The Routledge Handbook of Collective Intelligence for Democracy and Governance

Edited by Stephen Boucher, Carina Antonia Hallin and Lex Paulson

"Democracy is in crisis because today's governments largely fail to capitalize on their greatest untapped resource: the collective intelligence of their citizens. The cases in this book show the way to the smarter, more open democracy that humanity deserves."

Prof. Helene Landemore, Yale University, *author of* Democratic Reason *(2013) and* Open Democracy *(2020)*

"None of this century's hardest problems will be solved by a single stroke of genius – rather, we can only make progress by inventing new and better forms of collaboration. This book gives an essential guide to our emerging field."

Prof. Thomas Malone, Founder, MIT Center for Collective Intelligence

"Addressing the crises of the new world requires new tools based on the transformative participation of connected local communities on a South/South and not just North/South basis. This book feeds into such governance perspectives that can be one of the remedies to the most serious crisis: the crisis of trust in institutions."

Isabelle Durant, Former Deputy Prime Minister of Belgium, Vice-President of the European Parliament and Deputy Secretary General of UNCTAD

"The Routledge Handbook fills a gap in an emerging literature on collective intelligence and public innovation as a process of finding new way to provide people with public goods. This is a long-awaited book with a comprehensive view of the most sophisticated analyses, concepts and methodologies in the field."

Florent Parmentier, *Secretary-General of CEVIPOF research center, Sciences Po-Paris*

"The extent of the movement toward deliberative democracy has been poorly understood until now. *The Routledge Handbook of Collective Intelligence for Democracy and Governance* enhances our understanding of the breadth of activity across geographies and social institutions, while providing a valuable resource for insights from a host of experiments in collective intelligence."

Dawn Nakagawa, Executive Vice President of the Berggruen Institute, USA

"A key challenge presented in *The Routledge Handbook of Collective Intelligence for Democracy & Governance*, that of moving from the individual knowledge society to one that elicits the collective intelligence of all citizens, might be the greatest area of potential impact for democracy and governance today."

Andy E. Williams, Founder, Executive Director, Nobeah Technologies Foundation, Nairobi, Kenya

THE ROUTLEDGE HANDBOOK OF COLLECTIVE INTELLIGENCE FOR DEMOCRACY AND GOVERNANCE

The Routledge Handbook of Collective Intelligence for Democracy and Governance explores the concepts, methodologies, and implications of collective intelligence for democratic governance, in the first comprehensive survey of this field.

Illustrated by a collection of inspiring case studies and edited by three pioneers in the field, this handbook serves as a unique primer on the science of collective intelligence applied to public challenges. It seeks to inspire public actors, academics, students, and activists across the world to apply collective intelligence in policymaking and administration to explore its potential, both to foster policy innovations and reinvent democracy.

The Routledge Handbook of Collective Intelligence for Democracy and Governance is essential reading for scholars, students, researchers, and practitioners of public policy, public administration, governance, public management, information technology and systems, innovation and democracy.

Stephen Boucher is the founder and CEO of Dreamocracy and teaches at the Free University of Brussels (ULB), Sciences Po-Paris, and the Centre International de Formation Européenne (CIFE).

Carina Antonia Hallin is the founder and research coordinator of the Collective Intelligence Research Group at the IT University of Copenhagen (ITU), Denmark, co-founder of the Academy of Management's Community on Knowledge Integration, Synthesis and Engineering, and co-founder of the CI company Mindpool and Global Mindpool in collaboration with the UNDP.

Lex Paulson is Executive Director of the UM6P School of Collective Intelligence, Morocco, and lectures in international advocacy at Sciences Po-Paris.

THE ROUTLEDGE HANDBOOK OF COLLECTIVE INTELLIGENCE FOR DEMOCRACY AND GOVERNANCE

Edited by
Stephen Boucher, Carina Antonia Hallin and Lex Paulson

Routledge
Taylor & Francis Group

LONDON AND NEW YORK

IT UNIVERSITY OF COPENHAGEN

dreamocracy

PORTICUS

STIFTUNG
MERCATOR
FOUNDATION

CONTENTS

Contents

Contents

ILLUSTRATIONS

Figures

Tables

CONTRIBUTORS

Charlotte Arribe is the Sustainable Innovation Officer at the World Federation of United Nations Associations. Her work focuses on innovation and technology for sustainable development, urban regeneration, and diversity and inclusion. She is the Program Lead for Citypreneurs and Impact Manager at Impact Collective.

Stephanie Arrowsmith is the Asia-Pacific Regional Lead at Impact Hub. Her work focuses on systems change, strategic partnerships, and program design and delivery for entrepreneur support. She is the co-founder of Impact Hub Jakarta and Expert Lead at Impact Collective.

Mary-Alice Arthur is a Story Activist, using story practice for positive systemic shift and for focusing collective intelligence on critical issues. She guides people, and the systems they are part of, to find and activate the story that will take them into a larger and more authentic future. With story as an ally, people become the visionary leaders, changemakers, and paradigm shifters they want to be. They have the knowledge and tools to change the future for the better. She is an internationally recognized process host, building capacity for people to bring their stories to life, and in practice for more than 25 years. She is a steward of Art of Hosting (www.artofhosting.org), teaching participatory practice around the world, and co-creator of Collective Story Harvest methodology. Mary Alice is the author of *365 ALIVE! Find your voice. Claim your story. Live your brilliant life* and hosts THE STORY DOJO, an online community focused on the power and practice of story. She works with individuals, communities, and organizations around the world. More about her could be found at: www.getsoaring.com.

Annalyn Bachmann specializes in the intersection of online platforms, facilitation, and research. She is currently the Product Manager for MIT Horizon, a digital library with exclusive original content on emerging technologies. She is also a Research Affiliate with MIT's Center for Collective Intelligence.

Pilar Balet is a communications consultant who specializes in projects with social impact. She coordinates the communication of the B Corporation Stone Soup Consulting since 2013

and manages La mar de gente Comunicación, a project that she founded in 2017. She has a degree in Communication (FCOM, Navarra), a Master's degree in EU Law and Economics (Panthéon-Sorbonne Paris II), and a Diploma of Advanced Studies in International Relations (UCM, Madrid). In addition, she has been part of the Advisory Council of the Ecology and Development Foundation (ECODES) since 2018.

David Baum, Ph.D., D. Min. is an author, lecturer, and consultant, with 25 years of experience as a nationally respected expert in change management. Diverse clients include Fortune 50 companies, nonprofits and Nobel Prize winning organizations. His work includes conflict mediation in Northern Ireland, national health care reform policy negotiation, walking conflict resolution meetings in the Middle East, and post-conflict entrepreneurship for women in Bosnia-Herzegovina and Rwanda. His clients have won the Nobel Peace Prize, The Conrad Hilton Humanitarian Prize, the Malcolm Baldrige Award, and the Clinton Global Citizen Award. He is a Guest Lecturer at the Université Mohammed VI Polytechnique's School of Collective Intelligence (Morocco).

Knut Bergmann, Ph.D., heads the communications department and the Berlin office of the German Economic Institute (IW). Previously he was, among other things, a policy officer in the Office of the Federal President and a speechwriter for the President of the German Bundestag. He also teaches political science at the University of Bonn.

Stephen Boucher is the founder and the chief executive officer (CEO) of Dreamocracy, a consultancy group that fosters collective creativity for the common good (more: www.dreamocracy.eu). There, he and his team design and manage multi-stakeholder collaborative processes and events, as well as creativity processes for public authorities, political parties, Members of Parliament, advocacy groups, think tanks, and NGOs in Europe and internationally. A Harvard Kennedy School of Government and Sciences Po-Paris graduate, he is the author of several books on political creativity, think tanks, and energy policy. He was previously the CEO of consoGlobe.com, director for EU policy at the European Climate Foundation, co-director of the Jacques Delors Institute, ministerial adviser in the Belgian federal government, and public affairs consultant in London and Brussels. He teaches on matters related to policy innovation at the Free University of Brussels (ULB), Sciences Po in Paris, and the Centre International de Formation Européenne (CIFE). He sits on the board of Mindpool, the European Citizen Action Service, the Council on Economic Policies, and Europe's People's Forum.

Antonio Calleja-López holds a PhD in Sociology (University of Exeter), a DEA in Philosophy (University of Seville), and an MA in Political Science (Arizona State University). Antonio studies the multiple connections between technology, politics, and society, from the platformization of social movements, the public sphere, political parties, and states to the construction and sociotechnical governance of data and digital infrastructures. His work combines academic research, technological development, social innovation, and political action. He is the coordinator of the Technopolitics research unit of the Communication Networks and Social Change Group at the Internet Interdisciplinary Institute of the Open University of Catalonia. He has participated in numerous national and international projects, and is currently engaged in several, such as D2, Outonomy, Vector, Datapolitik, and Decidim, of which he is one of the cofounders. A Fullbright scholar, he has studied in different centers

and universities, among them the Center for Science, Policy and Outcomes and the Center for Nanotechnology in Society at Arizona State University, the Colorado School of Mines, the University of Exeter, the University of Seville, and the Internet Interdisciplinary Institute of the Open University of Catalonia.

Ankitha Cheerakathil is a social entrepreneur who is leading the Czech think-tank Institute H21's initiatives on collective intelligence and participatory democracy in India. She is also a Research Consultant working on urban governance at the Center for the Advanced Study of India, University of Pennsylvania. She is an alumna of the Paris School of International Affairs, Sciences Po, and St. Stephen's College, Delhi University.

Ted Cheeseman is a PhD candidate at Southern Cross University, Australia, and co-founder of the research collaboration and citizen science web platform Happywhale. His work has pioneered automated image recognition AI for humpback whales resulting in a global data set of over 60,000 individuals, applied to understand ecosystem change at an ocean-basin scale.

Finn Danielsen is an ecologist, dr.scient. His passion is participatory monitoring systems which provide valuable data, cost-effectively and sustainably, while simultaneously building capacity among local constituents and prompting practical and effective management interventions.

Kari De Pryck is a postdoctoral fellow from the Swiss National Science Foundation (SNSF) affiliated to the Université Grenoble Alpes (PACTE). She is also a research associate at the Centre Internet et Société (CNRS) and the Institute for Advanced Sustainability Studies (IASS). Her work focuses on the politics of knowledge production and global climate governance.

Anirudh Dinesh is a Research Fellow at the Burnes Center for Social Change at Northeastern University and its partner project, The Governance Lab (The GovLab). He is a member of the team designing and piloting experiments for new models of public engagement, what the GovLab calls people-led innovation, to improve the legitimacy and effectiveness of policymaking and to solve urgent public problems.

Uffe Elbaek is the founder and former principal of the KaosPilots – International School of New Business Design & Social Innovation. He was elected to the City Council of Århus twice and hired by the City of Copenhagen to be the CEO for the World Outgames 2009. After running for the Danish Social-Liberal Party in the national election for the Danish Parliament in 2010, he founded the consulting company Change the Game, with a focus on leadership training, political campaigning, and social innovation concepts. Besides, he has given himself the title: "Senior Troublemaker and Solution Finder," as he feels that this is his job nowadays. Elbæk won a seat in the Folketing for the Danish Social Liberal Party in the 2011 Danish parliamentary election. In 2011 he was appointed Culture Minister of Denmark. In 2013 he resumed his work at the Folketing as an independent and later announced the formation of a new "green" political party named The Alternative. The Party did not have a traditional political program, but wanted to develop it together with the citizens through the so-called "political laboratories."

Marwane Fachane is the Executive Director of the Fondation Hiba, which promotes artistic and cultural projects throughout Morocco. From February to December 2020, he coordinated the deployment of collective intelligence methods as a member of the support staff of the *Commission spéciale sur le modèle de développement* (CSMD).

Cristiano Ferri Faria is research affiliate at the Center for Collective Intelligence, MIT Sloan School of Management; research coordinator and lecturer, Center for Formation and Training, School of Parliament, House of Representatives, Brazil; has a PhD in Sociology and Political Science from the State University of Rio de Janeiro; and is the Brazilian House of Representatives' HackerLab founder and former director.

James S. Fishkin holds the Janet M. Peck Chair in International Communication at Stanford University where he is a Professor of Communication, Professor of Political Science (by courtesy), and Director of the Center for Deliberative Democracy. He is the author of *Democracy When the People Are Thinking* (Oxford 2018) and other books. He is a Fellow of the American Academy of Arts and Sciences, and he has been a Guggenheim Fellow and a Fellow of the Center for Advanced Study in the Behavioral Sciences.

Lodewijk Gelauff is a PhD candidate in Management Science and Engineering at Stanford University and designs, deploys and analyzes tools for societal deliberation and large-scale decision-making. He is the 20th Year Honouree Wikimedian of the Year (2021) for his volunteer contributions to Wikipedia and the Wikimedia movement.

Ashish Goel is a Professor of MS&E and (by courtesy CS) at Stanford University. His research areas include computer algorithms, social networks, social choice, and market design. He has led the development of the Stanford Participatory Budgeting Platform and the Stanford Online Deliberation Platform. He serves as a technical advisor to Coinbase, and has served as a technical advisor and research fellow at Twitter from 2009 to 2014.

Lars Grotewold heads the Climate Action Department at Stiftung Mercator, the largest philanthropic climate funder in Germany. He is a co-founder of Agora Energiewende, Agora Verkehrswende, Clean Energy Wire, and the Mercator Institute on Global Commons and Climate Change. He holds a PhD in molecular genetics and has been working for the National Council for Science and Humanities.

Carina Antonia Hallin is the founder and research coordinator of the Collective Intelligence Research Group at the IT University of Copenhagen (ITU), co-founder of the Academy of Management's Community on Knowledge Integration, Synthesis and Engineering, and a research affiliate at the MIT Center for Collective Intelligence (CCI), Massachusetts (2021–2022). Hallin has published within the disciplines of collective intelligence, artificial intelligence, computer science, decision science, strategy, and management. She has a strong research interest in the validation of new decision support systems for organizations and governments. Hallin is a listed knowledge partner to the United Nations Development Programme (UNDP) for collective intelligence. She is also a regularly invited speaker on collective intelligence for international and national organizations, such as the Organization for Economic Cooperation and Development (OECD), Novo Nordisk and Microsoft, and Dreamocracy in Brussels. In 2019, she was appointed by the Collective Intelligence Conference Steering Committee to be the Multi-Site Conference Chair of the

Association for Computer Machinery's first virtual Collective Intelligence Conference 2020. In 2019, Hallin co-founded the collective intelligence tech company Mindpool that has recently been acquired by the world leading innovation company, Wazoku, headquartered in London. The spinoff has received legal support from the Copenhagen Business School, and funding from the Innovation Fund Denmark, and other seed investors. In 2021, Mindpool launched the Global Mindpool Platform in collaboration with the UNDP to harness collective intelligence from citizens across 70 countries on climate change and inequality.

Lisbeth Iversen holds an Adjunct position at the Nansen Environmental and Remote Sensing Center (NERSC) in Bergen, Norway. She is an architect, interior designer, and former commissioner of Urban Development, Climate and Environment of Bergen. Lisbeth has a Master of Management from Oslo Business School, BI, and a Master in Regional Development from the University of Bergen. She is currently in the last year of a Public Sector PhD at Oslo School of Architecture and Design.

Catherine Jacquet is specialized in organizational and social innovation, with a focus on inclusive leadership and managerial innovations. She is also involved in several NGOs working on inclusive employment and social innovation in France, such as the Red Cross (Administrator of Croix Rouge Insertion) and Each One (Mentor for refugee inclusion). She has been a facilitator and advisor for the Unleash Innovation Lab since 2019 (2019: Shenzhen; 2020/2021: Hacks for Morocco, Mongolia, India, Dominican Republic, Haiti).

Nino Javakhishvili-Larsen conducts her research at the Department of the Built Environments at the Aalborg University. She specializes in economic geography of human interactions to the locational specific characteristics in urban, rural, peripheral, cross-border, and spatio-temporal functional localities, their development, planning, policy, and economic growth. Last couple of years she has been exploring collective intelligence methods in the human geography discipline, and how collective knowledge and group thinking can impact the development of different types of localities. She believes that the application of the collective intelligence methods can enhance bottom-up decision-making processes, planning and participation, and become a crucial part of normality in the era of digitalization and artificial intelligence.

Julie Anne Jenson is a researcher and writer focused on the impact of emerging technologies on language, health, well-being, and intergenerational communication. She is the co-founder of an early stage start-up and an associate lecturer at University of the Arts London: Central St. Martins.

Mark Klein (http://cci.mit.edu/klein/) is a Principal Research Scientist at the MIT Center for Collective Intelligence. His research draws from such fields as computer science, economics, operations research, and complexity science to develop computer technologies that enable greater collective intelligence in large groups faced with complex decisions. His current projects focus on large-scale online deliberation, as well as negotiation protocols for complex problems. He has also made contributions in the areas of computer-supported conflict management, design rationale capture, business process re-design, exception handling in workflow and multi-agent systems, and service discovery. He has over 180 publications in these areas, including over 9,000 citations on Google Scholar, 32,000 paper downloads, and an h-index of 47. He serves on the editorial boards of many prominent journals related

to artificial intelligence and social computing, as well as on the program committees for the premier conferences in those areas.

Adriana König is a PhD candidate as well as a research and teaching assistant at the Ludwig-Maximilians-Universität München (LMU) Munich School of Management. Her research focuses on health economics, health care management, and the role of behavioral aspects in health.

David Sun Kong, PhD, is a synthetic biologist, community organizer, musician, and photographer based in Lexington, MA. He is the director of the MIT Media Lab's Community Biotechnology Initiative, with the mission to empower communities through biotechnology.

Gitte Kragh is an ecologist, with a PhD in environmental volunteering. She is particularly interested in the motivations of stakeholders in citizen science, as well as the participatory community engagement approaches and interdisciplinarity required for citizen science projects to succeed. Gitte is engaged in many citizen science networks and is a board member of the European Citizen Science Association (ECSA).

Luis Lafosse set the foundations for his career in local government management 20 years ago in South America before moving with his family to Adelaide, South Australia, in 2014. He currently works at City of Playford as an Insight Analyst who specializes in community and city data and information. His areas of passion, experience, and knowledge include local strategic planning, innovation management, community engagement, public–private and non-profit organizations partnerships, education, cultural development, economic development, and rural development.

Camille Larmanou is a collective intelligence consultant at Hypermind. He holds an MA in European Affairs (Sorbonne Paris IV) and worked alongside cognitive scientists during the foundation of the Mohammed VI Polytechnic University School of Collective Intelligence. Inspired by forecasting, reasoning, and decision-making literature, he helps governments and companies make smarter decisions.

Robert Laubacher is an associate director of the MIT Center for Collective Intelligence. His work examines how novel ways of using information technology are transforming organizations and social patterns.

Karen Lawson is the Collaborative Learning Lead for the Collective Leadership for Scotland Team in the Scottish government. She has co-created a development program for leadership and facilitation in complex systems, and is interested in creative, relational, and democratic processes for addressing societal challenges.

David Leal Garcia is an economist (UC3M). He holds a PhD in Sociology (University of Barcelona). David is a system innovation consultant and dialogue facilitator passionate about unleashing collective intelligence to tackle our greatest challenges, with 12 years of experience helping public bodies, companies, and leaders to catalyze change in the frontlines in fields ranging from refugee inclusion, rural development, entrepreneurship development, Education 4.0, sustainable agriculture to public health promotion. He is a fellow researcher of the Communication Networks & Social Change Research Group at the Universitat Oberta

de Catalunya, where he looks into improving policymaking processes through the citizen engagement platform www.decidim.org. David has helped to design and execute participatory processes at MedialabPrado, Altekio, SenseTribe, and Platoniq. He has experience as a teacher in the leadership studies field at Universidad Isabel I and works as the spokesperson in Spain for several high-level initiatives such as the *Innovation in Politics Awards,* the *European Capital of Democracy* and the *Jeder Mensch: New Rights for a New Europe* campaigns. He is the main author for the IDEA International report on *Democracy technologies in Europe.*

Songyi Lee is the co-founder at Weave Collective, an entrepreneur, and a DAO/collective evangelist. Her work focuses on building a globally collaborative economy with purpose-driven entrepreneurs and emerging technologies. She is a Venture Partner at Impact Collective.

Bernard Le Roux works with conversations to heal fragmentation in society. This often involves aspects of mediation and negotiation, but always centers around dialogue. He is the co-founder of a Swedish not-for-profit company, *Dialogues,* that works on complex societal conflicts. He has an academic background in law, has experience working as a teacher, and has attended a variety of courses on mediation and dialogue.

Tze-Luen Lin is an Associate Professor in the Department of Political Science at the National Taiwan University. He specializes in global environmental politics, climate policy, deliberative democracy and post-empiricist policy analysis. He is currently the Deputy Executive Director at the Office of Energy and Carbon Reduction at the Executive Yuan, Taiwan.

Juan Linares-Lanzman holds a PhD in Communication and a Master in Social Communication (Pompeu Fabra University). Juan has been the Executive Editor of the Hipertext.net Yearbook from 2014 to 2017 and part of the Scientific Council of the journal. He is a collaborator of the DigiDoc Research Group (UPF). Through his involvement in this group, he has been involved in the organization of seminars, workshops, congresses, and conferences as well as in the design and application of protocols for analyzing the quality of online media. At the Universitat Oberta de Catalunya, he carries out research-action tasks in the Tecnopolítica network and in the Communication Networks & Social Change group. He is part of the Decidim Team, from where the Decidim.barcelona participation platform and the Decidim technopolitical project have been promoted.

Naima Lipka holds an MSc in Global Development from the University of Copenhagen, specializing in participatory development and global environmental governance. She currently consults the German Federal Ministry for Economic Cooperation and Development on climate policy.

Elisa Lironi is the Programme Director for European Democracy, working at the European Citizen Action Service (ECAS) since 2015. She develops and leads ECAS' European Democracy focus area by implementing EU projects and research studies related to Digital Democracy, Civic Engagement, and Understanding Populism. She is the digital democracy expert for ECAS and has been managing several projects on this subject from different EU programs including Erasmus+, REC, Europe for Citizens and Horizon Europe. She is currently part of the team working with the Secretariat-General of the European Commission on developing and implementing the European Citizens' Initiative Forum.

Helen K. Liu is a Professor at the Department of Political Science of the National Taiwan University. Her research interests include interorganizational networks, collaborative governance, crowdsourcing adaptation, and nonprofit management.

Kamesh Munagala is a Professor and Associate Chair of Computer Science at Duke University, conducting research at the intersection of computation with economics and social choice. He is an ACM Distinguished Scientist and an Alfred P. Sloan research fellow.

Liubov Nikolenko is an MS in Computer Science from Stanford University. She was working on the project for 2 years building several key features for the platform and crafting the scripts analyzing the deliberation data.

Sir Geoff Mulgan is a Professor of Collective Intelligence, Public Policy and Social Innovation at University College London. Prior to that he was the Chief Executive of Nesta, the UK's innovation foundation. He is a social entrepreneur, policymaker, and author, working at different times in civil society, government, technology, and academia.

Paul Natorp has worked at the intersection between activism, innovation, and leadership for many years. He is the co-founder of "Sager der Samler," co-founder of the international leadership program "Kaospilot Creative Leadership," and a member of the "OECD Innovative Citizen Participation Network."

Jonathan Oates is a former Liberal Democrat councilor in Kingston-upon-Thames (UK). He went on to be the Council's Deputy Leader. Jonny Oates was Chief of Staff to Deputy Prime Minister, Nick Clegg. He is a former Director of Policy and Communications at the Liberal Democrats and was Director of General Election Communications for the 2010 General Election, responsible for the party's communications strategy in an election that saw the Liberal Democrats gain nearly 7 million votes. Prior to this, Jonny Oates worked in various communications roles in the public and private sector. From 1999 to 2001 he lived in South Africa working for the Westminster Foundation for Democracy. He has also worked in Zimbabwe, teaching in a rural secondary school.

Passy Amayo Ogolla is a Network Weaver coordinating the activities and stakeholder engagement of the Next Generation Foresight Practitioners Network in Africa – a sensing network comprising emerging future-alert changemakers and leaders developing ideas that shape or disrupt the future toward a more desirable frontier for future generations. She is featured in the Converge Documentary, *Impact Networks: Creating Change in a Complex World*.

Raúl Oliván, Director General of Open Government and Social Innovation, is the driving force behind LAAAB. He was the Director of Zaragoza Activa until 2017. Raúl Oliván holds a Masters in Philosophy, took part in the U.S. Department of State's International Visitor Leadership Program, and holds degrees in advertising and social work. He works in the promotion of ecosystems, communities, and laboratories at the intersection between the public, private, and social by means of the Hexagon of Public Innovation.

Keira Oliver is a facilitator and was the Principal Social Researcher for the Collective Leadership for Scotland Team until September 2021. She was also the community facilitator

of u.lab Scotland. Her research interests include awareness-based systems change, trauma-informed practice, permaculture, and adaptation to the climate crisis.

Lex Paulson is the Executive Director of the UM6P School of Collective Intelligence (Morocco) and lectures in advocacy at Sciences Po-Paris. Trained in classics and community organizing, he served as a mobilization strategist for the campaigns of Barack Obama in 2008 and Emmanuel Macron in 2017. Lex studied classics at Yale (BA, 2002), Edinburgh (MSc, 2003), and Cambridge (JD finished, 2007) and practiced intellectual property law before earning his doctorate in ancient philosophy from the Sorbonne (PhD 2017). He has led projects in democratic innovation and leadership for UNICEF, the U.S. State Department, the French National Assembly, and the National Democratic Institute. He served as legislative counsel in the 111th U.S. Congress (2009–2011), organized on six U.S. presidential campaigns, and has worked to advance democratic innovation at the European Commission and in India, Tunisia, Egypt, Uganda, Senegal, Czech Republic, and Ukraine. He is author of "Cicero and the People's Will: Philosophy and Power at the End of the Roman Republic" (Cambridge, 2022).

Pierre Portevin is currently a life coach and personal development and strategy advisor. He is a trainer, a lecturer, and the author of several self-development books. He is involved in various associations supporting the transformation of our society. In his earlier career, Pierre opened a trendy bar at the age of 22, then was a DJ, worked in marketing and advertising, before becoming a facilitator for international projects of major French companies and SMEs (Small & Medium Sized Entreprises).

Michael K. Poulsen is an ecologist, working for Nordeco, with 30 years of experience in integrating conservation with local development. He has worked together with local communities on participatory monitoring and management in the Philippines, Laos, Indonesia, China, Nicaragua, Tanzania, Greenland, and Svalbard. Michael is a board member of the Participatory Monitoring and Management Partnership (PMMP), an international collaborative initiative for local leaders and communities.

Verena Ringler directs the European Commons from its headquarters in Austria. This Think and Do Tank builds cross-sectoral alliances for grand challenges, notably the green transition. She is the 2022 Helmut Schmidt Fellow and a former editor with *Foreign Policy* magazine, a former Deputy Head of Press and Public Affairs with a transatlantic diplomatic team in Kosovo (2006–09), and an alumna of the Johns Hopkins University's School of Advanced International Studies (SAIS).

Chiara Rosselli is the Head of the Open European Dialogue (OED) at GMFUS. The OED is Europe's first cross-party, cross-border informal network of elected politicians, with the aim to improve European politics by changing the way policymakers talk. She is the Vice President of Sistema Italia Adaptive Leadership association and alumna of Sciences Po.

Sukolsak Sakshuwong graduated with a PhD in Management Science and Engineering from Stanford University. He was the lead developer and designer for this platform during his candidacy.

Emile Servan-Schreiber is a cognitive psychologist (PhD, Carnegie Mellon, 1991) and a pioneer in digital collective intelligence. Since 2000, at the helm of the prediction-markets

company Hypermind, he has divided his time between scientific research on large-scale collective intelligence and its practical uses for companies and governments. He is also a founding member and affiliate professor at the Mohammed VI Polytechnic University School of Collective Intelligence. Previously, he worked as an artificial intelligence engineer and advised the OECD on its "brain and learning" program.

Aaditeshwar Seth currently teaches at the Department of Computer Science and Engineering of the Indian Institute of Technology in Delhi. He is the co-founder and director of the social enterprise Gram Vaani. Aaditeshwar is passionate about building technologies that can empower people with information. Several elements of his work have been adopted by government departments and social sector organizations.

Eva Sow Ebion has spent the last decade supporting African start-ups and entrepreneurship support organizations. She is a founder of the Innovation for Policy Foundation (i4Policy), where she leads on community building and training. She was awarded Tech Advocate of the year in 2021 by Women in Tech®.

Alice Siu received her PhD from the Department of Communication at Stanford University and has since advised policymakers and political leaders around the world, at various levels of government, including leaders in China, Brazil, and Argentina. She is an associate director of the Stanford Center for Deliberative Democracy where she has organized and collaborated on Deliberative Polls in many countries.

Paolo Spada is a lecturer in Comparative Politics within Politics at the University of Southampton. His research on collective intelligence explores how to combine the expertise of different people to achieve better decision-making. His work investigates in particular how and when these processes reshape political representation, promote accountability, and affect the planning and delivery of public policies. Paolo holds a PhD in Political Science (Yale University) and a PhD in Economics (Bologna University).

Eva Sørensen is a Professor in the Department of Social Sciences and Business at the Roskilde School of Governance. Her research focuses on political leadership in the age of governance, policy innovation, citizen involvement and co-creation in local neighborhood governance, and metagovernance and network governance, among other interests. She holds a PhD in political science from the University of Copenhagen. She is involved in several large-scale international research projects in areas such as policy and service innovation, democratic reform, and new forms of political leadership.

Jon Stever co-initiated and coordinated the world's first global citizens' assembly, the 2021 Global Assembly on the Climate and Ecological Crisis. He is a co-founder and Managing Director of Innovation for Policy Foundation (i4Policy), and a co-founder of Impact Hub Kigali, among other initiatives. He has advised and trained governments and communities across more than 50 countries. For his efforts supporting regulatory and legal reforms for start-ups, he was recently listed by Jeune Afrique among the top 20 people driving Africa's digital transformation.

Tim Switalski is the founder and president of Darwin Associates, an innovation consulting firm in Buffalo, New York, where for the past 27 years he has provided training, facilitation,

coaching, and consulting services to organizations around the world. His main focus is helping people to develop their leadership potential, build cohesive teams, and enhance their creative thinking skills. He is also a founding partner of the Center for Certification in Creativity where he serves as the faculty, coach, and coordinator of the coaching program. Tim is the former director of Leadership Development at Buffalo State College where he was responsible for providing ongoing learning and development opportunities for professional staff and faculty. Tim is one of the founding members of CREA Conference and currently serves as the faculty and coordinator of their Immersion and Expo programs. He holds an MS in Creativity and Innovation from the International Center for Studies in Creativity at Buffalo State College.

Stéphanie Tawa Lama is a CNRS Research Director (political science) at the Centre de Sciences Humaines (CSH), New Delhi. There, she studies contemporary Indian democracy through three main topics: political representation (with a special focus on women's representation); participatory experiences; and local democracy and urban governance. Her recent publications include *Emotions, Mobilisations and South Asian Politics* (with Amélie Blom, 2019) and *Les avatars de la participation en Inde. Formes et ambiguïtés de la démocratie participative* (2018).

Mamello Thinyane is an experienced information technology professional, computer science academic, and cross-disciplinary researcher with over 15 years of experience managing digital development projects in Africa and Asia. He is passionate about the role of scientific research to inform evidence-based policies and about technology innovation to advance inclusive, participatory, and sustainable development. He is a principal research fellow at the United Nations University, and was a facilitator for the Unleash Innovation Lab in Shenzhen in 2019.

Jacob Torfing is a Professor in politics and institutions and research director of the Roskilde School of Governance, which is a political science and public administration research center at the Department of Social Sciences and Business. His research interests include public sector reforms, network governance, collaborative innovation, interactive political leadership, and innovation management. He is part of a number of Nordic and European research projects that focus on the co-creation of innovative solutions to complex societal problems and the impact of leadership and institutional design on cross-boundary collaboration.

Jeff van Luijk is a Political Science and Philosophy graduate working in the field of Deliberative Democracy and Political Innovation. His research interests include the emotional dimension of political reasoning, especially during deliberative democratic exercises. He is an advisor to Dreamocracy and the founder of PLNT.lu.

Eunielle Yi is the co-founder at CAN Lab, a partner (venture capitalist) at TheVentures and a serial entrepreneur. Her work focuses on leveraging Web3 innovations to open a Community 3.0 era for various business sectors and leveraging the DAO model for start-up investments and new finance services. She is the Lead Tech Provider and a partner at Impact Collective.

PREFACE

Stephen Boucher, Carina Antonia Hallin, and Lex Paulson

What if we could use the knowledge distributed across society to produce better solutions to public problems? Everywhere we seem to find evidence of the delusions of large groups, especially when it comes to politics: online misinformation, partisan tribalism, public decisions driven by emotion more than fact, procrastination, and ideologies that restrain the range of options considered, etc. As we were putting the final touches to this book, the Russian government was waging a war on the people of Ukraine, not least for choosing a development path based on freedom of speech, free elections, and democratic participation. Vladimir Putin and other neo-totalitarians around the world reflect the old wisdom that a leader with no constraints on his or her power and missing diversity in decisions are always a threat to peace and human welfare.

And yet, we can also witness around the world inspiring examples of minds coming together to solve more effectively some of our most complex problems. Consider, for instance, the collective resilience and thoughtfulness that the world witnessed in the COVID-19 crisis. Producing a vaccine was predicted to take at least two to three years. Scientists and public health experts from different countries had to share information rapidly. Laboratories had to bring together researchers from different disciplines, each contributing a critical skill set. A huge network of individuals had to work in alignment to manufacture, test, license, and distribute the vaccine: doctors, regulators, pharmaceutical companies, supply chain experts, communications specialists, and community non-profits. None of these actors had sufficient expertise on their own to handle those tasks and deploy them on a world-wide scale. Together, a vaccine was created in eight months. Health measures were adopted at unprecedented speed, perhaps chaotically, some controversial, others possibly detrimental to democracy. Yet, in sharp contrast with the Spanish flu pandemic of the early 20th century, collectively hundreds of thousands, maybe millions of lives were saved. As a species we observed, learned, developed solutions, spread them, and are still learning and adjusting as we go along. No less than five stories in this book recount the unprecedented efforts to elicit collective intelligence to tackle the global pandemic in a more inclusive and participatory fashion.

Throughout history, collective intelligence has not been the exception – it has been a rule to help humans survive. In fact, for most of human history, we lived in small tribes and made collective decisions. Through conscious learning, has gained the possibility of adjusting and

improving the mental processes and behaviors that we inherited from the past. However, as we moved from small groups to large societies, the coordination costs of collective decisions rose, and hierarchies became more efficient. Now, the rising complexity of problems has outmatched the ability of hierarchies to track and solve them, while technology has considerably reduced coordination costs. At the same time, disillusionment about politics in general and representative democracy in particular have created urgent demands from citizens that governments open up and create new models of "thinking like a brain."

What if the solution to such crises rested in better understanding whether and how collective intelligence can be harnessed more efficiently by governments and democracies in particular to meet people's needs? This is a question that we see more and more policy makers, citizens, activists, scholars, and students of politics posing today.

The purpose of this handbook is to explore, in theory and practice, the opportunities and the challenges of collective intelligence in solving our most urgent public problems. In the chapters and case studies contained here, we hope to:

- Help readers discover some key aspects of the emerging science of collective intelligence, with clear explanations of the most recent insights into how to organize and facilitate complex collaboration;
- Inspire change-makers, both public servants and active citizens, to design better participatory methods that effectively harness the intelligence of the community;
- Equip readers with practical methods, tools, and strategies to develop their own initiatives in collective intelligence and make them sustainable – noting that while principles may travel well, practices will need to be adapted to local contexts.

This we tried to do by bringing together 36 case stories. Each has three sections around those goals: providing inspiration, sharing the science, and identifying key do's and don'ts. The stories and their analysis are brought to you by an impressive array of experts, some academics, some practitioners, from a diverse range of regions and cultures. These examples do not aim to be encyclopedic in nature. And there are many more concepts related to the science of collective intelligence and governance than we could cover in a single book. Our goal with these theoretical chapters and 36 cases is to illustrate the vast range of concepts required to understand the potential and complexities of collective intelligence applied to public problems. As you will see, some protagonists of those stories very deliberately put in place methodologies informed by the science of collective intelligence. In other cases, they may not have used the terms "collective intelligence" as such nor necessarily referred to explicit protocols. But in all the stories told, you will see how participatory processes were deliberately redesigned to foster better outcomes.

The introductory chapters sketch out the key concepts and references needed to understand the full complexity, potential, challenges, and limits of fostering collective intelligence at the level of a community, a city, a nation, or across several nations.

Our conviction is that we stand at the beginning of a major paradigm and systems shift. As in all such previous moments, this transition comes from new pressures from our environment that force us to develop new tools and organize ourselves in new ways. There is no foreordained outcome; the coming decades could see humanity become far less democratic, or far more so. What is certain, based on the lessons of our history, is that societies that cling to the *status quo* will falter, and societies that constantly innovate – and more importantly, that reinforce their capacity for continuous innovation – are likelier to succeed. It is our

belief that the intelligence of the many will outcompete the intelligence of the few. But we need to get to work, and this book is here to cast some light on that arduous path.

And now that this handbook is complete and in your hands, an equally important stage – of practice and knowledge exchange – is just beginning. We aim for this handbook to be a shared resource of a growing community of practice that we hope you will join.

ACKNOWLEDGMENTS

PART 1

Foundations

1

A BRIEF HISTORY OF COLLECTIVE INTELLIGENCE, DEMOCRACY, AND GOVERNANCE

Lex Paulson

Introduction

The history of collective intelligence in human societies is riven with paradoxes. Why, if human beings evolved to collaborate, are so many of us excluded from the decisions that most affect us? Are humans egalitarian or hierarchical by nature? How do we reconcile the seemingly universal human desire for respect and inclusion with the preference, maybe just as widespread, for rule by a strong hand? Why did the modern embrace of "democracy" actually preserve the power of elite males nearly everywhere on earth?

The power monopolies of elites are, to paraphrase James Joyce, a nightmare from which we are still struggling to awake. In *Hierarchy in the Forest* (1999), political anthropologist Christopher Boehm observes that our closest primate cousins tend to organize themselves in hierarchies, with an alpha male enjoying privileged access to food and females, and a ladder of junior pretendants below him. Drawing from a wealth of archeological, ethnological and anthropological data, Boehm argues that this model of elite male dominance, and its associated methods of negotiating and wielding power, was likely the early predecessor of all forms of human politics. On the other hand, from the emergence of *Homo sapiens* roughly 200,000 years ago to the rise of the first agrarian states – that is to say, for 95% of human history – Boehm contends that most human societies were egalitarian and participatory. Typically numbering 20 to 150 members, these cultures employed (and still employ) sophisticated practices of pooling information, resolving conflicts, making decisions, and compiling useful knowledge. Women contributed actively and decisively, the evidence suggests, to public decisions and knowledge-sharing. Further, the "Big Men" of these communities have often been materially poorer than their peers, serving not as tyrants but as mediators and facilitators of group thinking. As evidence continues to emerge from ethnographic studies and the archeological record, small-scale human politics is showing itself to be far more heterogeneous and fluid than once thought, with some cultures shifting between democratic and authoritarian models in different seasons of the year (Graeber & Wengrow 2021).

Are we thus "naturally" democratic, predisposed to share power and participate in public decisions? Alternatively, did our ancestors "find the knack" for participatory governance, practice it for many thousands of years, and then lose it? Taking this a step further, does the displacement of egalitarian societies by elite-governed cities and states mean that evolution *favors* hierarchies? Is putting power in the hands of an elite a better strategy, evolutionarily speaking, than harnessing the wisdom of a crowd?

Viewed in its proper light, the story of democracy begins not in the Athenian agora but with the earliest evidence for collective thought. In this introductory chapter we look to history for clues on how participatory governance came to be and how it might be reinvented in our own time. Our version of this story unfolds in two through-lines: in the increasing scale and complexity of human societies, and through an evolving, millenia-long debate on the capacity of groups to govern. As we will see, some of the earliest texts of political theory feature arguments for and against the merits of large-scale citizen participation. Several of these ancient texts have been given new force by empirical social science. As we will also see, theoretical debates are not the only, nor even the most important, arena in which communities practice meta-cognition – that is, thinking about how they think.

Our first through-line is complexity and scale. The long story of collective intelligence is not one of linear stages but exponential leaps. For the greater part of human history, most public decisions were made by communities of a few dozen members who knew one another intimately. As a result of ecological pressures around the end of the last Ice Age, communities in Mesopotamia and China began adopting new technologies of irrigation and domestication, swelling their populations into thousands, then tens of thousands. As Graeber and Wengrow (2021) argue with examples from Ukraine and Mesoamerica, the disruptive technology of farming may not have led inexorably to hierarchical states; human creativity and contingency yielded a variety of political models even in similar ecological niches. Nevertheless, the rise of such states is a historical fact: in the systems of taxation, commerce, and military organization that arose on the Tigris, Nile, and Yellow rivers, ruling elites monopolized power and information on a hitherto unimaginable scale (Fukuyama 2011; Scott 2017; Stasavage 2020). In the millennia that followed, new technologies of writing, navigation, and coinage drove another step-change in population, from cities of thousands to empires of millions. While typically organized under a single ruler or dynasty, increasingly complex bureaucracies came to assume important powers of their own (Fukuyama 2011; Stasavage 2020). Still closer to our own time, the technologies of printing press, rail and steam travel powered the creation of "imagined communities" of tens and hundreds of millions, a new form of association called the nation-state (Anderson 1983). Increasingly informed and educated citizens occasionally succeeded in forcing elites to redistribute power via constitutional reforms; just as often, the reforms led to a new governing elite replacing the older one, with the power of the average citizen basically unchanged. The digital revolution of the last half-century has arguably creates another step-change, allowing knowledge-sharing at the scale of billions – redistributing power in some cases, and reproducing new elites in many others. As new "imagined communities" emerge on these platforms, so too have existing communities gained new tools to tap into collective wisdom. What kind of citizen power will these new tools make possible? This handbook is an attempt to chronicle and learn from some early experiments in the application of collective intelligence in the digital age.

The scaling up of human politics has been neither linear nor uniform. The step-changes described above have occurred – are still occurring – at different moments and are unfolding in different ways. At any given time, these "chapters" of our history coexist and

contrasting models of politics are brought into competition or, more constructively, into dialogue. For this reason, the historical account that follows is not strictly chronological. Rather, we will look at some of implications of each step-change in human political organization: from smaller to larger communities, and from cities to empires, nation-states, and beyond.

Our second through-line traces a history of ideas. As these step-changes in population unfolded, competition for resources among neighboring societies also engendered a competition of ideas (Boehm 1999; Thomson 1968). Explanations of "how we do things here" become arguments over "why our way is best." Rituals, myths, plays, and theoretical treatises were created to meet this growing need for societies to explain – to others, but just as importantly, to themselves – why power should be organized in a certain way.

We can see these stories and texts (including the one you are reading right now) as acts of meta-cognition, thinking about thinking. Meta-cognition is a capacity of individual human minds, but so too is it practiced by communities, both synchronously in public debates and across generations. The foundation stories of the Iroquois and Gikuyu, for example, are exciting dramas, but so too are they fertile explanations of why "our community" must think and act together (Erdoes & Ortiz 1984; Kenyatta 1965). The tragedies of Aeschylus, first performed in the 5th century BCE, may have served precisely the same purpose for citizens of the Athenian *demokratia* (Goldhill 1987). Successors like Protagoras, Plato and Aristotle made more explicit inquiries into the different ways a community might rule itself and who had knowledge relevant to the task (Landemore 2012). This form of meta-cognition became known in Greek as *theoria*, "theory." Classical Athens is thus significant not because it invented participatory governance; it did not. Rather, political reformers like Solon, Cleisthenes and Pericles repurposed the egalitarian practices of an ancestral past in a new urban arena, using sortition and deliberation to organize their affairs and propel their city into prominence. For all their faults, their intellectual legacy – *demokratia*, *politeia*, *theoria,* and *demagogos*, to name a few Athenian coinages – still resonates in the digital age. The oldest extant arguments for collective intelligence, and many scathing arguments against it, are found here.

For most of the period that followed, in most of the world, arguments for majority rule were minority views. In the 17th and 18th centuries CE, frustration with ineffective and unaccountable elites boiled over into revolution in places like England, France, the American colonies, and Haiti. Successful uprisings opened new vistas of political creativity, as statesmen like Nicolas de Condorcet and James Madison presented blueprints of self-government on a continental scale. Their two models were based on opposite premises, however, regarding the competence of the average citizen. For Condorcet and his allies, citizen sovereignty was realized in the free flow of information and by direct participation in local, regional, and national assemblies; for Madison and the framers of the US constitution, citizens were asked to consent to and legitimize power, not exercise it (Landemore 2020). Actual authority in these new republics would be held by representatives who would (it was imagined) form an enlightened, competent and accountable ruling class. In this clash between the legacies of Athens and Rome, Athens lost; we came to live in Madison's republic of elected elites, not Condorcet's polity of self-governing citizens. Whatever the achievements of "representative" democracies, and the still-more-glaring flaws of authoritarian alternatives, recent decades have witnessed a sharp decline of public trust in representative institutions and the elites that control them (Miller 2018). Criticisms have grown louder from both ends of the democratic spectrum: from blood-and-soil nationalists and anti-system strongmen as well as from democratic reformers whose ideas reprise Protagoras and Condorcet. Most

promisingly, as this volume hopes to show, evidence for the "eudaimonic" value of democracy, its innate benefits for human well-being, is aligning with evidence for its "epistemic" value, that diverse crowds can actually outperform elites in solving public problems.

But how did collective intelligence first emerge in our species? What does history tell us about the competence of average citizens to govern? And how might we draw upon history to invent new models of public problem-solving? It is to these questions that we now turn.

Origins of the collective brain (10^1–10^3 members)

Given that human beings, of all the world's species, wield the most power over the natural world, it would seem safe to conclude that we must also be the most intelligent. But this is not exactly the case. Recent studies have seen chimpanzees outperform humans in a range of cognitive skills, including in short-term memory tasks and finding optimal strategies in two-player games (Henrich 2015). Nor do our large brains give us a decisive advantage in practical problem-solving: drop a randomly selected 21st-century urbanite and a chimpanzee into a forest, and who would you bet on to be alive in a month? Where human beings excel – what Joseph Henrich calls "the secret of our success" – is in our insatiable appetite first to learn from other humans, then to participate in complex collaborations of all sorts. It was this talent for teaming up, not sheer numbers or physical strength, that propelled humans atop the food chain.

Henrich posits that an important early instance of our collective intelligence was the ability to develop and transmit useful knowledge throughout a community. This is a uniquely human quality: other primates may use tools to dig for food – and can even show their children these techniques – but chimpanzee communities do not improve these tools and techniques over many generations. By contrast, every human child is given access to a vast store of knowledge stretching back thousands of years, including complex language, tools, and cognitive "software" like number systems and cardinal directions. Only humans acquired the knack for cumulative culture, and it led to civilization as we know it.

Why did humans make this consequential bet on collaboration? The decisive moment in our cultural evolution, according to Henrich, may have been the domestication of fire between 1 and 1.5 million years ago, at a time when our ancestors were more often prey than predator. A cooling climate may have intensified competition for food between humans and other land-based primates. However we stumbled upon it, the controlled use of fire enabled a new kind of interaction with our environment; critically, Henrich notes, cooking food allowed early hominids to shift energy from their digestive tracts to their brains, creating a feedback cycle that rewarded social learning.[1] The increasing sophistication of human technologies – from hunting weapons to cooking methods, clothing, and shelter – ultimately allowed *Homo sapiens* to leave our first ecological niche on the African savannah around 70–100,000 years ago. We made a home in every region and climate on earth, the only species to do this. The collective knowhow needed to survive in this wide range of environments was not automatic: it required a threshold level of inventiveness (at least some members of each generation trying new things); sociality (members willing to share what they knew); and transmission fidelity (each generation successfully passing its knowledge to the next). Henrich argues that these repositories of common knowledge can be understood as a society's "collective brain": unique among animal species, the knowledge critical for any individual's survival is distributed across the community as a whole. Critically, however, we learned to make use of the accumulated knowledge of previous generations without needing to know *why* these techniques produced the desired outcome; as any smartphone

user knows, humans can be entirely competent in using a tool – even hopelessly dependent on it – without having the least idea how it works.

Henrich concludes that our fire-wielding hominid ancestors became collectively intelligent by creating systems for building and transmitting cultural knowledge that could be used with or without justification. In fact, simply copying the methods of successful elders must often have been the most efficient way to marshal energy for survival-critical tasks. Just as our genetic evolution proceeds by mutation and selection, a cultural "trial and error" process and the filter of adaptive fitness drove the progress of our "collective brains." While potentially much faster than genetic evolution, cultural evolution could require many generations of tinkering to bear fruit. In this sense, the most adaptive societies may have been the ones to develop swifter and subtler ways of sharing cultural information, leading ultimately to a second accelerator: complex language.

Other animals have language, and even vocabularies, but human language may have been special in at least two respects. First, *Homo sapiens* developed the ability to refer to past and future events, making it possible to create and enforce moral norms (e.g. "she took extra meat for herself yesterday"). Second, our language permitted the development of abstract concepts to explain or justify those norms (e.g. "we share meat so all hunters are healthy," or "it's dishonorable to run away"). This ability to create abstract concepts, and use those abstractions to enforce social behaviors, is where government begins. As famously explored by ethologist Frans de Waal (1982), chimpanzees are capable of complex sociality, including forming coalitions, distributing resources to bolster status, and grooming allies (literally). But chimpanzees cannot appeal to common rules or give reasons, and this is precisely what early humans learned to do. Abstract language also enabled more complex exchanges of information: making predictions based on past experience, filtering stronger arguments from weaker ones, or transmitting norms and rituals by way of stories (Tomasello, 2019). These practices became part of a second form of collective intelligence: creating "shared intentions" to solve common problems. The most urgent tasks for community survival – identifying food sources, warding off predators, and managing relations with other groups – required new practices for sharing information, generating ideas and making decisions. Around campfires on the savannah, the public sphere was born.

When did this happen, and why? Drawing inferences from the archeological record and more recent studies of hunter-gatherer societies, Boehm (1999) places this turning point sometime between 100,000 and 200,000 years ago, just prior to our species' first forays from Africa. Around this time, he argues, fluctuations in global climate may again have increased competitive pressures on human societies, potentially rewarding new strategies of social organization. At the same time, the complexity of human language had developed to the point where our ancestors could create, explain, and defend a "way of doing things" – the elements of what Boehm calls a "moral community."

The ability to create explicit norms and rituals had two big consequences for political culture. For the first time, a community of human beings could "rewrite the rules" of their society, reversing the dominance of a single elite male, and establishing in some cases what Boehm calls "the domination of the weak over the strong." Technology played a critical role in this transition: the development of hunting spears, for example, meant that the members of a group could threaten, even execute, any individual that broke the rules, even if he was stronger than the rest. Collective hunting of big game, a key adaptation in a time of ecological stress, also may have favored societies that developed norms for equal sharing of food and other resources. "Proto-democracies" may thus have had a competitive advantage, Boehm posits, incentivizing neighbor communities to copy their practices. This adaptive

fitness was not cost-free. As shown by more recent studies in the Kalahari, the Arctic, and in New Guinea, egalitarian communities deploy an enormous range of civic skills to resolve conflict and temper ambition (Meggitt 1978; Boehm 1999; Henrich 2015). For example, after a successful hunt the !Kung people of Botswana praise the maker of the *arrow* that killed the animal, not the man who shot it; this cultural practice, combined with rituals of arrow exchange, has the effect of randomizing credit and thus tamping down individual ambition. Similarly, the Mae Enga people of New Guinea practice a carefully sequenced method of deliberation in which key facts are solicited, ritual language stabilizes conflicting views, and the "Big Man" finally presents a synthesis for group validation. In each case, the price of egalitarianism is patience, vigilance, and ingenuity.

The second consequence of the capacity to create "moral communities" was the ability to collaborate with strangers. Psychologists Jay Van Bavel and Dominic Packer (2021) observe that while many species exhibit some form of kin preference, only humans show unconscious preferences for strangers with a shared *non*-genetic affiliation like religion or nationality. Interestingly, the affiliations that shape our decisions may be deep and lifelong, but so too can they be temporary and arbitrary: in their experiments, subjects assigned to "Group A" or "Group B" showed unconscious preferences for members of their groups even when the groups had been formed mere minutes before. In these cognitive habits lie the secret of successful large-scale communities. As our capacity for moral reasoning emerged, human societies developed new cultural institutions capable of extending the scale of collaboration, including oaths, totems, and the threat of divine sanctions, all of which could enable interpersonal trust among thousands. Hunter-gatherer bands that would otherwise be hostile to one another could now function as part of shared political and economic systems, owing common moral duties (e.g. not to break oaths) and practicing common rituals (e.g. seasonal exchanges of goods). Again, to borrow Henrich's term, there is a "secret" to this success: most of us will never question *why* these cultural practices work as they do — it is simply "how we do things." But since our environment continually presents us with new pressures, our survival depends on a threshold number of innovators, teachers, and transmission channels to keep the wheels of adaptation turning (Winters 2020). This capacity to refine our culture, combined with changing environmental pressures and intergroup competition, has rewarded societies that can think together both synchronously and cumulatively – that is to say, at critical moments and across generations.

Step-change: City-states and confederations (10^4-10^5 members)

Farming created new possibilities of political order. Developed in the wake of climatic shifts around 10,000 BCE, new technologies of plant and animal domestication — first in the Fertile Crescent and South America (10,000–8,000 BCE), the Indus Valley (8,000–6,000 BCE), and China (ca. 6,000 BCE) — enabled new patterns of food production that could support much larger and denser populations. Historians like Jared Diamond (2013) and James Scott (2017) argue that this population explosion came at an enormous cost for most humans. Archeological remains suggest that most members of these communities saw their diets become less diverse, animal-borne disease more rampant, and the physical toll of food production more severe (including the first evidence of repetitive stress injuries). Above-ground crops like barley and rice also enabled the first systems of mass taxation, supporting the creation of temples, the feeding of armies, and the comfort of royal courts. These first states replaced egalitarian practices with centralized hierarchies that monopolized power over religious symbols, and consequently the power to coordinate collective behavior through their

official use (where "official" meant "backed by force"). The most successful of these states were able to achieve vertical integration – clear lines of authority from ruler down to senior and junior officials – as well as horizontal integration across large populations via symbolic language, rituals, and social norms, reinforcing a shared identity while guarding power for a select few.

The development of early states, however, was neither linear nor universal. Assembling a range of archeological and textual evidence, Graeber and Wengrow (2021) point to an astonishing variety of political models that accompanied the adoption of agriculture in different parts of the world. They observe, for example, that the conventional narrative of the "Agricultural Revolution" (a term they reject) fails to account for the several millennia that separate the rise of farming in Mesopotamia with the rise of states (see also Scott 2017). For many generations in the "cradle of civilization," in other words, cities may have thrived without a political or religious caste to rule them. Graeber and Wengrow cite archeological evidence from India, Ukraine, and Mesoamerica to argue that, in these places as well, the rise of cities did not require the abandonment of egalitarian practices. Perhaps most interestingly, they point to a variety of political models that may have coexisted within single communities. For example, the Nambikwara people of Brazil occupied hilltop villages and practiced horticulture during the rainy season of each year while during the drier months, they dispersed into small foraging bands (Levi-Strauss, 1948). Two utterly different kinds of politics are practiced in each of these two seasons. As Graeber and Wengrow put it:

> Chiefs made or lost their reputations by acting as heroic leaders during the "nomadic adventures" of the dry season, during which times they typically gave orders, resolved crises and behaved in what would at any other time be considered an unacceptably authoritarian manner. Then, in the rainy season, a time of much greater ease and abundance, they relied on those reputations to attract followers to settle around them in villages, where they employed only gentle persuasion and led by example to guide their followers in the construction of houses and tending of gardens. They cared for the sick and needy, mediated disputes and never imposed anything on anyone.

From burial patterns in Paleolithic Europe to the monumental remains of Stonehenge and Göbekli Tepe, it is now possible to see much of political prehistory as a blend of – or oscillation between – hierarchy and equality, not a choice of one or the other.

As the statist model expanded, its chief victims may have been women. While sexual dimorphism has always given men an advantage of brute force, the moral communities established in many hunter-gatherer societies may have given women a decisive role in sharing information and enforcing norms (Boehm 1999). So while men may have dominated formal deliberations in many early societies, women may have played the decisive role in establishing the moral frameworks for their decisions (Meggitt 1978; Boehm 1999; Henrich 2015). Not so in the first agricultural states, where men made political power their concern, and women effectively became a class of property to be guarded at home – a status in which too many have been confined until today (Fukuyama 2011). Notably, in parts of the world where below-ground crops like squash, potatoes, and groundnuts played a greater role in food production, and where the natural environment favored greater mobility, tax systems were far more difficult to maintain (Scott 2017).[2] As these societies scaled up, we find alternative models of collective thinking in which women tended to play a more prominent role.

One of these was the Iroquois Confederacy, formed by an alliance of five tribes in what is now the northeastern United States.[3] For at least 400 years, this community integrated tens of thousands of members, creating a model of collective governance far different from those of the ancient Near East (Weatherford 1988). Vertically, the Iroquois integrated political power in a bottom-up fashion: in each village, a Clan Mother designated a man as "sachem" to represent the village; village representatives gathered to make decisions at the level of the tribe; and the 50 sachems of all tribes served as the confederation's "Great Council," meeting every five years. Like the Mae Enga, and unlike most modern legislatures, the deliberations of the Iroquois were understood not as frameworks for zero-sum debate (Meggitt 1978; Weatherford 1988). Rather, their rules and practices were designed to build consensus; interruptions were strictly forbidden, for example, and each intervention was followed by a brief moment of silence for group reflection. Though each of the five Iroquois tribes were represented proportionally on the Great Council,[4] all sachems had an equal vote, with the most senior members giving the decisive final votes on a motion. To guard against the dominance of strong individuals, the civil role of sachem and military role of chief were kept strictly separate; moreover, all representatives could be recalled by their constituents, with women again playing the leading role. The horizontal integration of the Iroquois was equally sophisticated, based on exogamous marriage among neighboring clans, each with its own animal totem (e.g. "wolf clan," "turtle clan," and "beaver clan"). Strikingly, Iroquois stories tended to portray the five tribes' diverse talents as a civic resource. In one version of the confederacy's founding myth, the tribes are called in emergency assembly following a devastating invasion from the north. In this crisis, the founding figure Hiawatha[5] recounts the "special gift" the Upholder of Heavens has given each of the five tribes – including the complementary skills of persuasion (Seneca), good counsel (Oneida), and cunning (Cayuga) (Erdoes and Ortiz 1984). "You tribes," concludes Hiawatha, "must be like the five fingers of a warrior's hand joined in gripping the war club." Such stories were a key vessel of cultural transmission that sustained what Henrich would call their collective brain, but also served as a form of meta-cognition, as the oral tradition gave storytellers discretion to adapt and elaborate on key themes (and invite their audiences to respond). Material objects also played a key role in the transmission process; for example, the purple-and-white patterns of Iroquois wampum beads symbolized the values of courage and solidarity that a tribal member would be expected, in both senses, to display.

A similarly noteworthy model of collective intelligence is found in the Gikuyu people of East Africa.[6] As documented by Jomo Kenyatta (1965), himself a Gikuyu and later first president of independent Kenya, the Gikuyu forged a highly participatory system of government whose members, at its height, may have numbered in the hundreds of thousands. Like the Iroquois Confederacy, the Gikuyu used principles of bottom-up representation to integrate decision-making through nested layers of councils at the village, district, and national level.[7] Like the Iroquois, accountability for decisions flowed downward, such that village councils retained the right to recall their representatives at any time. And as with the Iroquois founding narrative, the Gikuyu claimed to have forged their system as a response to the overweening power of a single man, whose example continued to serve as a cautionary tale of the ever-present threats to an egalitarian society. This new constitution, in Kenyatta's words, was the product of "[t]he great desire…to give the country a new order where every section of the community would have some practical part to play in the people's government."

As with the Iroquois, the challenge of large-scale participatory governance inspired a series of adaptations by the Gikuyu to integrate the community horizontally. First, formal

membership in the nation was made universal for men and women, based on the sole criterion of the circumcision ceremony; all other social or hereditary distinctions were abolished. Instead, young Gikuyu entered into citizenship duties through a meticulous system of age grading. Based on the year of their birth, each young person was assigned to a *riika*, a ceremonial brotherhood or sisterhood shared with other Gikuyu born in that year. Members of a *riika* were subject to intense initiation rites that created powerful emotional bonds; the ceremonial duties of a *riika* were lifelong, and the strongest social taboos forbade harming a fellow member. With other members of one's *riika*, a young person was initiated into a new civic assembly at each phase of life: a Council of Junior Warriors, then Senior Warriors; then after marrying, the Council of Peace, the prime decision-making body for local matters. If surviving into old age, the individual passed a final initiation under the sacred tree of the Gikuyu, entering the Religious and Sacrificial Council charged with safeguarding the moral and spiritual order. Though men played the principal role in the assemblies, women accompanied their husbands as initiates into the Council of Peace and retained significant power over marriage, education and economic affairs. This progression into higher stages of civic responsibility was thus articulated at the level of the individual, his or her specific age cohort, and finally through the *itwika* ceremony, in which an elder generation formally bestowed civic authority on the rising generation of young adults. The integration of collective thought practiced by the Gikuyu in their councils was thus the product of a sophisticated web of practice designed to stitch together the civic order across family groups, gender, and generations. These interlocking individual and group identities, in turn, provided the foundation for a politics where collaboration and turn-taking were the norm.

A final factor in Gikuyu collective intelligence was their practice-based approach to civic education. Kenyatta observes that the Gikuyu had no use for the grand abstractions common in Western political thought; rather, "instruction is always applied to an individual concrete situation, and behavior is taught in relation to some particular person." From an early age, the games and songs transmitted to young Gikuyu are understood to "build habits of helping their parents and working under the system of reciprocity with other people." By taking part in large-scale mobilizations of volunteers to clear a field or repair a bridge, young Gikuyu learn in practice the value of the expression, *Kamoinge koyaga ndere*! ("Collective action makes heavy tasks easier"). This egalitarian system is not self-sustaining but requires constant vigilance: "…since the Gikuyu are not a society of angels, adherence to these social rules depends on the morale and courage of individuals." The time costs of a judicial system without jails and armed police are considerable. Chronic rule-breakers are called *mwebongia*, "one who works only for himself and is likely to end up a wizard." The positive behaviors needed to sustain their democratic order, Kenyatta concludes, are sustained by a combination of habit, peer pressure, and the meta-cognition given shape through civic stories and songs. "Thus the idea of education as participation in the life of the community is most clearly realized in Gikuyu society untouched by Western civilization."

Another disruptive technology opened the possibility of collective thinking at the level of the city. Writing, first developed by the Sumerians in the 4th millennium BCE, was initially a technology of elite power, highly difficult to master and used principally in the context of taxation, bookkeeping and royal propaganda. By the early 6th century BCE, however, Greek-speaking cities in the eastern Mediterranean had adapted the Phoenician alphabet and added a critical ingredient – the vowel – that made literacy far easier to acquire. A second new technology of the period, coinage, broke the monopoly of noble clans on economic resources and accelerated inter-city trade (Seaford, 2004). Together, the technologies of

writing and coinage opened the possibility of something new in human history: an informed and literate middle class.

As with the previous step-changes, the emergence of a new political system in the eastern Mediterranean was also a result of intergroup competition. In this case, clashes between the young city of Athens with its rival Sparta (the leading Greek power at the time) then with the Persian Empire, opened the possibility for new ways of organizing collective thought (Cartledge 2016).[8] Building on the early 6th-century reforms of Solon, the constitution proposed in 508 BCE by Cleisthenes created a framework for mass participatory governance in a community that would grow in the following century to 250,000 members.[9] Cleisthenes' design, radical and controversial though it was, propelled Athens from a middling status to undisputed chief city of the Greek world. Athenian democracy was, at its core, an experiment in collective intelligence; over two centuries, citizen expertise was the engine of its success.

How did the Athenians think together? Four main elements of their *politeia*, set in place by Cleisthenes and refined in subsequent generations, drove the exchange of knowledge and collective problem-solving. First, Cleisthenes assigned all Athenian citizens into ten "civic tribes," each named after a hero of Athens' archaic period, and each composed of members from the three principal regions of the *polis* (Ober 2008). These tribes served as the organizing unit of the decision-making institutions in the state, and as with the Gikuyu's *riika* system, connected individual Athenians to valuable networks of information and expertise outside their family and neighborhood. Second, the main executive body of the *polis* was the *Boulē* or Council of 500, which represented the city in foreign affairs and prepared laws to be voted in the *Ekklesia* or Assembly. The *Boulē* was chosen by lottery each year with balanced representation of each of the ten tribes, which themselves balanced interests from each of Athens' three regions – thus ensuring a cognitively diverse Council each year.[10] Serving on this body was both educational and intensely demanding: the *Boulē* met 300 days a year, and literally any issue of public concern would be treated in detail. More demanding still, members of the "presiding tribe," which rotated throughout the year, would be on continuous duty day and night in the case of emergencies (Cartledge 2016). The fact that a large portion, perhaps a majority, of Athenian citizens would serve at least once in their life on the Council helped produce not only an unusually high mastery of public affairs, but also the social knowledge of who else in the *polis* had special expertise, and who could be trusted (or not) at critical moments.

The third element of the Athenian *politeia* was the *Ekklēsia*, the assembly in which any citizen could attend and speak, and in which a majority vote could enact or revoke almost any public decision.[11] Fourth, the judicial functions of the state were carried out by citizen juries – again, selected by sortition on the basis of civic tribes – with the unique sanction of ostracism, by which any Athenian considered dangerous to the stability of public life could be non-violently removed from the city for a period of ten years. Notably, elections played a highly circumscribed role in the state, used only to select offices requiring special military, financial, or engineering expertise; these offices were for renewable terms of one year only, making the creation of a "governing class" next to impossible.[12] A feature of ancient urban politics on which the Athenians did not manage to improve was the almost total exclusion of women from public affairs, and the fact that many inhabitants of the city were legally enslaved to others, and thus excluded from the powers and responsibilities of citizenship. Given the magnificent successes of Athenian culture and science, one wonders what more the city might have accomplished if these sources of intelligence had been harnessed as well.

The genius of Athenian democracy was not that it never failed, but rather that its institutions allowed the city to recover from its stumbles and adapt. Central to collective learning were the cultural institutions – and especially the public arts of tragedy and comedy – that let the community interrogate its own ways of thinking. In the 6th and 5th centuries, the locus of collective meta-cognition in Athens was the civic festival. Organized in the spring and autumn each year, festivals like the City Dionysia developed out of the folk religious celebrations of the pre-urban period, in which mass processions culminated in a mimetic performance of a regenerative myth, featuring a priest and a chorus. In the hands of innovators like Aeschylus, Sophocles, and Aristophanes, these mimetic rituals developed into complex moral fables whose dilemmas were those of the contemporary city. From Antigone's rebellion against the state to the matricide Orestes submitting his case to a citizen jury in the presence of the goddess Athena, these performances dramatized the core problems of democracy in an inclusive and "intervisible" setting.[13]

These spectacles featuring stories of gods and mortals gave rise to a new verb in Greek: *theorein*. Literally "to look at divine things," it was frequently used to describe the experience of Athenian festival-goers as they examined the problems of their city through a dramatic lens. This innovative form of "speculation" was joined by others as the democracy matured. As Athens grew wealthy and debates in the *Ekklēsia* assumed higher stakes, those who could afford it engaged "sophists" (literally "wise men") to tutor them in the arts of reason and persuasion. It was one of these sophists, Protagoras, who may have first articulated an argument for democracy as a form of collective intelligence (Landemore, 2012).[14]

As portrayed in the eponymous dialogue by Plato, Protagoras challenges Socrates' claim that the knowledge needed to guide a city (*politikē technē*) is a different kind of knowledge than medicine or shipbuilding, arts mastered by a tiny few.[15] Protagoras makes his argument in the form a myth on the origins of human politics, whose stages share an uncanny resemblance to the account given earlier in this chapter. When the junior gods Epimetheus and Prometheus are ordered to distribute useful qualities to the animal kingdom like strength and speed, they run out of these physical talents before reaching mankind. Scrambling, they decide instead to give humans the mechanical arts of fire and tools (a decision for which Prometheus is later punished); from this base, humans go on to develop speech and divine rituals. Under severe pressure from the environment (the threat of "being destroyed by wild beasts"), Zeus then sends Hermes to provide men with the art of government, defined as "reverence and justice …[as] the ordering principles of cities and the bonds of friendship and conciliation." When Hermes asks if this *politikē technē* should go to a privileged few, Zeus replies "I should like them all to have a share; for cities cannot exist if a few only share in these virtues."

Thus, concludes Protagoras, it is right that each Athenian should be able to speak in the assembly, and that citizens who fail to practice these virtues are held to account. The political wisdom needed to sustain the city lies not in a small elite but in the city as a whole. Protagoras adds that this *politikē technē*, a capacity given to all, must nevertheless be actualized via careful education of the young, who must commit to their study and practice. Given Plato's deep skepticism of democracy – his teacher Socrates having been condemned by a jury's majority vote – it is striking to find this compelling case for democracy given voice in his dialogues.

Plato's star student, Aristotle of Stagira, took *theoria* in new directions. Founder of his own community of learning, he sent teams of junior researchers to all corners of the Mediterranean to study the constitutions[16] of 150 different cities. The result, the treatise we know as the *Politics*, is the most extensive exercise in civic meta-cognition that remains from

the classical period. Rather than analyze the qualities of an ideal city, Aristotle's research team looked at how real cities distributed power and drew insights on the factors that drove political change over time: with this work, comparative political theory begins. Based on his empirical study, the *politeia* Aristotle recommends as most conducive to the good life is not the Athenian model, but rather a blended system of monarchic, aristocratic, and democratic elements – what came to be called a "mixed constitution."

Given the low opinion of many Greek elites toward democracy, including his eminent teacher Plato, why does Aristotle think that the masses should participate in government? In Book 3 of his *Politics*, he lays out a series of arguments for how the many could, in practice, be wiser than the few. He famously uses the image of a banquet as metaphor for the type of complex task frequently confronted by those who would govern a city:

> The many, who are not as individuals excellent men, nevertheless can, when they have come together, *be better than the few best people, not individually but collectively*, just as feasts to which many contribute are better than feasts provided at one person's expense…
>
> *(3.11, emphasis mine)*

This core principle of cognitive diversity – in this case, combining diverse skills to complete a complex task – is extended by Aristotle to the arenas of deliberation and judgment:

> For being many, *each of them can have some part of virtue and practical wisdom*, and when they come together, the multitude is just like a single human being, with many feet, hands, and senses, and so too for their character traits and wisdom. That is why the many are better judges of works of music and of the poets. *For one of them judges one part, another another, and all of them the whole thing…*
>
> *(3.11, emphasis mine)*[17]

Furthermore, Aristotle argues, the true quality of public decisions can only be determined when citizens affected by those decisions are heard:

> For example, the maker of a house is not the only one who has some knowledge about it; *the one who uses it is an even better judge...* A captain, too, judges a rudder better than a carpenter, and a guest, rather than the cook, a feast.
>
> *(3.11, emphasis mine)*[18]

Finally, while special expertise will undoubtedly be needed for the principal posts of state, Aristotle asserts that states which exclude the average citizen from power put their own stability at risk:

> While it would not be safe to have [the multitude] participate in the most important offices…on the other hand, to give them *no* share and not to allow them to participate at all would be cause for alarm. *For a state in which a large number of people are excluded from office and are poor must of necessity be full of enemies.*
>
> *(3.11, emphasis mine)*

Though not a democrat himself, Aristotle's arguments for the benefits of participatory governance – the aggregation of diverse skills, the epistemic value of including citizens and the pragmatic risks of excluding them – remain essential ones today.

What has become less familiar to us is the Greek notion that no constitution is complete without a carefully delineated system of public education – that public education is really a "branch of government" itself. For the ancient Greeks, participation in public life required an approach to personal identity and autonomy very different from modern liberals. "One should not consider any citizen as belonging to himself alone," Aristotle affirms, "but as all belonging to the city-state, since each is a part of the city-state." (8.1) Humans are essentially communal creatures; as "political animals" (1.2), our true potential for reason and virtue can only be realized in public action.[19] Such ideas ring strangely in an individualistic age, but the Greeks – and one imagines, the Iroquois and Gikuyu as well – found them essential to a thriving community.

Step change: Empires and republics (10^5-10^8 members)

It takes an emperor to govern an empire. This principle, while self-serving for those at the top, has a certain logic when we consider the coordination costs of governance at a large scale. As we have seen, top-down political models flourished in contexts where methods of food production enabled a tax system that in turn fed bureaucracies and armies whose main task was to control territory and keep revenues flowing in. Moreover, rulers in these states could (and still do) point to the efficiencies of one man making decisions for all. In participatory systems, deliberation and conflict resolution are time-intensive tasks. They require high-quality internal communication and their outcomes are not always decisive. What rulers of early empires discovered was that it was possible to scale up the production and diffusion of collective knowledge without ceding any governing power. Achaemenid Persian emperors of the 6th century BCE, for example, established the "Chapar-Khaneh," an express postal service designed to pool information across an empire that stretched from Egypt to modern-day Afghanistan (Barghandan, 2015).

The Chinese and Roman empires, which at their heights in the 2nd century CE controlled around half the world's population, present contrasting examples of collective intelligence in seemingly top-down systems of governance. While they each managed the affairs of around 60 million people, China's imperial bureaucracy was four times larger than Rome's, and beginning in the Qin dynasty of the 2nd century BCE, its members were selected via a standard national exam (Stasavage, 2020). Could a national civil service be considered a form of participatory governance? As Stasavage (2020) argues,

> What happened…is that ordinary people were 'represented' by someone who scored well on an exam. This system was clearly less democratic – the state now chose who would represent you. But from the perspective of an ordinary person, it is not clear you were necessarily worse off. Would it be better to be represented by a feudal baron or by a bureaucrat who was recruited through a meritocratic exam?

Moreover, though their origins lay in the royal courts, bureaucracies were (and in many cases, still are) principally accountable to themselves. However glorious the emperor, a large amount of day-to-day decision-making power lay in the hands of bureaucrats, and in the case of both China and Rome, many emperors found them only partially responsive to their "official" commands.

Ancient Rome is the great "problem case" of participatory governance. Its genius was not the generation of knowledge but its assimilation. In the three centuries before the common era, Rome grew from provincial backwater to master of Italy, then hegemon of

the Mediterranean. It did so not because its legions won every battle; at several points in Roman history, they suffered monumental defeats. Rather, the Romans were able to integrate the knowledge of their neighbors with incredible speed. In the mid-third century BCE, for example, Rome had no navy. After losing a battle against Carthage, Roman engineers took apart a captured ship and built a new fleet on its model; its new navy was winning battles at sea within 18 months. Roads, aqueducts, medicine, philosophical systems, heated floors: whatever new knowledge the Romans encountered was integrated into their collective brain with astonishing effectiveness and speed (Beard, 2015).

Like Athens, Rome's *res publica* shared power among a rotating cast of magistrates and assemblies. What distinguished the Roman republic from Athenian democracy was its manner of selection: elections, not lotteries. While a few specialized officials in the democracy were elected, the mechanism of sortition guaranteed the average Athenian equal access to civic responsibilities at the highest level. Not so at Rome. Elections were expensive affairs that favored the sons of wealthy and famous families. Those who exercised the powers of consul and senator became the republic's ruling class, increasingly wealthy and jealous of its privileges. As a result, the world's first republic confronted a paradox all too familiar for modern ones: a citizen body called to make choices on Election Day, but denied the practical experience in governing that would help them use that power wisely. In the case of Rome, a widening wealth gap between senators and plebs, and the ironclad refusal of elites to allow reform, led to civil wars that brought free elections to a halt and gave the populist[20] Julius Caesar and his successors the reins of empire. Though Roman law continued as a durable system of collective knowledge,[21] Rome's participatory republic collapsed just as its empire took flight.

In the competitive political environment that followed the fall of the western Roman empire and the Arab conquests, new thinkers engaged with the problem of collective governance. Writing in North Africa, the historian Ibn Khaldun argued that the critical force in the rise and fall of regimes is *'asabiyah*, a collective will or group spirit that gives a community its cohesion and purpose. He outlines a cyclical process: the *'asabiyah* of a marginal, usually rural, community impels it to contest the dominant authority; upon taking power, luxury and complacency causes its *'asabiyah* to decline, and over three generations of rulers, the regime is exhausted and replaced by a new one whose *'asabiyah* is strong. The dynamics of collective power were also a key theme for the Florentine Niccolò Machiavelli, who argued that the social divisions of the Roman republic, rather than weakening the system, created precisely the competitive environment necessary to propel it to its era-defining success. For Machiavelli, the beauty of the republican system was that a society of actively participating citizens was far less corruptible than one dependent on the virtue of a single ruler. A lucid observer of princes, he knew their capacities for judgment and self-control weakened as their power grew. "Not without cause," he writes in the *Discourses* (1531), "may the voice of a people be likened to that of God; for one sees a universal opinion produce marvelous effects in its forecasts, so that it appears to foresee its ill and its good by a hidden virtue."[22]

In the 17th and 18th centuries, some thinkers began to argue that the scale of a group could augment rather than frustrate its collective intelligence. Writing from his perch in the Dutch republic, Baruch Spinoza argued in his *Tractatus Theologico-Politicus* that

> in a democracy, irrational commands are still less to be feared [than in other systems]: for it is almost impossible that the majority of a people, *especially if it be a large one*, should agree in an irrational design [emphasis added].

(16.16)

16

Landemore (2012) sees this passage as an early precursor of contemporary theories on the epistemic properties of judgment aggregation, popularly known as the "wisdom of crowds." Just as Aristotle seemed to suggest with his metaphor of the feast, Spinoza puts special value in the interaction of many diverse individuals:

> [M]en's natural abilities are too dull to see through everything at once; but by consulting, listening, and debating, they grow more acute, and while they are trying all means, they at last discover those which they want, which all approve, but no one would have thought of in the first place.

> *(9.14)*

Though Spinoza's treatises were rejected by the politicians of his day, they were closely read by the man whose ideas became a lightning rod of Enlightenment politics: Jean-Jacques Rousseau. In his treatise *The Social Contract* (1762), Rousseau develops Spinoza's idea of collective rationality in his keystone concept of *la volonté générale*, "the general will." Rousseau's central argument is that the general will of a community is not only the only legitimate basis for power, but *it can never be mistaken*. In his vision of politics, a citizen taking part in an assembly is not asked for his own opinion on a proposal, but rather "whether it does or does not conform to the general will…everyone states his opinion about this by casting his ballot, and the tally of the votes yields the declaration of the general will." In Rousseau's reckoning, if he expresses a view that ends up on the losing side, "it proves nothing more than that I made a mistake and that what I took to be the general will was not." Interpreted generously, this counterintuitive idea expresses the idea of a collective interest, objectively verifiable and independent of any subset of individual desires. But who has the right to proclaim what that collective interest is? Rousseau's answer lies in the figure of an all-seeing Legislator, a kind of "mega-technocrat," the objective guide and explicator of the people's will. Whether intended or not, this idea of enlightened leadership has also provided a basis for authoritarian projects ever since, as revolutionary governments punish those who dissent from the "general will."

In the 18th century, political creativity and revolutionary violence went hand in hand. Perhaps no man lived both of these more fully than Marquis Nicolas de Condorcet, a remarkable mathematician, democrat, and theorist of collective intelligence. Like Rousseau, Condorcet was convinced of both the feasibility and legitimacy of collective reason; unlike Rousseau, Condorcet had the quantitative aptitude to demonstrate how this could work in practice. On the eve of the French revolution, Condorcet published his *Essay on the Application of Mathematics to the Theory of Decision Making* (1785), which offered the first mathematical demonstration of crowd wisdom. The Condorcet Jury Theorem, as it became known,[23] hypothesizes that on a yes-or-no question such as the guilt of an accused murderer, the majority vote of a large group is virtually certain of obtaining the "truth" if three conditions hold: (i) voters are better than random at identifying the truth of the proposition; (ii) they vote independently of one another; and (iii) they vote sincerely as opposed to strategically. Importantly, the larger the group, the greater the probability the crowd will be right.[24]

In the period after the fall of the Bourbon monarchy in France, "for the first time since ancient Athens, direct democracy had become a concrete, collective goal." (Miller, 2018) Following his election to the revolutionary National Convention in 1792, Condorcet was charged with leading a committee to propose a new constitution for the nation. His *projet de constitution girondine* became the most radical blueprint for collective intelligence

since Cleisthenes, but at the scale of millions. Building upon Rousseau's premise that all power must derive from the sovereign citizen body, Condorcet proposes the active participation of citizens in a nested set of assemblies: local, regional, and national. Members of the higher assemblies are not to be considered "representatives" or a benevolent elite, but rather *mandataires* with constraints like those of the Iroquois and Gikuyu systems.[25] In his speech to the Convention, Condorcet departs from Rousseau in insisting on the value of deliberation in forming public judgments, and on the critical importance of the free flow of knowledge via newspapers and scientific associations. Echoing Aristotle, he adds that citizens can only be effective problem-solvers if a mass system of free public education is established. At the verge of adoption, Condorcet's constitution is blocked by his rival Robespierre, whose rise to power brings about the Reign of Terror and Condorcet's own execution in 1794.

Plans for participatory democracy at a continental scale met a similar fate across the Atlantic. After their own violent revolution, the formerly British colonies in America established a highly decentralized model of government in which states gave their citizens more or less prominent roles. Under these Articles of Confederation, one state in particular gave citizens collective control over the legislative process – Pennsylvania – whose leading citizen Benjamin Franklin was a devoted admirer of the Iroquois confederacy. Franklin's 1754 proposal at the Albany Congress that the 13 colonies establish a "grand council" was modeled on the Iroquois system and laid the groundwork for the First Continental Congress that managed the path to American independence.[26] In the 1780s, under Franklin's influence, the newly independent State of Pennsylvania established a constitution in which "the unicameral legislature was, in fact, seen as an upper house, with the people out of doors retaining the fundamental power of legislation. Bills could not become law…until, after their first reading in the legislature, they were publicized throughout the state, discussed and approved by local conventions and then voted upon again in the next legislative session." (Miller, 2018) A combination of aristocratic interests, as well as the chaotic handling of fiscal policy and foreign trade under the Articles, led to the convening of a new Constitutional Convention in Philadelphia in 1787, and the ultimate overturning of America's democratic experiment. Instead, under the pen of Virginian James Madison, America would become a federal republic ruled by a governing elite. Political differences would be settled not like the Iroquois, through deliberative methods intended to build consensus, but rather by the Anglo-Saxon tradition of representation with a Madisonian twist: since opposing interests could never be reconciled, the federal system would multiply and balance them. In modern republics, as in ancient Rome, average citizens could never be allowed near the reins of power. The "sovereign" citizen would exercise his authority precisely once per year, at the ballot box.

The industrial age created new demands for political participation, and new arguments for the benefits of collective thought. Liberal thinker John Stuart Mill emphasized the importance of government as an aggregator of knowledge. Against Rousseau's notion of the unity and infallibility of the general will, Mill proposes in *On Liberty* (1859) that an organized contest of views is critical to the drive for truth:

> The peculiar evil of silencing the expression of an opinion is, that it is robbing the human race; posterity as well as the existing generation; those who dissent from the opinion, still more than those who hold it. If the opinion is right, they are deprived of the opportunity of exchanging error for truth: if wrong, they lose, what is almost as great a benefit, the clearer perception and livelier impression of truth, produced by its collision with error.

> *(Mill 1859, 1993: 85)*

Though correctly cited as a defender of individual rights against oppressive majorities, Mill is equally a proponent of the epistemic value of free thought and speech by the community as a whole. Furthermore, Mill agrees with Rousseau (and diverges from Madison) in questioning whether the free exchange of ideas could flourish in a society that denied average citizens a deliberative role. "The ideally best form of government," he argues in *Considerations on Representative Government* (1861),

> is that in which the sovereignty…is vested in the entire aggregate; every citizen not only having a voice in the exercise of that ultimate sovereignty, but being, at least occasionally, called on to take an actual part in the government…
>
> *(Mill 1859: 41)*

He finds three distinct benefits in collective deliberation: it improves the minds and characters of those who participate; the interests of the many are protected against those of the few; and excluding the mass of citizens from public debate deprives the community of knowledge.[27] While thus a radical in some senses – including his outspoken support for enfranchising women – Mill is moderate to conservative on the role of elites. On the one hand, he anticipates contemporary ideas of cognitive diversity in arguing that a legislature should be a "Congress of opinions" made up "a fair sample of every grade of intellect among the people." (Mill, 1861) On the other hand, the prime function of Mill's proposed assembly is to air opinions and exchange views, not make decisions. Instead, in his ideal commonwealth Mill delegates the role of framing policy to a committee of unelected experts.[28] Was Mill a democrat, technocrat, imperialist, feminist, or all the above? 150 years on, as he may well have intended, the debate continues.[29]

The fiercest riposte to the elitist position is found in the works of W.E.B. Du Bois. In the decades following the American Civil War, a debate raged over the fate of newly enfranchised African-Americans and over the growing demands of women for equal political rights. A principal argument levied against their participation was that these individuals, through no fault of their own, were simply too ignorant of public affairs to responsibly cast a ballot. Though himself the holder of a doctorate from Harvard, Du Bois had no time for those who would exclude his fellow citizens on this basis:

> We say easily, for instance, 'The ignorant ought not to vote.' We would say, 'No civilized state should have citizens too ignorant to participate in government,' and this statement is but a step to the fact: *that no state is civilized which has citizens too ignorant to help rule it.* Or, in other words, education is not a prerequisite to political control – political control is the *cause* of popular education [emphasis added].
>
> *(On the Ruling of Men, 1920)*

Du Bois's point takes Mill's arguments an important step further. Mill had asserted that participation has an educative value, that it builds the store of community knowledge, and allows the many to defend their interests against the few. But Mill had also argued that certain people might not be ready to exercise this capacity for self-rule and would require benevolent guardianship in the meantime. To this Du Bois makes a fierce retort: first, that the fact that some part of the citizen body is "too ignorant to participate" is not an unfortunate accident but rather the effect of deliberate choices to *limit* their access to knowledge; that this exclusion must immediately be remedied; and that the only proper remedy is *participation itself.* Writing at the height of the women's suffrage movement, he allows that giving

inexperienced citizens access to power will not be cost-free. Though giving women the vote could "confuse our politics," "change the present status of family life," and "interfere with some of the present prerogatives of men," these costs can and must be paid:

> Notwithstanding this, if America is ever to become a government built on the broadest justice to every citizen, then every citizen must be enfranchised… Moreover, the method of modern democracy has placed within reach of the modern state larger reserves of efficiency, ability, and even genius than the ancient or mediaeval state dreamed of. That this great work of the past can be carried further among all races and nations no one can reasonably doubt.
>
> *(On the Ruling of Men, 1920)*

In Du Bois as in Mill, therefore, we find appeals to both the epistemic and eudaimonic value of collective intelligence. Including the so-called ignorant will not only give them access to material and cognitive benefits they had been denied, but also create greater reserves of information, ability, "and even genius" for society as a whole.

In the industrial age, many questioned whether the scale and complexity of public problems was simply too daunting for the average person. The speculative bubbles of the period inspired Scottish journalist Charles Mackay to trace how crowd behavior could produce catastrophic results; his *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds* (1841) became a classic of social psychology. More critical still was French sociologist and polymath Gustave Le Bon, whose influential work *La Psychologie des Foules* (1895) posited that upon entering a crowd, the individual becomes susceptible to acts of cruelty and manipulation to which he would never otherwise submit. "By the mere fact that he forms part of an organized crowd," Le Bon argued, "a man descends several rungs in the ladder of civilisation."

Writing in this vein, American journalist Walter Lippman (1925) famously doubted that public opinion could be a useful guide for government. Arguing that modern voters process information through rough "stereotypes" that simplify and skew the facts, he concluded that "representative government…cannot be worked successfully, no matter what the basis of election, unless there is an independent, expert organization for making the unseen facts intelligible to those who have to make the decisions." In the new 20th century, could technocracy succeed where representative democracy had failed?

Lippman's main sparring partner in this debate was the pragmatist philosopher John Dewey, whose work *The Public and Its Problems* (1927) is an indispensable text for the field of collective intelligence. From this book's rich tapestry we can unweave four key arguments and a warning. First, Dewey argues, true democracy requires citizens to abandon the notion of absolute truth. The new science of evolution helps us recognize that political ideas aren't "out there" to be discovered by enlightened individuals. Rather, humans form ideas in association with other humans and use them as adaptations to a changing environment. 18th century representative democracy was one such adaptation, prompted by the failures of monarchy and oppressive tradition; nevertheless, Dewey explains, the potential of this democratic idea has been largely unrealized. Why? His second argument is that in the 20th century, a democratic "public" has yet to realize itself.[30] The industrial age created new possibilities for combined action – unions, parties, associations – at a national scale, but our "mania for motion and speed" is out of joint with our localist habits of mind. The "public," for Dewey, is a pluralist space where the groups that emerge organically from human association – towns, faiths, professions – identify needs that require "systematic care" and consolidate identities around those needs. As the economic and administrative forces that operate

on us become more distant and impersonal, a true "public" is prevented from taking shape. We are passive observers of the political game, shouting our needs from afar.

This problem of the public, in turn, suggests why "government by experts" can never really work. The scale and complexity of public problems – overseeing industries, currencies, and transport networks – undoubtedly requires expertise. Some of this knowledge will be technical in nature. But the most important expertise in solving public problems, Dewey insists, isn't born in a classroom: it emerges from the life of the community. Building public knowledge "implies a kind of collective artistry to social inquiry that draws on the specific experiences of individuals, expert knowledge, facts about the problem in question, and potential risks of action." (Rogers, 2008) This collective inquiry, if well organized, both identifies new needs and leads us to new tools and methods to act on them. Once a policy is implemented, in turn, the only true measure of its impact will come from the citizens themselves. For this reason, government by "the wise," no matter how benevolent their intentions, will fail:

> The final obstacle in the way of any aristocratic rule is that in the absence of an articulate voice on the part of the masses, *the best do not and cannot remain the best, the wise ceases to be wise…* In the degree in which they become a specialized class, they are shut off from knowledge of the needs which they are supposed to serve. *The man who wears the shoe knows best that it pinches and where it pinches*, even if the expert shoemaker is the best judge of how the trouble is to be remedied [emphasis added]."
>
> *(The Public and its Problems, ch.6)*

In a true democracy, citizens are the only legitimate authorities because their problems create the framework in which all expertise can function. To call on collective intelligence is not to deny the need for experts, but rather to expand our understanding of the expertise that matters.

In Dewey's view, democracy is no more or less than collective intelligence put to public use. His fourth argument is that while effective rules and procedures are important in a democracy, far more important is how citizens interact with and learn from one another. To cultivate the knowledge and critical thinking of which each citizen is capable, all individuals must have "a share in forming and directing the groups to which one belongs."[31] It is thus the responsibility of communities – religious, professional, educational, artistic – to liberate the cognitive potential of their members, in harmony with common interests. Freedom to question and inquire must be protected; access to public information must be ensured; scientists must work to make new knowledge available; media must diffuse it and make it comprehensible; and artists must create symbols and stories to make that knowledge vivid and inspiring. The fate of democracy, then, is not decided by which party scrambles to victory in an election. Politics is not merely about multiplying and balancing antagonisms, as Madison believed, but about how well we can, by the quality of our public interactions, forge a new consensus that all parts of society can live with. In Dewey's expansive vision, "to get rid of the habit of thinking of democracy as something institutional and external and to acquire the habit of treating it as a way of personal life is to realize that democracy is a moral ideal." Democracy is not a constitutional form, but rather, "the idea of community life itself." (Dewey, 1939)

His final argument takes the form of a challenge. The greatest threat to a democratic community may not be rapacious capitalists or foreign despots, Dewey warns, but rather

our own habits of mind. One of these dangerous habits is coming to think of our fellow citizens as adversaries in a zero-sum game. "The ballot," Dewey observes, "[is] a substitute for bullets. But what is more significant is that the counting of heads compels prior recourse to methods of discussion, consultation and persuasion." The means by which a majority *comes to be* a majority is essential: not just by a show of hands, but by preparatory debates, adjusting majority views to meet minority objections, and by "the relative satisfaction given the latter by the fact that it has had a chance and that next time it may be successful in becoming a majority." Shutting off these paths of communication between opposing sides is to dissolve the public as an arena of collective knowledge. Perhaps the most insidious habit of mind in his fellow Americans is the sacred awe they often give to inherited institutions, as if they were incarnations of eternal truths. Instead, Dewey wants his readers to see their constitution how the Founding Fathers saw it, as an awkward but improvable compromise. Darwin showed how natural selection preserves what works, discards what is no longer needed, and puts new variations to the test; if democracy is to be realized, Dewey wants to say, each generation of citizens must do the same. The converse of sacred awe is the curiosity to experiment. "Men have got used to an experimental method in physical and technical matters," Dewey notes, "[but] are still afraid of it in human concerns." Because public needs always evolve, government should think less in terms of fixed programs, and more in terms of working hypotheses. Citizens and public servants must develop an experimental and flexible mindset, trying new technologies and methods while remaining connected to the face-to-face interactions, the "winged words of conversation" that give community its deepest and richest sense. "The essential need, in other words, is the improvement of the methods and conditions of debate, discussion, and persuasion." This, Dewey concludes, "is *the* problem of the public."

Digital age: The next step change? (10^9-10^{10} members)

The last half-century has witnessed two distinct revolutions in our understanding of collective intelligence and democracy, as well as the birth of collective intelligence as a scientific field. First and most obviously, the digital revolution opened possibilities of collaboration, knowledge-sharing and decision-making on a previously unimaginable scale. Less eye-catching but equally revolutionary, advances in political science have shown the viability of democratic models based on new forms of citizen participation.

For the better part of this period, these two revolutions appeared not to notice one another. In the 1970s and 1980s, as thinkers like Jurgen Habermas, John Rawls, Jane Mansbridge and Joshua Cohen explored the conditions of collective reason in a democratic society, computer scientists like Douglas Engelbart were creating tools intended to bring collective reason to life. Engelbart is a particularly illuminating figure: by the early 1970s his team at Stanford had invented the mouse, hyperlink, video conferencing, and document co-drafting, among much else, and their "oN-Line System" (NLS) served as network information center to the ARPAnet, precursor to the internet. Engelbart's vision was that these new technologies would not replace human intelligence, but augment it:

> We need to become better at being humans. Learning to use symbols and knowledge in new ways, across groups, across cultures, is a powerful, valuable, and very human goal. And it is also one that is obtainable, if we only begin to open our minds to full, complete use of computers to augment our most human of capabilities.
>
> *(Augmenting the Human Intellect, 1962)*

Engelbart argued that our "tool systems" (technologies and platforms) and "human systems" (shared values, language, and organizational models) evolve in concert with one another. To raise our "collective IQ," organizations need "bootstrapping strategies," tools and processes capable of analyzing and consciously reshaping these systems, thus "improving how we improve" (Engelbart, 1995). In both his mission and his methods, Engelbart could be seen as advancing the same vision that America's greatest democratic thinker, John Dewey, had outlined a half-century before.

Nevertheless, the field of collective intelligence comes into view at a remove from politics. In 1978, describing the goal of a computerized conferencing system, Hiltz and Turoff defined collective intelligence as "a collective decision capability [that is] at least as good as or better than any single member of the group." Attention to the potential of digital collaboration accelerated with the creation of the World Wide Web. Communities that formed around open-source software like Linux, and subsequently around Wikipedia and other "wikis," gave practical proof of how the internet could aggregate useful knowledge for society, and produce useful tools as well. As Eric Raymond put it in his classic account of open-source communities, *The Cathedral and the Bazaar* (1999), "given enough eyeballs, all bugs are shallow." This unprecedented scaling-up of human collaboration caused some to veer into what Geoff Mulgan (2018) has called "euphoric speculation." In his 1994 book *Collective Intelligence: Toward an Anthropology of Cyberspace*, philosopher Pierre Lévy posited that the exponential growth of the online world, and its power to instantly connect all information, heralded the advent of a "globalized civilization" in which "we pass from one humanity to another." Centralized planning and totalitarian forms of government failed, Lévy argues, because they are incapable of collective intelligence, "an intelligence distributed everywhere and constantly valorized," whose goal is "the recognition and mutual enrichment of people." On a less euphoric note, Nick Bostrom (2014) has predicted that machines may beat humans in the race to "superintelligence," defined as "any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest." While artificial forms of intelligence will not suffer from the limitations of human cognition, Bostrom observes, humans can make great strides by reducing distortions and inefficiencies in organizations and enlarging the proportion of humankind that is educated, digitally connected, and integrated into exchanges of knowledge. "Even partial solutions to these problems," he concludes, "could pay hefty dividends for collective intelligence."

Though the communities created around Linux and Wikipedia could be said to validate Engelbart's vision of collective IQ, market capitalism had other ideas. To Engelbart's regret, America's new technology sector prioritized "ease of use" over acquiring new cognitive skills, and business models of technology companies – soon to become the world's most profitable – relied on monetizing user attention rather than boosting their intelligence. The internet we have is far different than the one he tried to create. Market incentives were essential, however, in the development of another collective intelligence method: prediction markets, pioneered by the University of Iowa in the 1980s and a subject of research through the 1990s and 2000s by Philip Tetlock and others. The US intelligence community in particular has used crowd predictions to anticipate geopolitical events (Servan-Schreiber 2018). Structured in the form of markets or prize-based contests, prediction science has built on the ideas of Austrian thinker Friedrich Hayek (1945) on the efficiencies of markets as aggregators of information. Unlike in simple surveys, the prospect of financial gain (or the thrill of betting) incentivizes participants to think critically and apply all the information available to them, including local or private information not available to others. As Hayek observed, the sum of all this thinking is captured simply and rapidly in a single form: the market price.

Companies were early adopters of prediction markets, and became laboratories for other CI methods arising from psychology and organizational science. The structured, decentralized deliberations of Toyota assembly-line workers led to astonishingly low rates of product defects compared to their American counterparts; this "total quality movement" became a mainstay of management literature in the 1980s and 1990s. Howard Gardner's theory of "multiple intelligences" (1983), George Por's work on collective leadership (1995), and Peter Senge's theories of organizational learning drew on social science research to propose methods for redesigning many forms of collaboration. William Isaacs' *Dialogue: the art of thinking together* (1999) explored how methods of dialogue could uncover tacit knowledge and make progress on seemingly intractable problems. Influenced by the theories of physicist David Bohm, key skills of this tradition include cultivating proprioception (observing one's own thoughts and emotions[32]), suspending judgment of others, and creating iterative cycles of meta-cognition ("learning loops") to capitalize on new knowledge.

Meanwhile, the 1990s were a period of intense experimentation in democracy, though not in the West. With the arrival in power of the Workers Party (*Partido dos Trabalhadores* or PT), the city of Porto Alegre, Brazil embarked on a bold experiment to refashion their city budget in direct collaboration with local assemblies, open to all and with greatest attention given to poorer neighborhoods. This "participatory budget" launched a movement that would spread to 3,000 cities worldwide, including New York, Paris, and Wenling, China. Exercises in participatory democracy, based on broad citizen participation and aimed at redressing gaps in the representative system, were joined by deliberative experiments using "mini-publics," smaller groups of citizens selected by lottery. One such method, the Deliberative Poll™, developed by James Fishkin, presents expert views on both sides of a public question to randomly selected groups of citizens over the course of 2–3 days and encourages critical analysis of these views in small groups; Fishkin's team at Stanford has deployed this method with governments and nongovernmental organizations (NGOs) in 29 countries, and has shown how deliberation produces significant shifts in opinion among participants.[33]

In this moment of experimentation, some political scholars began to re-engage with the arguments of Aristotle, Condorcet, and Dewey regarding the power of groups to make smart decisions. An article by Jeremy Waldron (1995) helped revive interest in Aristotle's arguments in Book 3 of the *Politics*, which Waldron dubbed the "doctrine from the wisdom of the multitude." Philip Converse (1990) coined the term "miracle of aggregation" to describe the statistical phenomenon by which individual errors within large groups tend to cancel each other out, resulting in accurate collective judgments.[34] Converse thought that the drivers of this effect were the correct judgments of an informed minority, whereas Page and Shapiro (1992) argued instead that meaningful opinions exist within each individual, surrounded by statistical noise.[35] By far the most popularizing work was journalist James Surowiecki's bestseller *The Wisdom of Crowds* (2004). His highly readable account gives pride of place to Francis Galton's article of 1906 which showed that a group of several hundred strangers at an English county fair, each making individual guesses, correctly estimated the weight of an ox within 0.8%. The story of Galton's experiment has become perhaps the best-known popular example of collective intelligence, tarnished somewhat by Galton's own political views.[36]

The early 2000s brought new scientific insights into the conditions for crowd wisdom. The groundbreaking experiments of Lu Hong and Scott Page demonstrated that groups composed of members with diverse cognitive abilities could arrive at estimations not only superior to its average member but even the best individual in the group. Hong and Page's notion of cognitive diversity created an important caveat in contemporary debates over

diversity in politics and the workplace. Their experiments show that the highest performing groups are not necessarily the ones that "look" the most diverse, but rather the ones whose members bring different heuristics, mental models, and representations to a common task.[37] As political discourse flooded online spaces, it became evident that large and diverse crowds were nevertheless capable of enormous error. In *Infotopia: How Many Minds Produce Knowledge* (2007), Cass Sunstein explored several hypotheses for collective stupidity. Reprising sociologist Irving Janis's theory of "groupthink" (Janis, 2008), Sunstein posits that groups often suffer from "cascade effects," where a single piece of bad information is amplified as it passes through a group; the human tendency to create "echo chambers" of similarly minded allies; and the subconscious social and reputational pressures that cause important information to go unshared. His "law of group polarization," and its implications for democracy, has prompted fierce debate from scholars and citizens alike. Sunstein himself praises the efficacy of aggregative methods like wikis and prediction markets and argues that these methods provide lessons on how to improve deliberative practice, including how to incentivize sharing relevant information and promote a diversity of views.[38] These ideas were given further clarity by Anita Woolley and Thomas Malone, whose seminal studies of small-group tasks pointed to the importance of social sensitivity (an ability to read the emotions of fellow members) and equal speaking time in producing a "collective intelligence factor" for the group as a whole. Groups with greater proportions of women were also found to be more intelligent overall (Woolley et al., 2010).

A watershed moment in the encounter of collective intelligence and democratic innovation was the publication of *Collective Wisdom: Principles and Mechanisms* (2012), edited by Helene Landemore and Jon Elster. This collection of essays invited historians of democracy (Josiah Ober) into a common conversation with cognitive scientists (Daniel Andler, Hugo Mercier, and Dan Sperber), prediction scientists (Emile Servan-Schreiber), and democratic theorists (Daniel Estlund and John Ferejohn), as well as Hong and Page. Landemore and Elster's introduction synthesized three critical insights for the study of collective intelligence and democracy. First, collective intelligence can be understood not merely as the intensification or amplification of individual intelligence, but as "an emergent phenomenon that cannot be traced simply to individual minds, but rather to the *interaction* between those minds and between them and their constructed environment." Thus, group intelligence may ultimately depend less on the "who" (the quality and number of individual actors) than on the "how" (technologies, methods, and spaces that connect those actors and enhance their capacities). Second, building on the work of Hong and Page, cognitive diversity must now be understood as an essential indicator in the quality of democratic processes; to maximize the intelligence that emerges, designers and facilitators of these processes should take steps to increase diversity, measured not only in how people look, but also in how they think. Finally, Landemore points out the difficulty of setting a procedure-independent standard for collective intelligence in politics. Neutral and objective standards can evaluate the performance of a prediction market, but what allows us to say, on a question like immigration or affirmative action, whether the judgment of the crowd is wise? The key point is that ascertaining facts or assessing causal relationships requires a different framework than evaluating the moral rightness or wrongness of political judgments. *Collective Wisdom* clarifies and opens, but does not resolve, this important question.

Where is the study of collective intelligence and democracy today? The pages of this handbook aim to provide an answer. The last several years have witnessed what some have called a "deliberative wave," as frustrations with political elites have pushed governments to experiment with new forms of citizen participation (OECD, 2020). These include experiments

in crowdsourced constitution building in Iceland and Chile; citizens' assemblies on major policy issues in Ireland and France; deliberative polls across sub-Saharan Africa; and digitally enabled citizen deliberations in Taiwan. Several of these will be explored in detail in this book. Increasingly, researchers are using statistical and psychological insights to measure the performance of these democratic innovations, as clarified by Paolo Spada in Chapter 5. New insights into collective intelligence continue to arrive from cognitive scientists like Hugo Mercier and Michael Tomasello, cultural anthropologists like Joseph Henrich and David Graeber, and complexity scientists such as Geoffrey West and Jessica Flack. New institutions like the GovLab at NYU, founded by former Obama advisor Beth Noveck, and the NESTA Centre for Collective Intelligence Design in London, founded by Geoff Mulgan, are leading the way in translating these advances into practical guides and capacity-building programs for governments. Founded in 2019, the UM6P School of Collective Intelligence in Morocco has dedicated itself to producing cutting-edge research and helping a new generation of public servants cultivate smarter collaborations with citizens. For every frustrating lapse of our existing institutions, in other words, there is new evidence and energy for methods of CI that provide more effective and inclusive solutions to humanity's most complex problems. Hélène Landemore's *Open Democracy* (2020) and *Democratic Reason* (2012) demonstrate how the multi-dimensionality of problems like climate change or a global pandemic provides the best argument for a new paradigm of governance. "Given the complexities of modern politics," she concludes, "it is much more plausible to assume that the cognitive labor involved in ruling a country must be shared among many people rather than entrusted to just one person" (Landemore, 2012).

Conclusion

The philosopher Hans-Georg Gadamer once wrote that all human understanding is really self-understanding. It is my hope, then, that the historical and evolutionary lens of this chapter has been useful in showing us to ourselves: a species that has thrived on collective intelligence, even as we have also scorned and misused it. An unignorable message from the last million years of our history is that when the world's climate changes, humans change with it. Time and again, ecological disruptions have prompted human societies to find new strategies for producing food, building new tools, and transmitting the knowledge that can permit our survival. One way of adapting, as our Mesopotamian ancestors may have done around 3500 BCE, is to accept the rule of a strongman. Taxing the many to empower the few did bring efficiencies of production and decision-making, and thus greater safety, but for most humans throughout history it also drastically reduced the development of their faculties and the quality of their lives. In times of great stress, this may again be an appealing bargain. All the while, technologies of knowledge production, though initially in service to elites, also open new possibilities for collective thought. The alphabet (embellished with Greek vowels), the printing press, radio, the internet – each of these helped create conditions in which new, egalitarian ideas could take hold. That these new ideas reflected ancient, even prehistoric human practices is a potent and underappreciated fact.

Though theory, politics, and democracy may be Greek coinages, collective thinking about thinking is our common heritage. The story of human politics has unfolded in millennia-long adaptations and debates between defenders of hierarchy and equality, and between monopolists and diffusers of public knowledge. Does evolution mean progress? The long evolution of politics, and human culture more generally, has proven highly nonlinear

and only partially subject to our ambitions. In any age, most members of a community – egalitarian or despotic, of 50 or 50 million – will simply repeat "how things have always been done". Conformity and conservatism can indeed be wise strategies for survival. And yet, here in the 21st century, women in many societies are questioning the status quo and in some places gaining back, perhaps even surpassing, the political power of their hunter-gatherer grandmothers. Slavery and public executions, once widely practiced, have sharply declined. Elsewhere, elite males seem just as preoccupied by status and dominance as our ancient forebears (and primate cousins).

History also reveals that collective intelligence, organized through broad and active citizen participation, can be a force to outcompete oligarchs and tyrants. And as this survey aimed to show, the intellectual history of crowd wisdom offers vital arguments for why a society of empowered citizens may not only be better for solving problems, but better for us as human beings. Some disagree, and predict the inevitable rule of algorithms or strongmen. But if politics is the human attempt to negotiate power and define purpose without recourse to violence, the failure of politics would be the failure of the human experiment itself. Humans evolved to think together, and the kind of thinking we call self-government may be our most demanding and rewarding task. And as the cases of this handbook demonstrate, our powers of political imagination are far from extinguished.

The capacity of our early ancestors to reflect on their own thinking made it possible to intervene and reshape human systems, not just copy the past. Yet as we continue to see, those who benefit from systems of power inevitably guard their privileges, even to the death. How then do democratic models of collective intelligence become possible? Our history shows that strategies for systems change must be built on a keen understanding of tradition; from 508 BCE to 1776 CE, most successful revolutions explained themselves not as leaps into the unknown, but as restorations of ancient rights. Democratic systems change also requires inspiring leaders who motivate others to take the risk of putting trust in their own expertise. And systems change requires an eye for the *kairos*, the moment where environmental, economic, and social stresses make a political order ripe for change.

Such a moment of creativity and crisis may have arrived. The climate is changing again, probably with more speed and violence than at any other moment in human history. In the face of the industrial age's dehumanizing technologies, Dewey predicted that when properly understood, the machines of a free society "will be a means of life and not its despotic master." Democracy will come into its own, in turn, "when free social inquiry is indissolubly wedded to the art of full and moving communication." The difficulties of this path are well understood, and towering obstacles remain. We would do well to remember that W.E.B. Du Bois, a witness to shocking injustices, was still able to insist that

> the vast and wonderful knowledge of this marvelous universe is locked in the bosoms of its individual souls. To tap this mighty reservoir of experience, knowledge, beauty, love, and deed we must appeal not to the few, not to some souls, but to all.

Notes

1 Most primates dedicate 5–10% of blood flow on brains; humans dedicate around 30–40% (Henrich 2015).
2 As James Scott points out, it is far easier to cheat on taxes when the taxman cannot measure your wealth with his own eyes. Similarly, farmers of river valleys such as the Nile, Tigris, and Euphrates had fewer options to relocate, making political control of these populations relatively easier.

3 "Iroquois" is the name by which they became known by European settlers; they called themselves the Haudenosaunee, or "people of the longhouse." A sixth tribe, the Tuscarora, formally joined the Confederacy in 1722.

4 The Seneca tribe had eight "seats", the Mohawk and Oneida nine, the Cayuga ten, and the Onondago fourteen.

5 One of three traditional founders of the Iroquois confederacy; importantly, one of the this trio was a woman, the ingenius and indomitable Jigonsaseh.

6 Also commonly called the Kikuyu. Since Kenyatta in his book calls them "Gikuyu," I use this name in what follows.

7 "Nested" in this sense refers to the fact that council members at the highest level were a sub-group of the representatives serving at the district level, which in turn were a sub-group of village-level representatives.

8 A third key technology, triremes, enabled naval victories over the Persians; as Aristotle would later point out, the fact that these victories were the product of masses of oarsmen reinforced the argument of poorer Athenians (many of them the veterans of these battles) for full participatory power.

9 Of these, as many as 40–50,000 were considered citizens; women, children, slaves, and "metics" (resident aliens) had no citizenship rights (Cartledge, 2016).

10 Taking geographic diversity as a proxy both for diversity of information and for the mental representations and heuristics that would likely be tied to micro-local cultural practices (Page, 2017). An almost total absence of contemporary evidence prevents us from speculating how these principles could have played into the design of these institutions.

11 A kind of "judicial review" was in place in Athens by the 4th century in the form of the *nomothetai*, specially designated lawmakers chosen from the citizen jury pool of 6,000. These *nomothetai* may have had the final decision over whether a law of general application could stand (Cartledge, 2016); this would not have affected the Assembly's power of decrees, i.e. decisions of policy on particular cases.

12 These included the *strategoi* or military generals, as well as specialized officials with jurisdiction over monetary policy and the water supply.

13 For a recent study of the role of "intervisibility" in the creation of common knowledge, see Chwe (2013).

14 Farrar (1988) calls him the "first democratic theorist in the history of the world."

15 Though Plato's dialogue was written a generation or so after Protagoras taught at Athens, given the teacher's great fame it is likely for Plato to have presented an argument that could plausibly have been his.

16 The Greek word *politeia* is typically translated as "constitution" in English, but is much broader, encompassing the education system, civic festivals, and often the distribution of property as well as legislative, executive and judicial institutions. A closer translation of *politeia* would be a community's "public way of life."

17 Though Aristotle is not explicit that this form of collective intelligence is the product of deliberation, the context of his argument is the deliberative practice of Athenian assemblies, which "come together to hear cases, deliberate and decide." (3.15, 1286a25–26); see Landemore (2012).

18 The argument is elaborated upon by Marsilius of Padua (Landemore, 2012) and echoed later in Dewey "shoe-pinching" argument, infra.

19 A caveat to this principle is that proper education is indispensable to assuming the duties of the citizen, a group from which Aristotle's theory (like the entirety of extant texts, with the exception of Plato) excludes women and slaves. Scholarly debate over whether Aristotle considered these exclusions desirable or merely "the way things are" is longstanding and ongoing.

20 Our word "populist" derives from the Roman *popularis*, members of a political faction who claimed to represent the common man against the corrupt elite; Gaius Julius Caesar rose to power under this political banner.

21 Codified under the emperors Theodosius (347-395 CE) and Justinian (527-565 CE), Roman law would remain a living force in European courts a thousand years after the empire's fall.

22 This chapter of Machiavelli's Discourses (pt. 1, ch. 58) is entitled, "The Multitude is Wiser and More Constant than a Prince."

23 The appellation "Jury Theorem", first given by Duncan Black in 1958, is flawed in two senses. First, Condorcet's proposal takes the form of a hypothesis, not a rigorously proven theorem. Secondly, he did not limit this hypothesis to juries, but rather considered the logic applicable to any group decision (Landemore, 2012).

24 It is worth noting that the CJT was not proposed to apply to all public decisions, but rather a sub-group of tasks which required estimating or evaluating whether something is or is not the case. Since such a task is precisely at issue in a jury trial, it is understandable that this became the paradigmatic example. Probability science has since expanded the principle of the CJT beyond "yes or no" questions to a wide range of estimation or prediction tasks.

25 The comparison drawn here is my own.

26 Though Franklin's plan was adopted unanimously by delegates to the Albany Congress, it was rejected by the colonial legislatures.

27 Mill emphasizes the importance of local forms of participation, including jury service and parish duties, as well as voting (Landemore, 2012).

28 Though the legislature Mill outlines can propose topics for consideration by the "committee of experts," it is these "experts" that actually write the laws.

29 Landemore (2013) considers Mill "at best, an epistemic democrat with a strong elitist twist."

30 Dewey defines "the public" as "all those who are affected by the indirect consequences of transactions to such an extent that it is deemed necessary to have those consequences systematically cared for."

31 Critically, Dewey understands that each democratic citizen develops a political identity as part of multiple groups. The goal of such development is not to focus on a single dimension of identity but rather create a "fullness of integrated personality" that allows all these dimensions to coexist.

32 Alternatively known as "interoception."

33 See https://cdd.stanford.edu/what-is-deliberative-polling/.

34 Though distinct from the Condorcet Jury Theorem, the "miracle of aggregation" equally depends on statistical properties given by the law of large numbers, to which Condorcet was an important early contributor; see Landemore and Elster (2012).

35 But see Caplan (2007) who argues that people are more likely to be systematically biased in the same direction.

36 Though a brilliant polymath, Galton's political views were unabashedly racist. Believing that society should be led by the genetically superior, he coined the term "eugenics" and was a principal leader of this movement in Britain.

37 Page (2007) notes that diversity of life experience is a key element of cognitive diversity, and this is often highly correlated with other facets of personal identity including gender, ethnicity, and language. His point is not to dismiss identity diversity, but rather to note how it can be an imperfect (and occasionally misleading) proxy for the cognitive diversity which is the true driver of collective intelligence.

38 These strategies include (i) raising the motivation to share via individual financial incentives or rewards for group performance; (ii) explicitly welcoming dissent, institutionalizing space for (authentic) devil's advocates; (iii) enabling anonymous opinion-sharing; and (iv) refraining from stating a firm view at beginning, thereby reducing the risk of anchoring and potential cascades.

Bibliography

Anderson, B. (1983). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Verso.

Barghandan, M. (2015). "Iran's new social media-friendly approach," Turkish Policy Quarterly, 14(1), 137–145.

Beard, M. (2015). SPQR: A History of Ancient Rome. Profile Books.

Boehm, C. (1999). *Hierarchy in the Forest*. Harvard University Press.

Bostrom, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.

Cartledge, P. (2016). *Democracy: A life*. Oxford University Press.

Chwe, M. S. Y. (2013). *Rational ritual: Culture, coordination, and common knowledge.* Princeton University Press.

Converse, P., "Popular Representation and the Distribution of Information," in Ferejohn, John and Kuklinski, J., eds., *Information and Democratic Processes* (Urbana and Chicago: University of Illinois Press, 1990).

Dewey, J. (1939). "Creative democracy—The task before us." *John Dewey. The later works*, 1988, 229–230.

Dewey, J., & Rogers, M. L. (2012). *The public and its problems: An essay in political inquiry*. Penn State Press.

Diamond, J. (2013). *Guns, Germs and Steel: A Short History of Everybody for the Last 13,000 Years*. Random House.

Du Bois, W.E.B. (1920). "On the Ruling of Men," from *Darkwater: Voices from within the Veil*. Harcourt Brace.

Elman, B. A. (2013). *Civil Examinations and Meritocracy in Late Imperial China*. Harvard University Press.

Engelbart, D. (1962). "Augmenting the Human Intellect: A Conceptual Framework," Summary report AFOSR–3223, Stanford Research Institute, Menlo Park, CA.

Engelbart, D. (1995). "Toward Augmenting the Human Intellect and Boosting our Collective IQ." *Communications of the ACM*, Vol. 38, No. 8, 31–33.

Erdoes, R. and Ortiz, A., eds. (1984). *American Indian Myths and Legends*. Pantheon Books.

Farrar, C. (1988). *The origins of democratic thinking: The invention of politics in classical Athens*. CUP Archive.

Fukuyama, F. (2011). *The Origins of Political Order: From Prehuman Times to the French Revolution*. Farrar, Straus and Giroux.

Goldhill, S. (1987). The Great Dionysia and civic ideology. *The Journal of Hellenic Studies*, *107*, 58–76.

Graeber, D. and Wengrow, D. (2021). *The Dawn of Everything: A New History of Humanity*. Allen Lane.

Hayek, F. A. (1945). "The Use of Knowledge in Society." *The American Economic Review*, Vol. 35, No. 4, 519–530.

Henrich, J. (2015). *The Secret of Our Success*. Princeton University Press.

Kenyatta, J. (1965). *Facing Mt. Kenya*. Vintage Books.

Landemore, H. (2012). *Democratic Reason: Politics, Collective Intelligence, and the Rule of the Many*. Princeton University Press.

Landemore, H. (2020). *Open Democracy: Reinventing Popular Rule for the Twenty-First Century*. Princeton University Press.

Le Bon, G. (1895). *La psychologie des Foules*. Editeurs Alcan.

Lévi-Strauss, C. (1948). "La vie familiale et sociale des Indiens Nambikwara." *Journal de la Société des Américanistes*, Vol. 37, 1–131.

Lippman, W. (1925). *The Phantom Public*. Transaction Publishers.

Mackay, C. (1841). *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds*. London: Richard Bentley.

Meggitt, M. (1978). *Blood Is Their Argument: Warfare among the Mae Enga Tribesmen of the New Guinea Highlands*. McGraw–Hill.

Mill, J. S. (1859). *On Liberty and Utilitarianism*. Bantam Books (1993 edition).

Miller, J. (2018). *Can Democracy Work? A short history of a radical idea, from ancient Athens to our world*. Farrar, Straus and Giroux.

Mulgan, G. (2017). *Big Mind*. Princeton University Press.

Ober, J. (2008). *Democracy and Knowledge*. Princeton University Press.

OECD (2020). *Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave*.

Page, B. and Shapiro, R. (1992). The Rational Public. University of Chicago Press.

Rogers, M. (2008). *The Undiscovered Dewey*. Columbia University Press.

Scott, J. (2017). *Against the Grain: A Deep History of the Earliest States*. Yale University Press.

Seaford, R. (2004). *Money and the Early Greek Mind: Homer, Philosophy, Tragedy*. Cambridge University Press.

Servan-Schreiber, E. (2018). *Supercollectif: la nouvelle puissance de nos intelligences*. Fayard.

Stasavage, D. (2020). *The Decline and Rise of Democracy*. Princeton University Press.

Thomson, G. (1968). *Aechylus and Athens*. Grosset and Dunlap.

Tomasello, M. (2019). *Becoming Human: A Theory of Ontogeny*. Harvard University Press.

Van Bavel, J. and Packer, D. (2021). *The Power of Us: Harnessing our Shared Identities to Improve Performance, Increase Cooperation, and Promote Social Harmony*. Little, Brown.

de Waal, F. (1982). *Chimpanzee Politics: Power and Sex among Apes*. Johns Hopkins University Press.

Waldron, J. (1995). "The Wisdom of the Multitude: Some Reflections on Book 3, Chapter 11 of Aristotle's Politics," *Political Theory*, Vol. 23(4), 563–584.

Weatherford, J. (1988). *Indian Givers: How Native Americans Transformed the World*. Broadway.

Winters, J. (2020). "Is the Cultural Evolution of Technology Cumulative or Combinatorial? SocArXiv Papers, aypnx. doi:10.31235/osf.io/aypnx

Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., & Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, Vol. 330(6004), 686–688.

<p style="text-align:center">2</p>

FROM THE KNOWLEDGE SOCIETY TO THE COLLECTIVE INTELLIGENCE SOCIETY

Collective tacit knowledge and artificial intelligence for policymaking

Carina Antonia Hallin

Introduction

Since ancient times, new knowledge and new inventions have periodically remade human societies. Today, collective intelligence that combines human knowledge with technology is exercising greater importance than ever before for governance and policymaking. An example of such significance is the recent and global launch of the United Nations Development Programme (UNDP) campaign "Don't choose extinction," which makes use of the Global Mindpool platform. The platform connects UNDP with the global population. The goal of the platform is to empower people everywhere on the planet to make their voices heard and be part of building a more sustainable and equitable future. Global Mindpool mobilizes the collective intelligence of the global population to harvest the insights that can lead to the most effective, valuable, and meaningful solutions to climate change for the UNDP and politicians across the world. This example of collective intelligence is just one out of many that are presented in this book on how societies harness knowledge from citizens for policy-making using technology platforms.

This chapter presents the shift from the knowledge society to the new **collective intelligence society** and the implications the new paradigm will have for humanity and policymaking. The knowledge society holds many meanings, but a general definition is "a society that generates, processes, shares, and makes knowledge available to all members. It is a society in which the creation, dissemination, and utilization of information and knowledge are the most important factor of production" (Encyclopedia of Information Science and Technology, 2015). A collective intelligence society is a new term that will be further elaborated on in this chapter. A collective intelligence society can be thought of as "the capacity of human communities to cooperate intellectually and intuitively in hybrid with machines" (cf. Peters, 2015) to "advance predictions, creations, innovations and workflows for the benefit of society" (cf. Lévy, 1997).

As humanity stands at the brink of the fifth industrial revolution, characterized by deep learning models and increased coupling of human and machine intelligence, there will be a growing need for meta-thinking. That is a need for reflecting on our thinking patterns and how we can think together with machines – new thinking processes that could lead to higher levels of consciousness for humanity (Koriat and Levy-Sadot, 1999).

The chapter presents an emergent debate on how we as humans can create more intelligent organizations and societies through the harnessing of our unconscious tacit knowledge and collective intuitions as our intangible resources coupled with the deep minds of computers. The chapter will discuss the challenges and opportunities of a new collective intelligent society.

From the knowledge society towards a new collective intelligence paradigm

The concept of knowledge and its importance to the government of society is not new. The philosopher Plato (428–347 BC) viewed intelligence as the most important quality of a political leader (Politicus). The British philosopher and economist John Stuart Mill also assumed that intellectual and moral education surpasses industry and wealth in its effects on societal development (Mill, 1974).

The coining of the notion of "**knowledge society**" can be traced back to the American sociologist Robert E. Lane (1917–2017). In 1966, Lane coined the concept "knowledgeable society," addressing the importance of knowledge, mainly referring to scientific, philosophical, and cultural knowledge, that would replace industrial production as the major source of competitive advantage. In Lane's view "just as the 'democratic society' has a foundation in governmental and interpersonal relations and the 'affluent society' a foundation in economics, so the knowledgeable society has its roots in epistemology and the logic of inquiry" (1966:650). That is, Lane's conception of a knowledgeable society is coupled rather closely to the theory of science and reflects that science would somehow allow for the possibility of a society in which common sense would be radically replaced by scientific reasoning freezing out opinions and ideologies in political conflicts (Stehr and Ruser, 2017).

The term "the knowledge society" also derives from the natural result of changing economies and industrial developments that took place in the second half of the 20th century and has been widely discussed until recently. In the First Industrial Revolution, between 1750 and 1900, capitalism and new technologies of production and information diffused throughout the globe. What was unprecedented was not the forms of capitalism or these technologies; many of these, such as trans-continental trading routes or movable type, had important precursors in both East and West. The newness was the speed of technological advances and their spread across cultures, classes and geography. Capitalism had become the organizing principle of the Western and Northern Europe by 1850. Within another 50 years, it spread throughout the entire inhabited world. This transformation was equally driven by a radical change in the meaning of knowledge. In both the West and Asia, knowledge had traditionally been seen as applied to the idea of being. That was the assumption that people are essentially born with certain knowledge and learning capabilities. However, overnight, the perception of knowledge changed to be seen as a result of common citizens in their everyday lives – that being the individual's continuous accumulation of knowledge from their everyday activities, such as when citizens carry out their work and engage in network-related activities, and thereby generate new knowledge (Drucker, 1993). In other words, an increasing valarization of "everyday knowledge" as opposed to the theoretical knowledge earned in elite settings.

In 1973, the American sociologist Daniel Bell popularized the concept of "the knowledge society" in his book *The Coming of Post-Industrial Society: A Venture in Social Forecasting.* He predicted a vastly different society developing _one that will rely on the "economics of information" rather than the "economics of goods." Bell focused on the transformation from industrial to post-industrial society in which knowledge was becoming the axial principle that forms the central, economic growth-enhancing power. He stated, "the post-industrial society, it is clear, is a knowledge society" (1973:212) and identified two indicators for its "emergence": (a) "the sources of innovation are increasingly derivative from research and development (...)" and (b) "the weight of the society — measured by a larger proportion of Gross National Product (GNP) and a larger share of employment — is increasingly in the knowledge field" (1973:212). By dividing the society into economic sectors, Bell projected that the post-industrial sector, a society marked by a transition from a manufacturing-based economy to a service-based economy, would vastly develop and change due to telecommunication and computers. Analyzing society through the lens of different economic sectors, Bell (1973) also anticipated the structural and systemic impacts of telecommunication. He foresaw how the increased use of computers could result in an "information society." The knowledge society differs from the information society in that it serves to transform information into resources that allow society to take effective action while the latter only creates and disseminates the raw data. Such technological determinism about the "information society" can also be found in the writings of Japanese economist Tadao Umesao, who in 1963 published his analogy between evolution and different economic sectors of society.

To illustrate this evolution, information takes the shape of structured and formatted data that remain passive and inert until used by those with the knowledge needed to interpret and process them (Steinmueller, 2002). That is, knowledge also creates a capacity for intellectual activity. So, the meaning of the knowledge society is fundamentally a matter of cognitive capabilities of the population (Hornidge, 2011).

In the late 1990s, certain economic historians argued that the disparities in the productivity and growth of different countries had far less to do with the presence or absence of natural resources than with the capacity to develop human capital through new knowledge and ideas, and incorporate them in equipment and education (Abramovitz and David, 1996, 2000). A related characteristic of economic growth that became increasingly evident through the twentieth century was the growing relative importance of intangible capital in total productive wealth, and the rising relative share of gross domestic product derived from intangible capital. Intangible capital largely falls into two main categories: investment geared toward the production and dissemination of knowledge (e.g. training, education, research and development (R&D), information and coordination, such as publications in newspaper and scientific journals); and investments in physical and mental well-being (e.g. health care expenditures). Taking the United States as an example, knowledge and know-how had already emerged as key drivers of the nation's economy at the end of the 1960s; around this time, the value of the stock of intangible capital (devoted to knowledge creation and human capital) began to outweigh that of tangible capital (physical infrastructure and equipment, inventories, and natural resources) (Becker, 1964).

Now, in the first decades of the 21st century, the virtues of flexibility, innovativeness and adaptability, and cognitive skills are increasingly upheld as essential for a rapidly changing world of work (Mueller and Subotzk, 2001). For example, often the business pages of newspapers and the speeches of politicians comment on the stakes of the "knowledge society" and refer to it in terms of competitive advantage – how nations, regions, communities, and

businesses can position themselves to capitalize on emerging technologies and adapt to an unstable environment (Prusak, 2001; Wiig, 1997).

The knowledge society and government

The role of government in the knowledge society has mainly focused on accommodating the needs and interests of different stakeholder actions and initiatives to generate and enforce relevant legislation and control processes of knowledge through legal frameworks, as well as through explicit public policies. Knowledge societies' goals are formulated and implemented following different guidelines, such as those based on the UN 2030 Sustainable Society Agenda. Other guidelines are formed by the 2003, 2005, and 2015 World Summit for Information Society (WSIS) that have been focusing on cooperation programs on knowledge between different regions (e.g. Arab States, Asia and the Pacific, Latin America and the Caribbean, Europe, North America, East, West and Central Africa; North-South, North-North, and South-South), and other macro-regional development objectives for provinces and federal states (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2016).

For example UNESCO (2015) defines knowledge societies as:

> "societies in which people have the capabilities not just to acquire information but also to transform it into knowledge and understanding, which empowers them to enhance their livelihoods and contribute to the social and economic development of their communities".
>
> *(Engida, 2016)*

That is, the vision of knowledge societies is built upon the principles of freedom of expression, cultural and linguistic diversity, universal access to information and knowledge, and quality education for all. Such vision is enabled by the spread of digital technology and particularly upon Internet Universality principles of human rights, openness, accessibility, and multi-stakeholder participation (UNESCO, 2015). So, an essential element to make knowledge societies effective for policymaking is to ensure the active participation of stakeholders in government, such as representation from the private sector, the civil society and ICT users along with international organizations in the implementation of knowledge societies. Typical relationships in which knowledge is developed in stakeholder relations are public–private partnerships, public–private-people, government–academia, government–nonprofit, private users, and other partnerships that align complementary capabilities, competencies, and resources.

The emerging collective intelligence society

Since the mid-2010s, the scientific debates over knowledge societies have pivoted to different schools of thinking and the future impact of artificial intelligence (AI) on society, governments, and democracy. The main academic debates now center upon roughly three different schools of thought (Peeters, Diggelen, and Bosch, 2021). The first school is a technology-centric perspective, assuming AI will soon outperform humankind in all areas and that the primary threat for humankind is superintelligence (Bostrom, 2014). The second school is the human-centric perspective arguing that humans will continuously remain superior to AI when it comes to social and societal aspects and that the main threat of AI is to

be found in that humankind's social nature is overlooked in technological designs (Human and Cech, 2020). The third and most recent school takes a collective intelligence-centric perspective, affirming that true intelligence lies in the collective capacities of all intelligent agents, both human and artificial. In isolation, the intelligence of the individual human and AI entities is extremely limited. According to this school, the main threat to humanity is related to the challenges of technological design related to both the collective and systemic level that are hard to oversee and control.

A collective intelligence societal perspective is however not new. Arguments for collective intelligence communities, as described by Dr. Lex Paulson in Chapter 1 of this handbook, dates back to the thinking of ancient philosophers, and has been a foundation for governance and democratic thinking over time. A collective intelligence society can be seen as emerging from the collaboration, collective effort, or even competition of many individuals, and which also appears in public deliberation and decision-making (cf. Surowiecki, 2004). That is, collective intelligence develops from processes that aggregate or synthesize the knowledge of many individuals to accomplish what even the most skilled individual could not do alone (Malone, 2004; Woolley et al, 2010). For example, studies have shown that the decisions of a sufficiently diverse group systematically outperform the decisions taken by just a few experts (Hong and Page, 2004).

Although the term "wisdom of crowds" originally pertained to a group of individuals, the term has expanded to include the notion of a group of people coupled with intelligent technologies (Malone, 2018; Malone and Bernstein, 2015). Collective Intelligence scholars have shown that when people join forces, collaborate, and make joint decisions, facilitated by crowdsourcing software platforms and the internet, they tend to make better decisions (Lévy, 1997; Surowiecki, 2004). That is, crowdsourcing is considered one of the main mechanisms for harnessing collective intelligence (Brabham, 2015).

The intelligence terminology for a society is also consistent with the systems-of-systems perspective in engineering:

> Instead of thinking about machine intelligence in terms of humans versus machines, we should consider the system that integrates humans and machines – not artificial intelligence but 'extended intelligence'. Instead of trying to control or design or even understand systems, it is more important to design systems that participate as responsible, aware and robust elements of even more complex systems.
>
> *(Ito, 2019, p. 1)*

Such logic is consistent with other theorists of systems design (e.g. Mulgan, 2018; Berditchevskaia and Baeck, 2020). Mulgan (2018) explains that most of the debates about AI begin with a discussion about the capabilities of existing or emergent technologies, such as machine learning, deep learning, computer vision, natural language processing, and so on, and then address the questions of where such technologies may be adopted. However, collective intelligence turns such questions on their head and asks how institutions or systems (societies) could be more intelligent as a whole. As Mulgan argues, the spread of intelligent machines often coincides with a decline in intelligence at a systems level, so the real challenge for humanity lies in enabling "thinking" at a large scale, involving many people and often many machines, to better address complex problems.

Since the Obama Administration's initiative in 2009 for open government solutions, an increasing number of governments and municipalities around the world have turned to crowdsourcing and AI to engage citizens and capitalize on the power of public knowledge

for more informed political decisions (Noveck, 2017). The idea of "citizen-sourcing" has emerged as a new tool for policymakers to gather ideas, identify public needs, and receive feedback to improve services in real time. Through citizen-sourcing, governments can not only collect opinions and feedback, but also generate new strategies and aggregate predictions to anticipate public problems before they arise.

Among the many roles collective intelligence plays in today's socio-political landscape (see Tables 6.1 and 6.2 presented in Chapter 6), enhancing methods of deliberative and participatory democracy are so far the most widespread. Through platform-based deliberations, citizens are increasingly engaging with elected officials and civil servants on issues that matter to them (Dryzek, Bächtiger, and Chambers et al., 2019). Many of these platforms are produced by movements of citizens, such as vTaiwan, CitizenLab, and ProDemo, and others are developed within public administrations, such as Decidim, GrandDébat.fr, MyGov.in, and Rahvakogu. The debate on participatory democracy especially focuses on the design of citizen engagement with a focus on ensuring diversity among participants, creating public transparency, and reducing the spread of misinformation (Suran, Pattanaik, Kurvers, Hallin et al., 2021).

In the coming sections, we will unravel the building blocks of collective intelligence with a focus on collective tacit knowledge, predictions, and machines as the foundation for the emergent collective intelligence society. As the reader will note below, the epistemological and ontological views in the literature demonstrate that new strategic knowledge resources for policymaking are both collective, tacit, and artificial.

Collective tacit knowledge as a strategic resource for policymaking

A key date in the history of collective intelligence is 1907, when Darwin's half-cousin Francis Galton, a statistician and sociologist, published the results of an experiment in *Nature*. Galton analyzed the estimations of 787 people at a county fair who had been asked to guess the weight of an ox when it was slaughtered and dressed. The results showed that although none of the individual participants provided an accurate answer, the average of estimates was less than one standard deviation away from the actual value (Galton, 1907). The above experiment gave an empirical demonstration of the "wisdom of crowds" (Surowiecki, 2004), and the collective tacit knowledge of crowds claiming that humans can sense stimuli that can make them intelligent (Sternberg et al., 1999).

Tacit knowledge

The idea of tacit knowledge as a knowledge capability deriving from the accumulation of stimuli sensing and practical experience has a long tradition dating back to the early philosophers. Aristotle (384–322 BC) recognized that human knowledge has uncertain components (Kane, 2003) and points to different types of knowledge (Capurro, 2004). One is technical knowledge (*techné*), which is a technical and implicit knowledge about how to artificially produce things such as craftsmen that build houses. Another type of knowledge is scientific knowledge (episteme) which refers to scientific knowledge that is the effect of logical reasoning. A third type is a practical knowledge (*phronesis*), which concerns the ability to reason about the best means to achieve goals, i.e. the knowledge of how to make good considerations, judgments, and choices in concrete situations or the virtue of moral thoughts.

The term "tacit knowledge," introduced by the chemist and philosopher Michael E. Polanyi (1966), has been used to characterize the knowledge accumulated from everyday

experience. According to Polanyi, knowledge requires a knower who is an interested, responsive individual, a master of a certain set of skills who is immersed in and influenced by the context or community in which he or she operates (Adams and Mullins, 1984). Polanyi introduced the term "tacit dimension" in his book *Personal Knowledge* (1962) in which he sets forth the dynamics by which an individual becomes a skillful, responsible, and knowing person. He argued that as human beings become a part of an interactive community with shared norms, talents, meanings, and purposes, they also become agents with interests and capabilities. Polanyi differentiated between explicit and tacit knowledge and acknowledged that individuals acquire knowledge by dynamically creating and organizing their own experiences; thus, the ability to state facts represents only the tip of the iceberg of human knowledge. As he concluded, "We know more than we can tell" (Polanyi, 1966, p. 4). In Polanyi's view, all knowledge exists on a continuum of which explicit knowledge sits on one end and tacit knowledge on the other end. Most knowledge would exist between the two, such as a teaching session where the teacher explicitly states theoretical concepts, but at the same expresses such concepts in a convincing manner through the person's body language.

According to Polanyi, tacit knowledge is personal, context-specific, and therefore hard to formalize and communicate, while explicit knowledge or codified knowledge can be transmitted in a formal and systematic language. Both explicit knowledge and tacit knowledge are forming tacit knowledge. Sternberg and his colleagues (Sternberg, 1999, 2000; Wagner and Sternberg, 1985) view tacit knowledge as an aspect of practical intelligence, corresponding to Aristotle's *phronesis*. It is the knowledge that reflects the practical ability to learn from experience and to apply that knowledge in the pursuit of personally valuable goals. Tacit knowledge is needed to successfully adapt to, select, or shape real–world environments. Because tacit knowledge is an aspect of practical intelligence of all humans in everyday life, it provides insight into an important factor underlying the successful performance of real-world tasks (see Sternberg, Wagner, and Okagaki, 1993).

Nonaka (1991) and Nonaka and Takeuchi (1995) adopted the concept of tacit knowledge into the realm of organizational life in conjunction with their research on innovation in Japanese companies. Their motivation for these studies was to fill the gaps in Western management, organizational and economic theories of knowledge, which have emphasized knowledge processes of acquisition, accumulation, and utilization of existing knowledge and neglected the perspective of knowledge creation in the development of new products, new methods, and new organizational forms. They argued that Japanese companies like Toyota had been talented at turning individual tacit knowledge into a collective asset, making explicit the beliefs and assumptions of their employees, and using these insights to improve collective performance.

Saint-Onge (1996) treated tacit knowledge in the light of strategic decision-making and acknowledged that since tacit knowledge includes intuition, perspectives, assumptions, beliefs, and values resulting from people's experiences, it can guide people's behavior and attitudes toward future states of organizations (cf. societies). Saint-Onge also focused on the importance of treating the collective tacit mindset of the organization – the implicit, unspoken, and taken-for-granted "ways of doing things here" – as a strategic asset. Collective tacit knowledge, in his view, takes its shape from organizational culture (1996, p. 225). He suggested that the collective tacit knowledge guides both perceptions and behaviors of organizational members and shapes the way members perceive the competitiveness of their organizations (cf. societies). So, on the one hand, citizens carry insights composed of explicit knowledge, which is objective and can be easily expressed, and on the other hand, tacit knowledge, which is subjective and context-specific (cf. Nonaka, 1991). The latter

encompasses the intuitions, experiences as well as unexpressed technical know-how, which cannot be easily transferred to other societies as it is influenced through socialization.

Psychologists have also found that tacit knowledge being embedded in the human body and mind lead to such experiences as "gut feelings" and intuitions (Varela, Thompson, and Rosch, 1991; Shirley and Langan-Fox, 1996). It is acknowledged that tacit knowledge produces insight, intuition, and decisions that can be used as a vehicle to operationalize tacit knowledge (Leonard and Sensiper, 1998; Parikh, Neubauer, and Lank, 1994).

Collective tacit knowledge refers to how knowledge is distributed and shared among members of a society. It is the accumulated knowledge of the society stored in its culture, rules, procedures, routines, and shared norms that guide the behavior, problem-solving activities, and pattern of interaction among its members (cf. Erden, von Krogh, and Nonaka, 2008). It can be more or less than the summation of all knowledge possessed by individuals, depending on the mechanisms that aggregate and synthesize this knowledge (Glynn, 1996, pp. 1093–1094).

Scholars suggest some key characteristics of collective tacit knowledge (Erden, von Krogh, and Nonaka, 2008; von Krogh et al., 2000). First, collective tacit knowledge is socially constructed – it is a result of socialization through many interactions, repeated over time. That is through socialization a group members can arrive at mutual understanding's perceptions of shared situations, common definitions, but also justified true belief about how to act in that situation. Consequently, group-level knowledge is created which includes collective practical skills, expertise, and cognitions.

Second, collective tacit knowledge is also deeply rooted in actions. Weick and Roberts (1993) argue that mindful performance is a result of thinking, feeling, and creating a shared purpose. This indicates that collective tacit knowledge hinges on activity in and with the group where members delve into the practice both mentally and physically. That is the knowledge that enables a group to act as a "collective body and mind" without necessarily having the help of explicit rules and procedures. "The collective mind can be thought of as a pattern of implicitly coordinated, heedful interrelations of actions in a social system" (Weick and Roberts, 1993).

Embedded in societies, collective tacit knowledge resembles the memory or "collective mind" of its citizens. It exists among individuals and can either be centralized in organizational forms or dispersed throughout society. It can be seen as the society's "stock" of knowledge for policymaking, stored as readily available for use by public servants (cf. Walsh and Ungson, 1991). Communities of practice in societies are good examples of collective tacit knowledge formation (Brown and Duguid, 1991; Lave and Wenger, 1991). One example of a community of practice is the ACM Collective Intelligence Conference Series that brings together researchers from academia, businesses, nonprofits, governments, and the world at large to share insights and ideas relevant to understanding and designing collective intelligence in its many forms. Another example is the Academy of Management's community on Knowledge Integration, Synthesis, and Engineering (KnISE), which is formed in response to the fragmentation of knowledge in organizational research. KnISE seeks to become a catalyst for knowledge accumulation and integration for ready-to-use decisions and policy outcomes. The community integrates advances in science (open science, meta-theory, and meta-methods) and technology (information systems and collective intelligence platforms) into actionable solutions for broad societal impact. Communities of practice such as these share a concern, a passion and a commitment to harness collective tacit knowledge through regular interactions (cf. Li, Grimshaw, Nielsen, and Judd et al., 2009).

Scholars assert that when people interact with one another over time and share their history of past interactions concerning abilities and dispositions, perceptions related to future states are formed within the group (Fine, 2001). Hence, the perceived reputation of a community or nation can be harnessed through aggregated human intuitions and expectations toward future states of such a community or nation (alias consumer sentiment index as described below) that should be beneficial to policymaking as it produces tacit insights with lead time to act before societal trends or events take place.

Eliciting collective tacit knowledge for policymaking

When people relate to the future, they tend to draw on signs and proxies of the past and the present stemming from a variety of economic, political, social, or personal developments in a complex process (Katona, 1960). For example, the consumer sentiment index deployed by many nations taps into citizen predictions of the economy through their confidence ratings of their own expected financial situation. That is, such statistical representations of future and subjective notions of citizen expectations of the economy are grounded in their individual experiences. So by operationalizing people's guesses, "gut feeling" and intuitions about the future (Katona, 1960), individuals' tacit knowledge is externalized (Nonaka and Takeuchi, 1995; Polanyi, 1966; Saint-Onge, 1996).

Examples of methods for tapping into and eliciting collective tacit knowledge are the aggregation of intuitions of multiple individuals, either by combining independent predictions through Delphi studies (Dalkey, Norman, and Helmer, 1963); crowd predictions (Hallin et al., 2016; Hallin et al., 2017, 2019; Tedlock and Gardner, 2015); swarm intelligence (Rosenberg et al., 2017); or prediction markets (e.g., Pennock et al., 2001; Servan-Schreiber and Wolfers et al., 2004). The term "prediction" is often used to refer to an informed guess or opinion by a group or crowd of people. Such predictions tend to be beneficial for policymaking when each individual has a minimum amount of relevant information and the group is sufficiently diverse (Hong and Page, 2004).

The Delphi method is based on the principle that predictions (forecasts) from a structured expert group of individuals are more accurate than those from unstructured groups that are not carefully sampled based on their expertise of the given topic (Rowe and Wright, 2001). The experts answer surveys in two or more rounds, and after each round, a facilitator provides an anonymized summary of the experts' forecasts from the previous round as well as the reasons they provided for their judgments. That is, participating experts are encouraged to revise their earlier answers considering the replies of other members of their panel. It is found that during this process the range of the answers will decrease, and the group will converge toward the "correct" answer (Markmann et al., 2020). The Delphi method is used extensively by foresight units of various public bodies to generate the strongest possible opposing views resolutions of major policy issues, such as strategy and policy for infrastructure and engineering asset management within asset-intensive organizations. So, the objectives of the Delphi method are to ensure that all possible options have been considered and their impacts estimated to determine the acceptability of each individual option. The committee process is commonly making use of Delphi to address a wide range of issues and decisions before a policy decision is made. For example, a Delphi method was implemented in Spain to reach a national consensus Comprehensive Geriatric Assessment (CGA) domains in older oncological patients and the CGA scales to be used as a foundation for widespread use. Representatives of the panel were chosen from among the members of the Oncogeriatric Working Group of the Spanish Society of Medical Oncology (SEOM).

Prediction markets can be set up to elicit tacit knowledge using virtual markets where individual agents place bets on specific outcomes (Slamka, Jank and Skiera, 2012; Wolfers and Zitzewitz, 2004), and making quotes as buyers and sellers (Zenger, Felin, and Bigelow, 2011). Prediction markets are often designed and run for the primary purpose of aggregating information so that market prices forecast events (Berg, Nelson, and Rietz 2001, p. 286). Prediction markets have been adopted by both private and public organizations typically designed to produce predictions from stakeholders for policymaking (Forsythe et al., 1992). Such prediction markets elicit intuitive judgments from stakeholders before the specified event and once the outcome is known, each virtual stock receives a "cash dividend" (payoff) according to a predetermined (market) rate (Pennock and Sami 2007). An example is the Climate Prediction Market's design by Hivemind prediction markets. The market can be applied to longer-range climate prediction, as well as non-climate phenomena for policy-making and government for sustainability.

Crowd predictions is another approach to harness intuitions from people for policymaking. It is a multifaceted method to harness the wisdom of crowds for dealing with organizational or societal events (Hallin et al., 2019; Tetlock and Gardner, 2015). The Good Judgment Open Research Project was co-created by the University of Pennsylvania professors Phillip E. Tetlock, Barbara Mellers, and Don Moore in 2011 under the U.S. Intelligence Advanced Research Projects Activity (IARPA). This initiative invited participants to give probabilistic estimates about the likelihood of different outcomes as related to a particular event, such as presidential elections, sports championships, or other global and political events. Participants were asked to indicate a probability percentage for each possible outcome of an individual event. Today, the Good Judgment Open Research Project still operates and participants are encouraged to adjust their predictions frequently as new information arises. The results of the research program show that those participants who base their judgments on statistics, psychology, and their forecasting training along with other levels of interaction between individual forecasters, consistently produced the best forecasts for policymakers. Moreover, such flexible forecasting behavior tends to increase accuracy on the predictions as it reduces polarization among participants (Mellers, Tetlock, and Arkes, 2019). However, collective judgments may be threatened by "groupthink," information cascades, and herding effects (Sunstein, 2006).

Crowd predictions have also been studied in the context of organizations to harness employee or citizen predictions for decision-making (Hallin et al. 2017; 2019). Predictions can also be crowdsourced on platforms collected from the individual stakeholders rather than using virtual investments to assess expected outcomes. An example is Mindpool, recently acquired by the British innovation platform company Wazoku, which runs forecasts for organizations with their employees (Hallin et al. 2017). Such predictions can be crowdsourced in sequential surveys that track the evolution of sentiments over time (Hallin, 2016; Hallin et al., 2017). The surveys ask respondents to predict the likelihood of future events. The answers are compared with a baseline period and accordingly the development is assessed in conjunction with participants' rationales for their predictions. If needed, the survey questions can be refined in a second ranking round based on the first consensus report (Healy, Linardi, Lowery, and Ledyard, 2010).

The wisdom of crowds can also be harnessed using Artificial Swarm Intelligence (ASI) by combining the power of AI with real-time human knowledge, wisdom, insights and intu-ition. When using swarm engineering techniques, online participants make predictions by collaboratively moving a graphical puck to select among a set of possible answers. The puck is generated by a central server and modeled as a real-world physical system with a defined

mass, damping, and friction. Each participant in the swarm connects to the server and is allocated a controllable graphical magnet that allows the user to freely apply force vectors on the puck in real-time (Rosenberg and Pescetelli, 2017). Unanimous AI is an American technology company that provides ASI technology. These real-time systems have been shown to amplify group intelligence across a wide range of tasks, from forecasting political events and financial markets. The results suggest that when small teams make subjective judgments as real-time swarms, they can be significantly more accurate than individual members, and their accuracy can be further amplified by aggregating the output across small sets of swarms (Willcox, Rosenberg, Askay et al., 2019)

In summary, collective intuitions can be harnessed through independently formed predictions by using the above prediction and forecasting methods – all focused on tapping domain-specific knowledge, experience, and cognitive abilities which can be shared and interpreted collectively for policymaking.

Hybridizing collective tacit knowledge and artificial intelligence for policymaking

Recently, the field of collective intelligence has expanded to also include artificially intelligent systems. The nexus between artificial and collective intelligence is referred to as *hybrid intelligence* (e.g. Peeters et al., 2021) or superminds (Malone, 2018), which explores how people and computers can be connected "so that – collectively – they act more intelligent than any person, group, or computer has ever done before" (Malone, 2018). The assumption is that both artificial intelligence and collective intelligence can be considered shallow when in isolation. The combination of collective intelligence and artificial intelligence can benefit policymakers in their design of democratic processes where the effectiveness of the system is driven by its interconnectedness, diversity, and cultural structures (Mulgan, 2017).

Artificial intelligence can advance the ability to elicit collective tacit knowledge for policymaking in numerous ways (cf. Peeters et al., 2021). For example, *in a dyadic way,* a policymaker could ask a decision support system what the right decision would be under a given context and for a given problem. A case example is CrowdMed.com, which harnesses the combined savvy of more than 20,000 doctors, nurses, medical students, and other formal healthcare credentials. CrowdMed.com combines crowdsourcing and machine learning. It offers doctors the opportunity to find a correct diagnosis to expedite the time it takes to diagnose rare and possible fatal diseases. Similar support system may allow the policymakers to identify more effective solutions to complex public problems.

At the team level, an example is a swarm of public drones that perform sensing surveillance of floods and then transmit data to a platform on the ground used by rescue teams to help move people from potential flood areas.

At the organizational multi-team level, such as when policymakers carry out new policy reforms but tap into different groups' judgments using CI methods. An example is the adoption of swarm intelligence, such as when each participant connects to the server and is allocated a controllable graphical magnet that allows the user to freely apply force vectors on the puck in real-time (Rosenberg and Pescetelli 2017). It could also be citizens' deliberation on participatory platforms, supported by natural language processing (NLP) to sort and categorize the open-text contributions of interested citizens. An example is our case study included in this handbook on: *Reinventing local government through collective intelligence and artificial intelligence: How a Danish municipality harnesses citizen insight.* In this study the citizen platform's integrated NLP can help scale the data processing of the complex nature of

judgments and statements by combining a vast amount of structured quantitative data with unstructured citizen insights in the form of texts or images.

At the societal and cultural level, such as when multiple systems collaborate and interact with one another supported by AI. Collective intuitions on policy questions can be transformed into hypotheses that are testable using AI. For example, collective intuitions and predictions by citizens can point in the direction of a potentially remarkable discovery for humanity. A recent example is when UNDP initiates a worldwide climate campaign to harness the collective intelligence from citizens across 70 countries using the Global Mindpool platform, and accordingly derive some theories about the state of citizens' basic assumptions about climate change. Such insights can be used to develop new theories and hypotheses supported by big data and machine learning to generate new strategies for policymakers to engage citizens on climate-friendly policies.

Together, collective and artificial intelligence establish a new paradigm in solving public problems – identify opportunities and new ideas, but also anticipating threats and risks to our collective well-being. The paradigm of a collective intelligence society is also highly practical: as public issues grow more complex, even the most expert citizens and policymakers will only have a partial understanding of a given issue, meaning that durable solutions will require collective human judgments assisted by machines and the expertise to deal with them (Sloman and Fernbach, 2018). On the other hand, collective intelligence platforms can run the risk of becoming an instrument of mass manipulation. An example of such misuse is when citizens try to influence other citizens about a claimed danger of lifesaving vaccines. That is, collective intelligence designers and facilitators should be mindful of misinformation and adapt their tools carefully to the task at hand, and "especially those tasks that combine persuasive techniques such as reduction, tailoring, and personalization to actively influence their user's behaviour to achieve lasting behaviour change" (Kamphorst and Kallis, 2015, p. 77).

Conclusion: A new collective intelligence society

Over centuries, societies have relied on collaboration, such as sharing knowledge, culture, and tools to better manage crops, combat diseases, anticipate weather patterns, and the like (Peach, Berditchevskaia, Mulgan et al., 2021). Over the last decade, collective intelligence theories, methods, and technologies have evolved fast and there are now thousands of digital tools helping businesses, local and national governments, and communities to pool ideas and connect people in new ways for collaboration. Artificial intelligence is increasingly being applied in combination with collective intelligence methods to augment and optimize the mobilization of human intelligence for policymaking. This is predominantly using algorithms that increase the speed and efficiency of data processing at scale. Emerging uses of AI for public good include modeling, visualization, and virtual reality (e.g., the Metaverse), which push the boundaries for how groups collaborate to tackle complex problems, such as rapid urbanization, pandemics, and the localized impacts of climate change.

Considering the profound ways in which the internet, social media, and recommendation algorithms affect human cognition, collective intelligence designers must be conscious about the importance of diversity, local insights, and transparency – as these are essential to bringing about collective behavior across the public and policy institutions (cf. Suran et al., 2021). Ultimately, it is the adoption of scientifically informed policies and guidelines, and the careful investigation of emerging potential crises involving humans and machines, that will protect both communities and their deliberations in the years to come.

The combination between collective knowledge, collective intelligence technologies, and artificial intelligence indicates an evolution from a "knowledge society" paradigm to one that continuously adopts collective intelligence to public problems. It is a change from the knowledge society to a collective intelligence society. The reason for this change is that while artificial intelligence offers unprecedented abilities to quickly process vast quantities of data that can provide data-driven insights to address public needs (Verhulst, 2018), the collective tacit and domain-specific knowledge of citizens offer similar potential breakthroughs in changing how we govern, primarily by creating a means for tapping into the "wisdom of the crowd." This progress will allow groups to create better solutions than few of the smartest experts working in isolation could achieve.

References

Abramovitz, M. and David, P.A. (1996). Technological change and the rise of intangible investments: The US economy's growth-path in the twentieth century, in D. Foray & B.A. Lundvall (Eds.), *Employment and Growth in the Knowledge-Based Economy*. Paris: Organisation for Economic Cooperation and Development.

Abramovitz, M. and David, P.A. (2000). American macroeconomic growth in the era of knowledge-based progress: The long-run perspective, in S.L. Engerman & R.E. Gallman (Eds.), *An Economic History of the United States: The twentieth century*, vol. 3, pp. 1–92. New York: Cambridge University Press.

Adams, Douglas, and Mullins, Phil (1984). Conscience. Tacit knowledge and the art of judgment: Implications of Polanyi's thought for moral reflection. In *Soundings*, vol. 66, pp. 34–45.

Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education* (1st ed.). Chicago: University of Chicago Press.

Bell, D. (1973). *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. New York: Basic Books Inc.

Berditchevskaia, A. and Baeck, P. (2020). The future of minds and machines: How artificial intelligence can enhance collective intelligence. Report, Nesta. Retrieved from: The future of minds and machines (nesta.org.uk).

Berg, J.E., Nelson, F.D., and Rietz, T.A. (2001). Accuracy and forecast standard error of prediction markets. Working paper, University of Iowa, IA.

Bostrom, N. (2014). *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.

Brabham, D., 2015. *Crowdsourcing in the Public Sector*. Georgetown University Press.

Brown, John Seely and Paul Duguid (1991). Organizational learning and communities of practice: Towards a unified view of working, learning and innovation. *Organization Science*, 2/1: 40–57.

Capurro, R. (2004). Skeptical knowledge management, in H.-C. Hobohm (Ed.), *Knowledge Management* (pp. 44–57). Munich: IFLA (International Federation of Library Associations and Institutions).

Dalkey, Norman and Helmer, Olaf (1963). An experimental application of the Delphi method to the use of experts. *Management Science*, 9(3): 458–467. doi:10.1287/mnsc.9.3.458.hdl:2027/inu.30000029301680.

Drucker, P. F. (1993). The rise of the knowledge society. *The Wilson Quarterly* 17(2): 52–72.

Dryzek, J. S., Bächtiger, A., Chambers, S., Cohen, J., Druckman, J., Felicetti, N. A., Fishkin, J. S., Farrell, D. M., Fung, A., Gutmann A., Landemore, H., Mansbridge J., Marien, S., Neblo, M. A., S. Niemeyer, M. Setälä, R. Slothuus, J. Suiter, D. Thompson, and M. E. Warren (2019). The crisis of democracy and the science of deliberation. *Science*, 363(6432): 1144–1146.

Encyclopedia of Information Science and Technology (2015). Edited by Laplante, P. A. Taylor and Francis, Volume I and II.

Engida, G. (2016). How can digital government support the development of knowledge societies? Keynote Lecture, 9th International Conference on Theory and Practice of Electronic Governance (ICEGOV2016), Montevideo, Uruguay, 1–3 March 2016. http://doi.org/10.1017/CBO9781107415324.004

Erden, Z., Von Krogh, G., and Nonaka, I. (2008). The quality of group tacit knowledge. *The Journal of Strategic Information Systems*, 17(1): 4–18.

Fine, G. A. (2001). *Difficult Reputations: Collective Memories of the Evil, Inept and Controversial*. Chicago University of Chicago Press.

Forsythe, R., Nelson, F., Neumann, G.R., and Wright, J. (1992). Anatomy of experimental political stock market. *American Economic Review*, 82(5): 1142–1161.

Galton, F. (1907). Vox Populi (the wisdom of crowds). *Nature*, 75(7): 450–451.

Gladwell, M. (2005). *Blink: The Power of Thinking without Thinking*. New York: Little, Brown.

Glynn, M. A. (1996). Innovative genius: A framework for relating individual and organizational intelligence to innovation. *Academy of Management Review*, 21/4: 1081–1111.

Hallin, C. A. (2016). Aggregating predictions of operational uncertainties from the frontline: A new proactive management practice, in T. J. Andersen (Ed.), *The Routledge Companion to Strategic Risk Management*. Abingdon, UK: Routledge, pp. 487–500.

Hallin, C. A, Andersen, T. J, and Tveterås, S. (2017). Harnessing the frontline sensing of capabilities for decision support. Decision Support Systems. 10.1016/j.dss.2017.03.009.

Hallin, C. A., Jensen, J. J. U., Koren, O., Perel, N., and Tveteraas, S. L. (2019). Testing smart crowds for the economy, in ACM Collective Intelligence 2019 paper series.

Hasson, F., Keeney S., and Mckenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*, 32(4): 1008–1015.

Healy, P. J., Linardi, S., Lowery, J. R., and Ledyard, J. O. (2010). Prediction markets: Alternative mechanisms for complex environments with few traders. *Management Science*, 56(11): 1977–1996.

Hong, L., Page, S.E. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences of the United States of America*, 101(46): 16385–16389.

Hornidge, A.-K. (2011). 'Knowledge Society' as academic concept and stage of development–– A conceptual and historical review, in Thomas Menkhoff, Hans-Dieter Evers, Chay Yue Wah & Eng Fong Pang (Eds.), *Beyond the Knowledge Trap: Developing Asia's Knowledge-Based Economies*. World Scientific Publishing, June 2011. Available at SSRN: https://ssrn.com/abstract=1861024

Human, S.L. and Cech, F. (2020). A human-centric perspective on digital consenting: The case of GAFAM. In: *Human Centred Intelligent Systems 2020*, June 17, 2020 – June 19, 2020. This version is available at: https://epub.wu.ac.at/7523/. Available in ePubWU: March 2020.

Ito, J. (2019). Forget about artificial intelligence, extended intelligence is the future. Retrieved from: The World Is Complex. Measuring Charity Has to Be Too | WIRED.

Kamphorst, B., and Kalis, A. (2015). Why option generation matters for the design of autonomous e-coaching systems. *AI & Soc*, 30(1): 77–88.

Kane, H. C. M. (2003). Reframing the knowledge debate. With a little help from the Greeks. *Electronic Journal of Knowledge Management*, 1(1): 33–38.

Katona, G. (1960). *The Powerful Consumer*. New York: McGraw-Hill Book Company, Inc.

Koriat, A., and Levy-Sadot, R. (1999). Processes underlying metacognitive judgments: Information-based and experience-based monitoring of one's own knowledge, in S. Chaiken & Y. Trope (Eds.), *Dualprocess Theories in Social Psychology* (pp. 483–502). New York: Guilford Press.

Lane, R. E. (1966). The decline of politics and ideology in a knowledgeable society. *American Sociological Review*, 5(31): 649–662.

Lave, J., and Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity.* Cambridge: Cambridge University Press.

Leonard, D., and Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, 40(3):112–132.

Lévy, Pierre (1997). Cyberculture: Rapport au Conseil de l'Europe dans le cadre du projet « Nouvelles technologies, coopération culturelle et communication » Editions du Conseil de l'Europe, Editions Odile Jacob [www.odilejacob.fr/fr/index.html] Novembre 1997. 313 pages. ISBN 2-7381-0512-2

Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., and Graham, I. D. (2009). Use of communities of practice in business and health care sectors: A systematic review. *Implementation Sci*, 4: 27. https://doi.org/10.1186/1748-5908-4-27.

Malone, T. W. (2004). *The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life*. Boston, MA: Harvard Business Review Press.

Malone, T. W., and Bernstein, M. S. (2015). *Handbook of Collective Intelligence*. Cambridge, MA: MIT Press.

Malone, Thomas W. (2018). *Superminds: The Surprising Power of People and Computers Thinking Together.* New York: Little, Brown and Company.

Markmann, C. et al. (2020). Improving the question formulation in Delphi-like surveys: Analysis of the effects of abstract language and amount of information on response behavior. *Futures & Foresight Science*, e56, doi:10.1002/ffo2.56

Mellers, B., Tetlock, P., and Arkes, H. R. (2019). Forecasting tournaments, epistemic humility and attitude depolarization. *Cognition*, 188: 19–26. https://doi.org/10.1016/j.cognition.2018.10.021

Mill, J. S. (1974). Das System Der Deduktiven Und Induktiven Logik, in F. Jonas (Ed.), *Geschichte Der Soziologie* (pp. 434–445). Hamburg: Rowohlt.

Mulgan, G. (2017). *Big Mind: How Collective Intelligence Can Change Our World*. Princeton, NJ: Princeton University Press.

Mulgan, G. (2018). Artificial intelligence and collective intelligence: The emergence of a new field. *AI & Society*, 33: 631–632. https://doi.org/10.1007/s00146-018-0861-5.

Muller, J. and Subotzky, G. (2001). What knowledge is needed in the new millennium? *Organization*, 8(2): 163–182.

NESTA and UNDP. (2021). Collective Intelligence for Sustainable Development Getting Smarter Together.

Nonaka, I. (1991). The knowledge creating company. *Harvard Business Review*, 72(6): 104–114.

Nonaka, I. and Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.

Noveck, B. S. (2017). Five hacks for digital democracy. *Nature*, 544:287–289.

Parikh, J., Neubauer, F. F., and Lank, A. G. (1994). *Intuition: The New Frontier of Management*. Cambridge, MA: Blackwell.

Peach, K., Berditchevskaia, A., Mulgan, G., Lucarelli, G., and Ebelshaeuser, M. (2021). *Collective Intelligence for Sustainable Development: Getting Smarter Together*. UNDP.

Peeters, M. M. M., van Diggelen, J., van Den Bosch, K., and Bronkhorst, A. (2021). Hybrid collective intelligence in a human − AI Society. *AI & Society*, 36(1):217–238.

Pennock, David M., Lawrence, Steve, Giles, C. Lee, and Årup Nielsen, Finn (2001). The real power of artificial markets. *Science,* 291(5506):987–988. CiteSeerX 10.1.1.147.3421. doi:10.1126/science.291.5506.987. PMID 11232583. S2CID 35108036.

Pennock, David M., and Sami, Pennock (2007). *Computational Aspects of Prediction Markets. In Algorithmic Game Theory*, edited by Noam Nisan, Tim Roughgarden, Eva Tardos, and Vijay V. Vazirani, 651–676. New York: Cambridge University Press. 2007.

Peters, M. (2015). Interview with Pierre A. Lévy, French philosopher of collective intelligence. Open Review of Educational Research. https://doi.org/10.1080/23265507.2015.1084477

Polanyi, M. (1962). *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge & Kegan Paul.

Polanyi, M. (1966). *The Tacit Dimension*. New York: Doubleday & Co.

Popper, K. R. (1968). *The Logic of Scientific Discovery*. London: Hutchinson & Co.

Prusak, L. (2001). Where did knowledge management come from? *IBM Systems Journal*, 40(4): 1002–1007.

Rosenberg, Louis, and Pescetelli, Niccolo (2017). Amplifying prediction accuracy using Swarm A.I. *2017 Intelligent Systems Conference (IntelliSys)*: 61–65. doi:10.1109/intellisys.2017.8324329. ISBN 978-1-5090-6435-9. S2CID 4366745.

Rowe and Wright (2001). Expert opinions in forecasting. Role of the Delphi technique, in Armstrong (Ed.), *Principles of Forecasting: A Handbook of Researchers and Practitioners*. Boston: Kluwer Academic Publishers.

Saint-Onge, H. (1996). Tacit knowledge: The key to the strategic alignment of intellectual capital. *Strategy and Leadership*. (March/April): 10–14.

Servan-Schreiber, E., Wolfers, J., Pennock, D., and Galebach, B. (2004). Prediction markets: Does money matters? *Electronic Markets*, 14(3): 243–251.

Shirley, D. A., & Langan-Fox, J. (1996). Intuition: A review of the literature. *Psychological Reports,* 79(2), 563–584. https://doi.org/10.2466/pr0.1996.79.2.563

Slamka, C., Jank, W., and Skiera, B. (2012). Second-generation prediction markets for information aggregation: A comparison of payoff mechanisms. *Journal of Forecasting*, 31(6): 469–489.

Sloman, S., and Fernbach, P. (2018). *The Knowledge Illusion: Why We Never Think Alone*. New York: Penguin.

Stehr, N., Ruser, A. (2017). Knowledge Society, Knowledge Economy and Knowledge Democracy. In: Carayannis, E., Campbell, D., Efthymiopoulos, M. (Eds.) Handbook of Cyber-Development, Cyber-Democracy, and Cyber-Defense. Springer, Cham. https://doi.org/10.1007/978-3-319-0609, (pp. 1–20).

Steinmueller, W. E. (2001). Virtual communities and the new economy, in R. Mansell (Ed.), *Inside the Communication Revolution*. Oxford: Oxford University Press.

Steinmueller, W. E. (2002). Knowledge-based economies and information and communication technologies. *International Social Science Journal*, 54(171): 141–154.

Sternberg, R. J., Forsythe, G. B., Hedlund, J., Horvath, J. A., Wagner, R. K., Williams, W. M. et al. (2000). *Practical Intelligence in Everyday Life*. New York: Cambridge University Press.

Sternberg, R. J., and Horvath, J. A. (Eds.) (1999). *Tacit Knowledge in Professional Practice*. Cambridge University Press.

Sternberg, R. J., Wagner, R. K., and Okagaki, L. (1993). Practical intelligence: The nature and role of tacit knowledge in work and at school, in H. Reese & J. Pluckett (Eds.), *Advances in Lifespan Development* (pp. 205–277). Hillsdale, NJ: Erlbaum.

Sunstein, Cass R. (2006). *Infotopia: How Many Minds Produce Knowledge*. Oxford: Oxford University Press. ISBN 978-0-19-534067-9.

Suran, Shweta, Pattanaik, Vishwajeet, Kurvers, Ralf, Hallin, Carina Antonia, De Liddo, Anna, Krimmer, Robert, and Draheim, Dirk (2022). Building global societies on collective intelligence: Challenges and opportunities. *Digital Government: Research and Practice*, 3(4), Article No.: 31, pp. 1–6, https://doi.org/10.1145/3568169

Surowiecki, J. (2004). The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies and nations, doubleday.

Tetlock, P. E., and Gardner, D. (2015). Superforecasting: The art and science of prediction (Crown, New York). The Good Judgment Project. 2011. The idea behind the good judgment project. The Good Judgment Project™. July 27, 2011. Retrieved April 25, 2018.

Umesao, T. (1963). Information industry theory: Dawn of the coming era of the ectodermal industry. Hoso Asahi, Jan.: 4–17.

UNESCO. (2015). Keystones to foster inclusive Knowledge Societies. Retrieved from http://unesdoc.unesco.org/ images/0023/002325/232563E.pdf

United Nations Educational, Scientific and Cultural Organization (2016). *Knowledge Society Policy Handbook*, UNESCO.

Varela, F. J., Thompson, E., and Rosch, E. (1991). *The Embodied Mind: Cognitive Science and Human Experience*. Cambridge, MA: MIT Press.

Verhulst, S. G. (2018). Where and when AI and CI meet: Exploring the intersection of artificial and collective intelligence towards the goal of innovating how we govern. *AI & Society*, 33, 293–297, https://doi.org/10.1007/s00146-018-0830-z

von Krogh, G., Ichijo, K., and Nonaka, I. (2000). *Enabling Knowledge Creation. How to Unlock the Mystery of Tacit Knowledge and Release the Power of Innovation*. Oxford, UK: Oxford University Press.

Wagner, R. K., and Sternberg, R. J. (1985). Practical intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology*, 49(2), 436–458.

Walsh, J. P. and Ungson, G. R. (1991). Organizational memory. *Academy of Management Review*, 16: 57–91.

Weick, K. E., & Roberts, K. H. (1993). Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly*, 38: 357–381.

Wiig, K. M. (1997). Knowledge management: Where did it come from and where will it go? *Expert Systems With Applications*, 13(1): 1–14.

Willcox, G., Rosenberg, L., Askey, D., Metcalf, L., Harris, E., and Domnauer, C. (2019). Artificial swarming shown to amplify accuracy of group decisions in subjective judgment tasks. *Future of Information and Communication Conference* (FICC), San Francisco, 2019.

Wolfers, J., and Zitzewitz, E. (2004). Prediction markets. *Journal of Economic Perspectives*, 18(2): 107–126.

Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., and Malone, T.W. (2010) Evidence for a collective intelligence factor in the performance of human groups. *Science*, 330: 686–688.

Zenger, T, Felin, T, and Bigelow, LS. 2011. Theories of the firm-market boundary. *Academy of Management Annals*, 5(1): 89–133.

3

SMARTER TOGETHER?

Collective intelligence and change in government

Stephen Boucher

Introduction

The backdrop to this handbook is people's increasing disaffection with representative democracy, attacks against representative democracy, and, for some people, the appeal of undemocratic alternatives, including autocracy, the rule of experts, and military rule. In many countries, representative democracy is seen as not delivering sufficiently, not working properly, and not caring enough (Wike and Fetterolf, 2021; European and World Values Survey, 2017). Around the world, there are alarming signs that countries could slip away from democracy, a trend that has been exacerbated by the Covid crisis.[1] Such disaffection has contributed to the success of populist parties at the ballot box in many countries. Yet many of the same countries also express a desire for new forms of democratic governance (Welzel, 2021; Fourquet and Sibai, 2018; Harris, 2021).

The inquiry into the potentialities of what humans are capable of doing together at their best – the quest for optimal collective intelligence (CI) – is part of a deeper quest for more comprehensive understanding, and more powerful capacities of agency, to govern our common destiny in wise and appropriate ways. This inquiry has many implications for the role of governments in our society, which are called to evolve and transition into a whole new strategic and operational paradigm. Our times call for renewed awareness and greater capacity for collective leadership in order to face the systemic challenges that we face in a more intentional, effective, and strategic way. The field of CI, although still in its infancy, gives us some key questions and insightful responses into the best ways to capture collective creativity to tackle the main crises of our time, which are fundamentally systemic, interconnected, and interdependent.

"The urgent question therefore lying now in front of us," posits Geoff Mulgan in *Big Mind: How Collective Intelligence Can Change Our World,*

> is how could democracy be organized differently if it wanted to make the most of the ideas, expertise and needs of citizens? (...) Or again, how could a city administration, or national government, think more successfully about solving problems like traffic congestion, housing shortages, or crime, amplifying the capabilities of its people rather than dumbing them down?
>
> *(Mulgan, 2019)*

While this handbook tries to answer this broader question by examining the different facets of collectively intelligent forms of government and smart public decisions, this chapter explores specifically why CI is very necessary for solving problems yet very hard to implement. In doing so, we will tackle the following questions: How are politics and CI related in theory? Why do governments not harness the knowledge of their citizens in practice? Why are public institutions not designed purposefully to foster CI? Why is CI potentially a solution to people's disaffection with representative democracy? And what are the signs that CI is already informing new governance models?

Collective intelligence for public problems: Much needed and hard to come by

Politics and collective intelligence: A natural match, in theory at least

Politics is by nature a collective art with collective consequences. How a government manages its decisions determines, in the long run, whether the resulting actions meet the needs of the majority of citizens, or only a few. As John Dewey observed, "every serious political dispute turns upon the question whether a given political act is socially beneficial or harmful" (Dewey, 1927). One can therefore easily see how CI can be relevant to politics and policymaking. We understand here CI as the ability that a group has to find solutions to problems collaboratively that are superior to any of the solutions that members of the group might have found individually. The challenge of governance is to put in place and use the decision-making processes that will help meet the needs of certain populations, with their particular preferences and interests.

From the same perspective, democracy, which aspires to be "government *of the people*, *by* the people and *for* the people," as Abraham Lincoln put it, is quintessentially a collective art. Borrowing a term from the economic sphere, its end goal – at least from a utilitarian perspective – can be understood as producing Pareto-optimal decisions, i.e. decisions that meet the needs of the maximum number of citizens, with no alternative solution able to satisfy a greater number of them. In this light, the central question for any form of democratic decision-making process should be, in our view, the following: How can we make the process smarter so that it produces Pareto-optimal policies? This presumes, importantly, that citizens are able to discuss and identify their needs without the distortions that can lead to massive delusions, such as those famously recounted in Charles Mackay's *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds* (1841).

Such a job is complex. From our experience the type of CI required by public administration is often about enhancing cooperation and collaboration, also often about enabling better coordination, and also about identifying and mitigating cognitive biases.[2] With this in mind, driving social and political change generally requires a lot of intelligence, i.e., the ability to solve problems, as well as many skills at all stages of the policy process, with a focus on deliberation and creative thinking skills.

If one considers the six phases of the policymaking cycle outlined in Table 3.1, it is also apparent that the types of tasks needed to govern require a multitude of interactions at each stage, with adequately equipped people collaborating in smart ways in order to make decisions in the common interest.[3] Even the most centralized regime is not led in isolation by a single ruler, whether benevolent or tyrannical. And given the complexity and interdependence of public problems today, no one actor has the power, information, or agency to enact change unilaterally. Collaboration is a must (see Table 3.1).

Table 3.1 How collective intelligence methods contribute to the six phases of the policy cycle: Types of tasks of policymakers and public administration

Phase	Types of tasks of policymakers and public administration
1. Agenda-setting and problem definition	– Define the (right) problem(s) at hand – Gather adequate data to explore root causes, ideally without preconceptions and overcoming the rulers' own biases – Identify the needs of the relevant constituencies, aggregate and express preferences – Make sense of the future and plan for it
2. Generating solutions	– Seek inspiration, research best practices, and benchmark them – Ideate to produce solutions, innovative where needed
3. Evaluating, filtering, selecting options, decision	– Compare, evaluate, deliberate options, argue pros & cons, understand and weigh trade-offs – Prioritize optimal solutions against criteria – Filter proposals – Match proposals with preferences, needs and resources – Decide
4. Communication and mobilization	– Inform of decisions – Explain – Educate, increase awareness – Mobilize constituencies in implementation
5. Implementing, testing and scaling the solution(s)	– Implement policy – Peer-to-peer education, learn across communities – Mutual aid – Match skills – Monitoring, oversight and accountability
6. Evaluation, learning, correction	– Memory – Capture best practices – Evaluation; feedback – Agile adaptation – 'Collective wisdom'

Throughout the governance process, collaboration between interested parties – in the sense that we highlight in the definitions chapter, requiring proper deliberation and fostering creative capacity – is essential. And one would expect that the job of any government seeking to produce solutions should *de facto* be to "harness the power of a large number of people to solve a difficult problem as a group [to] solve problems efficiently and offer greater insight than any one individual could provide"... in other words to foster CI, as defined by the *Financial Times* Lexicon.[4]

If politics is in principle a collective process that requires intelligence, CI is also by nature fundamentally political, in the sense of pertaining to shared goals and collective survival and flourishing. Etymologically, Geoff Mulgan reminds us, both words "collective" and "intelligence" have deep ethical connotations: "Intelligence derives from the Latin word *inter*, meaning "between," combined with the word *legere*, meaning "choose." This makes intelligence not just a matter of extraordinary memory or processing speeds. Instead it refers to our ability "to use our brains to know which path to take, who to trust, and what to do or not to do. It comes close in this sense to what we mean by freedom." As "collective" also

derives from *legere* with the prefix *col-*, meaning "together," Mulgan concludes, "collective intelligence is in two senses a concept about choice: *who* we choose to be with and *how* we choose to act" (Mulgan, 2019).

Yet this correspondence, so elegant in the abstract, faces some very real constraints.

In reality: The conditions for CI are not easily met

Why do governments not always produce good decisions? We all accept that governments, democratic or not, can produce either intelligent or suboptimal, if not outright stupid and dangerous outcomes. And, as polls suggest, more and more people doubt in particular that their representative institutions are capable of making good decisions. If we borrow from Hélène Landemore's three conditions to enable collective wisdom in democracy (Landemore, 2012), we see how challenging they are to meet in practice.

- **Inclusion**: There has been a historic decline in the number of citizens taking part in civic processes such as voting (see, for instance, The Economic Intelligence Unit's Index of Democracy, 2008 to 2020).
- **Cognitive diversity**: The sociological diversity of policymaking circles is usually limited, in democratic countries and beyond (Surel, 2000).
- **Deliberation**: It is only in carefully designed deliberative mini-publics that the five criteria for quality deliberation defined by James Fishkin (2018) are met, whereas political discourse in the real world seems sorely lacking in many respects (Johnson, 2005):
  - Quality information: How often indeed are participants given access to reasonably accurate information that they believe to be relevant to the issue?
  - Substantive balance: The arguments offered by one side often dominate the agenda – the list of issues to which political actors devote their attention – rather than being answered with equal consideration by other perspectives. In fact, there is a notable tendency towards stridency in debates whose terms are framed by one side (on framing: Lakoff, 2014).
  - Diversity: The participants in any given public discussion rarely bring together the major positions at play on the topic considered. In fact, "One of the most important traits of human sociality is homophily, the tendency of similar people to be connected to each other due to their shared biological and cultural attributes such as gender, occupation, or political affiliation," which "is a major force behind several pressing social issues including inequality, segregation, and online echo chambers" (Asikainen, 2020).
  - Conscientiousness and equal consideration (respectively in Fishkin's words "the extent to which participants sincerely weigh the merits of the arguments" and "the extent to which arguments offered by all participants are considered on the merits regardless of which participants offer them") are also rarely visible in everyday political debates or conversations.

Geoff Mulgan lists in his chapter in this handbook six functional capabilities of intelligence: the ability to observe the world, models to make sense of the information thus gathered, creativity to come up with novel and useful solutions, memory, empathy, and judgment and wisdom. Examining politics through this lens, we also see how designing institutions that can accomplish each of these tasks effectively is difficult:

- **Observation**: While policymakers are overwhelmed with data, it is often hard to identify the most relevant data for the task at hand, or "weak signals" of problems before they arise.
- **Models**: Ideologies and dominant logic get in the way of sensible action: "what is seen are information-rich but interpretation-poor systems (...) that seem to confuse raw information or data with appropriate actionable knowledge" (Bettis, 1995).
- **Creativity**: Policymakers consider only a limited set of policy options, often constrained by political communications considerations, resulting in a narrow Overton window on any given issue in any given context. Named posthumously after Joseph Overton's model of public policy change, the Overton window refers to the range of policies considered acceptable by a given population at a certain time.[5]
- **Memory**: It is hard in government to draw the right lessons from past successes and failures. Even policies that have worked well in one context cannot always be successfully transposed to another.[6]
- **Empathy**: As French analyst Pierre Rosanvallon notes, people's perceived hardships and emotions largely structure today's political landscape, but are unequally acknowledged and channeled, and when they are, it is usually more deliberately so by populist movements (Rosanvallon, 2021).
- **Judgment and wisdom**: When it comes to drawing "on experience, ethical sensitivity and the ability to take a long view" and "being fluent in many frameworks and models and having the experience and judgment to apply the right ones, or combine them, to the context" (Mulgan's description of applying judgment and wisdom), we know from economists David Colander and Roland Kupers that public administration tends to be dominated by economists' tools (Colander, 2016) and from Australian academic Jonathan Boston that governments tend to have a "presentist bias" (Boston, 2016).

Thinking collectively requires overcoming conflicting interests

The fact is, as described in Lex Paulson's chapter on a "brief history of collective intelligence, democracy, and governance," while CI has emerged since the earliest human societies from political practice, institutions have rarely been purposefully designed to overcome the obstacles listed above and to foster the key components of better collective thinking. At the heart of this divergence lie two characteristics that set policymaking apart from other human activities: politics is inherently conflictual, and any public challenge is by nature intermingled with many other complex aspects of life in society. It is the plural and often conflicting nature of interests within a society that makes "public collective intelligence" a particularly hard challenge.[7]

The job of politicians devising policies and those implementing them – public administration – is indeed by nature the art of dealing with conflict and enforcing or preventing change. And those that have power are those that can decide what the issues are, make decisions, and impose changes that impact others' lives. We are a social species in a constantly changing environment; we need some way of making decisions, resolving conflict, and distributing resources for our survival. Thus, all human societies have systems of authority and rules of government, which are essentially about mediating diverging interests and imposing change so that the desires of some prevail over the preferences of others.

Managing change is at the heart of governance. This can take the form of policy change – incremental shifts in structures and policies (Bennett and Howlett 1992, cited by Cerna,

2013) – or of policy reform, which is more ambitious. Policy change and reform may in turn introduce familiar solutions or bring about innovation – whether incremental, structural, or disruptive – which is a solution seen by observers as both useful and original relative to the context in which it is introduced. The types of innovation covered in this book include social innovation (solutions that address social needs), policy innovation (new public policies), democratic innovation (in the forms, institutions, processes of democratic governance), and political innovation (which, in our case, refers specifically to novel political campaigning approaches).

We are all accustomed, as citizens, to seeing policymakers struggle with bringing about change, let alone innovation. Indeed, no matter what the nature of the reforms introduced – be they to the pension system, designing a new public square, or updating car safety standards – each will encapsulate a choice of values, aspirations, visions, and interests. Each will prioritize different trade-offs, *ex ante,* and each will have different distributional effects *ex post*. Vested interests of groups are thus likely not to be aligned before, during and after the negotiation and implementation of reforms. As Greener notes (2002), actors who benefit from existing models tend to resist changing them. And, as explored by various scholars, interest groups tend to invest more energy in resisting policies they perceive as unfavorable than in promoting favorable ones (Rauch, 1994). The favored strategy of pressure groups to win arguments is often not to mobilize their collective thinking to come up with solutions closer to the Pareto frontier – that is, where the overall benefit to all stakeholders may be greater – than to form coalitions that resist any change to the *status quo* (Guéguen, 2021). European lobbying veteran Daniel Guéguen notes in fact that today, in the context of EU policymaking,

> Industry pressure groups no longer have lobbying strategies. Their coalitions are false coalitions around EU consultations designed to increase the number of signatories. EU trade associations have become bureaucracies that are crippled by the lowest common denominator. They are reduced to defensive actions.[8]

Guéguen's observation resonates with my own experience as a former lobbyist at national and EU level and later as an EU affairs ministerial adviser. The trend most evident from these experiences is toward broad federations of stakeholders that rally around lowest-common denominator positions, while governments seek to reduce the costs of reform for the groups that have been most vocal. Most interest groups master the art, not of smart collaboration toward common and innovative solutions, but of preserving the *status quo.*

Therefore, if politics is eminently about solving a multitude of complex problems, that job is made all the more difficult by the fact that the parties involved may not want to collaborate, but may in fact compete at each step of the process, framing issues and proposing solutions in a way that serves their interests and disqualifies other points of view. The adversarial nature of modern politics explains why thinkers, especially in the West, have tended to focus on ensuring people's security (Hobbes), preventing absolutism and protecting the state of law (Locke), enhancing personal freedom,[9] the balance of power, and religious tolerance (Jefferson), serving the general will rather than private interests (Rousseau), etc.[10] Therefore, the key decision-making and CI tools at hand in the Western model of democracy – elections, parliaments, public administration – have been designed to reflect those priorities but not *specifically* engineered to foster the CI of the constituencies of actors involved. The CI benefits that we may find in today's institutions are principally from trial and error rather than conscious design. It has thus taken this long to ask ourselves the question posed by Geoff Mulgan above: How can we make the most of the ideas, expertise, and needs of citizens?

Now, putting aside for a moment the conflict-driven perspective, different explanations of policy change have emerged based on notions of learning. Indeed, while conflicting interests are central to public problems, stakeholders of a given issue often seek to develop new policy options by learning from others. This too poses specific problems. Take, for instance, a consensual policy objective such as ensuring that all children get the best possible education. Why is it, for instance, that the PISA scores[11] of children in Wallonia, the Southern region of Belgium, are so much lower than those of children in neighboring Flanders in the northern part of the same country? How much policy learning is there from the North to South of Belgium and vice versa? Policy learning refers to "relatively enduring alternations of thought or behavioral intentions which result from experience and which are concerned with the attainment (or revision) of policy objectives" (Heclo, 1974, p. 306, cited by Cerna, 2013). This highlights the fact that actors in the system can change their beliefs and adopt new policies by learning from others. It involves different processes, including learning about organizations, programs and policies, and policy diffusion or policy transfer, which is more specifically the process by which one public authority learns from another (Evans, 2009). Policy learning and transfer also turn out to be difficult: there is limited search activity; institutions are not always receptive to ideas; resources to adopt solutions may be insufficient; solutions might appear too complex, or disregard local know-how and knowledge; etc. There are cognitive as well as environmental obstacles (including linguistic, cultural, and political ones in the case of Flanders and Belgium, despite their geographical proximity) (Evans, 2017).

Furthermore, aggregating conflicting interests, making decisions, guiding change, and learning from experience grow more challenging as the world becomes more complex.

The interdependence between issues and actors makes collaboration harder

Due to coronavirus disease 2019 (Covid-19), everybody has come to realize concretely what the U.S. Army summarized in the acronym VUCA: Volatile, Uncertain, Complex, Ambiguous (Bennett and Lemoine, 2014): We live in volatile, uncertain, complex and ambiguous times. Public problems related to Covid have been: Volatile because the rate of change has been very high with the frequent appearance of variants reshuffling the deck of cards; Uncertain because governments, scientists, and citizens alike have been unclear about the situation and the factors at play from the start;[12] Complex because the number of factors and actors involved in the crisis and its resolution has been worldwide and multidimensional; Ambiguous because even with huge amounts of data, the interpretation of information has proven difficult at each step. As a result, governments around the world have an increasingly hard time predicting the outcome of their decisions and understanding the situation, despite having access to unprecedented amounts of data. This is the case for many public problems that evolve ever faster, with unclear outcomes and developments, and where interconnections multiply between actors, causes and effects. And even when we do have data, interpreting what we know is hard.

In such a context, the possibility of unforeseen tipping points – also known as "punctuated equilibrium" (Baumgartner and Jones, 2009) – is greater. While there is ever more information and competition on the global market for policy ideas, some ideas will get more attention than others and gain unstoppable momentum, potentially leading to periods of rapid change (Baumgartner and Jones, 1991; Gladwell, 2006).

Overall, policymakers' job in a VUCA world becomes all the more difficult, as change is so unpredictable and finding the right answers gets harder, yet the pressure on public administration to enact change that makes a visible difference increases. As a Belgian civil servant told me in recent interdepartmental negotiations on a new climate and energy plan for 2030,

> We keep adding new requirements to our agenda. They're all legitimate and important, from gender issues to climate to biodiversity, but they all require more horizontal coordination, more expertise, while we don't get more resources. It's becoming very hard to follow. And once you add new demands, there's no going back, it keeps piling up.[13]

The increasing complexity of problems is forcing all types of organizations, and of course governments, to develop new learning processes to keep up. In this context, Peter Senge's "five disciplines of learning organizations"[14] are useful (Senge, 2014). Finger and Bürgin Brand pointed out (1999) that our governments need to become learning organizations, a concept which Peter Senge popularized as places "where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together" (Senge, 1990). That – idyllic? – vision clashes with the reality of public institutions. They are often too slow and rigid. As Pierson (2000) notes, public policies and formal institutions are usually designed to be difficult to change, so past decisions encourage policy continuity. Public bodies suffer from path dependence, as "once a country or region has started down a track, the costs of reversal are very high" (Levi, 1997). Such path dependence is illustrated, for instance, by the difficulty of transitioning entire economies away from fossil fuels. And public administration is usually designed to provide stability and clarity in the execution of public policies, rather than facilitate disruptive new approaches.

The difficulties of governments in innovating and scaling innovations can be enumerated *ad nauseam*. Christian Bason (2012) listed the reasons that he observed as head of the Danish public innovation lab, which other observers corroborate: Too much internal focus; a propensity to seek to retain power; insufficient static and dynamic memory despite (or because of) an information overload (Pollitt, 2006); a bias towards safety, certainty, hierarchy, and bureaucratic rigidity (Graeber, 2015); lack of holistic thinking taking into account feedback loops (Israeli, 2020); insufficient understanding of complexity and a prevalence of economic tools that oversimplify the world (Kupers and Colander, 2014); fear of experimentation; and a "bottom line" that is difficult to identify. And yet, many public officials are coming to understand that "the context of high volatility and complex challenges require governments to develop new responses, new capabilities and new ways of understanding how to act," to quote the European Commission.[15] Information overload amplifies uncertainty and ambiguity and civil servants around the world acknowledge that we need more minds working together on these challenges. For many, Covid-19 has catalyzed their thinking on how to increase public administration's resilience through innovation.[16]

Meanwhile, however, politicians', bureaucracies', and governments' capacity to think and act has become an object of popular derision.[17] But this is no laughing matter.

The legitimacy of representative democracy is being challenged by illiberal and autocratic regimes

The legitimacy of representative democracy as we have known it for the past century or so is being seriously challenged as the competition between different governance models runs

rife. And as citizens' trust in public decision-making processes – and in traditional informa-tion sources – weakens, acting collectively becomes still harder.[18] Asking ourselves why and how collective wisdom can be mobilized for the benefit of the many is thus inseparable from the issue of the legitimacy of public decision-making. And the question we face becomes not just, as Geoff Mulgan phrased it, "how could democracy be organized differently if it wanted to make the most of the ideas, expertise and needs of citizens?" but also **"**how, in doing so, can it regain people's trust?"

Political scientists Fritz Scharpf (1999) and Vivien Schmidt (2012) invite us to consider three dimensions of the legitimacy of public action, which Schmidt defines as "democracy requiring government by the people (political participation), of the people (citizen represen-tation), and for the people (governing effectiveness)."

1. **Input legitimacy** is the perception that policies have been guided or oriented by the people they are intended to serve;
2. **Throughput legitimacy**, also referred to as procedural legitimacy, comes from the perception that the policies have been developed through fair and transparent processes;
3. **Output legitimacy** is the perceived effectiveness of policy outcomes for the populations concerned.

To these three dimensions of public legitimacy, we propose to add a fourth:

4. **Emotions legitimacy** is the perception that policies correspond with the deeper values, aspirations, worries, feelings and needs of the populations concerned (Boucher, 2021a).

Integrating all the above, we see that the challenge to democratic forms of governance is along all four dimensions.

1. **Input legitimacy**: Populist movements have renewed political communications, either communicating on unprecedented scales directly with their constituencies (e.g. Donald Trump tweeting), or organizing internal online forums (e.g. the Italian Cinque Stelle movement with its pioneering Rousseau digital platform). Populists claim to act on behalf of a purported better understanding of what more "authentic" people truly want and have managed to give the appearance of being more approachable to some categories of the population, as results at the ballot box indicate. Meanwhile, the very foundations of what constitutes meaningful, even truthful contributions to the public sphere are severely undermined.
2. **Throughput legitimacy**: Procedural legitimacy was most likely the driving con-cern behind the organization of the French "Grand national debate" in 2019 following the yellow vest movement, which complained fiercely that decision-makers were too detached from people's real-life hardships, likening President Macron to Louise the 16th and his wife to Marie-Antoinette. A key request of the movement was more direct democracy. With the national debate, the French authorities intended first of all to set in place an organized process to inform policymaking. In fact, many questions during the "Grand Débat" revolved around how transparent the algorithms were, who got to choose the questions in local debates, etc.
3. **Output legitimacy:** Authoritarian rulers promote a technocratic/elitist form of govern-ment that they claim is less messy and overall more effective. In fact, "illiberal" regimes

take the liberty to stress this, as did, for example, a recent article in China's *Global Times* arguing that an "Overloaded West faces [a] crisis of democracy," which suggested that the enterprise is inherently flawed, as "Europe and the US look like an overloaded old car" with "the policies of political parties [concentrating] too much on the so-called interests of their voters."[19] The article concludes, as surely many other people do in China and elsewhere,[20] that "the Covid-19 pandemic has become a crisis of the West and democracy" and that "the powerful role of government in allocating resources is now clearly indispensable. Governments should make and implement orders. People need to fully cooperate with them as responsible citizens. (…) And arguments should give way to cooperation" (Wen, 2021). However, is top-down decision-making by a small clique of like-minded bureaucrats what will help the State become more effective in the face of future crises and increasingly complex challenges, and will this be sufficient to restore trust in government?

4. **Emotions legitimacy**: The French "Grand débat" was, argues Hélène Landemore (2020), unprecedented for France (and Western democracy) for its scale and methodological effort. Yet people's trust in the government was not perceptibly improved in its immediate aftermath, with the government, and in particular the country's president, still very much seen as aloof, even snobbish by many. Based on this and other recent examples, we argue that policymakers should, in addition to attending to people's input, the decision-making process and the impact of their decisions, attend to "emotions legitimacy." In other words, truly listening, being seen to show empathy and care about people's feelings, and treating such emotions as meaningful input for policymaking. This is starting to become a topic of attention for those developing new deliberative democracy approaches (see Blondiaux, 2018). As the Grand Débat suggests, even if efforts are made to bolster government's input, throughput and output legitimacy, citizens may not develop great trust in their public leaders so long as they feel that their fears, feelings of injustice or deeper aspirations have been ignored. Meanwhile, populists have become "emotions entrepreneurs," argues French analyst Pierre Rosanvallon (2021).

Yet, most people still want more democracy, certainly in countries with a long history of representative democracy.[21] Taking again the example of France, a large majority of citizens now want public officials to ask citizens what they think more frequently and through various channels, including citizen councils, large surveys and national debates, citizen assemblies, participatory budgets and other mechanisms.[22] There is widespread backing for direct democracy in many countries.[23] In this context, we believe humanity faces at least the following crucial questions: Can democracy foster CI better than other forms of government? Can CI, properly nurtured, serve democracy better than other regimes and help invent new and deeper forms of democracy? Can CI serve democracy in a way that strengthens its legitimacy on the global governance market? Can we muster CI deliberately to serve governments and people better? Why does CI not work in some of the stories told in this book? Can CI become an effective approach to strengthen input, throughput, output, and emotions legitimacy?

We will now seek to provide some very preliminary answers to these questions to provide some elements of context for the stories in this handbook. These questions will however require our utmost attention and need to be answered convincingly and in depth in the coming years, far beyond what this handbook can achieve.

CI and the renewal of democracy

Overall, democracy is a more natural laboratory for collective intelligence

Fostering inclusion, diversity, and deliberation and bringing together purposefully the six functions of "government as a brain" suggested by Geoff Mulgan is not a given, as we have just seen. This does not mean however that all governance types are equal in fostering or hindering the emergence of better collective decisions. Hélène Landemore (2012) and the school of epistemic democracy argue forcefully that, while citizens may not always think rationally, and may be apathetic and poorly informed, democracy is the system that makes the most of this human material, which many will deride as incapable of making good collective decisions (and yet which all political systems must account for). Democracy, Landemore and others argue, in particular in the more open form she envisages,[24] can be seen as a cognitive system that epistemically outperforms the rule of the few, because democracy is better at aggregating the information and expertise of large and diverse populations, thus making better collective decisions, if not every time, certainly on average over time. Through inclusion, cognitive diversity, deliberation, and majority rule, errors tend to cancel each other out, and, over time, democratic regimes tend to make less mistakes than less democratic regimes. In summary, Landemore argues "that in an open liberal society, it is simply more likely that a larger group of decision makers will be more cognitively diverse, and therefore smarter, than a smaller group." She thus attributes "the epistemic superiority of democracy not only to the sheer number of decision makers, but also the qualitative differences that, in liberal open conditions, this great number of decision makers is likely to bring with it" (Landemore, 2012).

Democracy in this spirit does imply a certain kind of liberal society, with a free market of ideas, a diverse economy, and liberal education fostering autonomy and individuality (Landemore, 2008). Under such conditions, inclusive deliberation (direct or indirect) tends to produce better results over time than deliberation among a small circle of experts, while providing the many with majority rule matches epistemically the smart few (Landemore, 2012). Combining both aspects – deliberation and majority rule – results in democracy epistemically outperforming other forms of governance.

Despite these advantages, real-world democratic systems feature numerous obstacles to CI, as we have seen, requiring us to think about how to deliberately nurture the factors that will make it more likely to see better solutions emerge. Such factors, as mentioned earlier, include in particular inclusion, cognitive diversity, deliberation and majority rule. Also, social psychology scholars have stressed the importance of intrinsic motivation to foster creativity and innovation within groups (Csikszentmihalyi, 2013). Intrinsic motivation is the act of accomplishing something without the need for external rewards (Amabile, 1998). It can be linked to the importance of emotions in collective affairs mentioned above. It is central to overcoming the conflictual nature of politics highlighted earlier. Adequately combined, those five factors have *the potential* to give public decisions greater legitimacy.

Can collective intelligence help solve the legitimacy equation?

The stories told in this handbook show different ways of tackling the key obstacles to acting collectively and bringing about change and sometimes expanding the window of discourse, including in very difficult contexts such as the Covid-19 pandemic. It is interesting to note that many cases describe a similar effort to nurture a combination of greater inclusion,

cognitive diversity, collaboration methods (including deliberation and many other types), and/or harnessing intrinsic motivation to create better public solutions. Sometimes these processes unfold intuitively, without branding the approach with a specific name; sometimes they employ carefully developed and tested methods. These principles are illustrated by the following examples.[25]

- **Inclusion**: Carina Antonia Hallin, with a case in Denmark, Anirudh Dinesh in Latin America, Helen Liu and Lin Tze-Luen in Taiwan, Elisa Lironi in Iceland, and Gitte Kraghe regarding citizen science in the Arctic, each show the potential of crowdsourcing for addressing public challenges. Crowdsourcing has been defined by Howe (2006) as outsourcing a task:

  > to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers.

  The cases show that crowdsourcing can also be applied to a variety of policymaking tasks as an alternative to other forms of idea generation (Pisano and Verganti, 2008). Ankitha Cheerakathil, in her story about participatory budgeting, Passy Amayo Ogolla and Julie Jenson Bennett, in theirs about futures thinking, and Keira Oliver and her colleagues in the Scottish administration show how broadening the circle of decision-makers can, under the right circumstances, foster positive results by sensing the context better, coming up with new options, providing greater legitimacy to the decisions, etc.

- **Cognitive diversity**: Verena Ringler and Chiara Rosselli suggest how lawmakers from different countries can get to know one another and appreciate different perspectives, while David Baum tells a compelling story of how the fresh perspective of a younger generation helped an indigenous community overcome internal divisions. The story of the Youth Justice Board in the UK demonstrates how attending to the institutional setup can be central to overcoming silos, contributing different skills to the task, and stimulating new thinking and energy. And Emile Servan-Schreiber recounts how certain types of crowds can forecast the evolution of infectious diseases better than specialists with the right tools and protocols.
- **Collaboration methods**: Tim Switalski shows how positive change can occur when there is an alignment of the relevant people using a creative process under the right conditions to produce meaningful outcomes. The International Panel on Climate Change is a prime example of collaboration on a major scale, combining science and diplomacy as expanded on by Kari De Pryck. Aadisteshwar Seth shows how mobile phones can be used to accelerate collective learning, even in marginalized communities. The role of experimentation is highlighted in Pierre Portevin's story of a local innovation agency and in the story I tell of an experiment to fight long-term unemployment in France. Prof. Carina Hallin shares the case of a Danish city using Artificial Intelligence (AI) to reinvent local government and improve deliberation with citizens. Luis Lafosse talks about how Australia successfully pioneered public challenges in the early part of the 20th century, while Prof. James Fishkin tells us of the adaptation of the Deliberative Polling method to the era of online video conferences. Many other methods are illustrated throughout the

case studies, themselves only providing a small sample of the variety of approaches under development.

- **Fostering intrinsic motivation**: As Stephanie Tawa-Lama shows, carefully nurturing inclusion, diversity, giving a voice to the excluded, and allowing hopes, frustrations, resentment, even acrimony to be expressed in a constructive fashion can help victims of discrimination engage with public authorities. Knut Bergmann describes how former German Chancellor Helmut Kohl sought to create the right conditions to nurture dialogue in a diplomatic context, while Bernard Le Roux explores how deep listening facilitates productive dialogue within local communities (and what happens when this fails). Allowing actors to express a shared and desired vision of the future and to come together around a common set of values is also central to the story of The Alternative, a recent political formation in Denmark. Keira Oliver tells an impressive story of how the Scottish government built on the insights of Theory U – a leadership and CI approach developed by Otto Scharmer of the MIT – to tap into people's deeper aspirations in order to tackle the Covid crisis.

On paper, carefully cultivating such factors can lend public decisions greater legitimacy, thus facilitating systemic change:

- **Input legitimacy**, because CI requires that we make purposeful efforts to tap into "the crowd's" different perspectives. Nearly all the actors of the cases studied in the handbook make a deliberate effort to involve a wider range of players (and, note, not only "ordinary citizens," but also a variety of experts).
- **Output legitimacy**, because CI carries the promise of delivering better solutions. This is always a matter of appreciation. However, all the Covid-19-related stories, the Youth Justice Board story (in which the number of juvenile delinquents behind bars was cut into half), the What Works Scotland example, the reform of Iceland's constitution, and many other examples show a marked improvement in outcomes for the target populations, whose inclusion in the process also helps ensure the viability of these approaches over time.
- **Throughput legitimacy**: Because CI requires careful decisions about the steps, methods, and tools employed in a given process, it can, overall, be perceived as being fairer. Collaboration, transparency, and accountability are at the heart of CI and open government approaches. This is the case, for instance, of the *jan sunwai* complaints mechanism in India, or of the Icelandic constitutional reform process and many others.
- **Emotions legitimacy**, by listening to relevant stakeholders' deeper values, aspirations and visions for the future. We see attempts to do this in the examples of the North American tribe, Scotland using the Theory U approach, the Sager der Samler citizen platform in Aarhus or again in the case of the *jan sunwai*.

In turn, we can surmise that greater legitimacy is positively correlated with intrinsic motivation to engage in public affairs and contribute one's opinions, ideas, and talents for the public good.

New governance methods to harness CI are under construction

We arguably have never been as well equipped as we are today with knowledge, know-how, data, tools, and technologies to make sense of the world's complexity.[26] Overall, we have seen over recent years a flourishing of methods that seek to nurture the key factors of CI in service to public decision-making.[27] Table 3.2 provides a cursory overview of some of the

Table 3.2 How collective intelligence methods contribute to the six phases of the policy cycle: Examples of methods and tools

Phase	Examples of methods and tools NB − Several of the methods listed below can be applied at different stages of the policy cycle.
1. Agenda–setting and problem definition	– Civic-, gov-tech to identify and discuss issues – Crowdmapping platforms – Participatory Action Research – Data mining – Prediction markets – e-petitions – Surveys (off-/online) – Forecasting, crowd predictions, future studies, scenario building (e.g. Future casting; TSP; Delphi method, Future workshop, Causal Layered Analysis…) – Collaborative mapping – Predictive modeling, Predictive Analytics and AI in Governance – Lean and prescriptive analytics, behavioral insights, ethnography…
2. Creating solutions	– Open calls – Open data / government – Participatory Budgeting – Collaborative platforms – Hackathons – Design thinking (e.g. living labs…) – Public challenges and other challenge mechanisms – Ideation techniques (e.g. design sprints, hackathons, Creative Problem Solving…) – Policy labs – Think tanks – Citizen juries
3. Selecting options	– Mini-public deliberations (Citizens' Assemblies, Deliberative Polls, planning cells…) – Focus groups – Opinion surveys – Data collaboratives – Decision Matrix, Multi Criteria Decision Analysis
4. Argumentation and acceptance	– Transformative Scenario Planning – Door-to-door canvassing – Citizen hearing – Serious gaming
5. Implementing, testing and scaling the solution(s)	– Nudging – Mutual aid networks – Pol- / Legal- / Sup-tech – Regulatory sandboxes and innovation hubs – Randomised control trials
6. Evaluation, learning, correction	– Wikis – Communities of practice – Collective learning and sense-making – Research, training – User committees

approaches being developed in relation to governments' various tasks. While incomplete, it illustrates the diversity of paths being explored, including and beyond those presented in this handbook. While incomplete, it certainly shows that CI methods that can help public administration and people address public challenges go far beyond citizen participation, which in turn many simply equate with citizen assemblies. Governments' CI toolbox is far richer and expanding by the day.

New institutional models are being designed with CI in mind

Not only do policymakers have at their disposal a variety of methods inspired by CI principles, new forms of governance and institutional designs are also being informed by new values and objectives that put CI to public use. Some governments have been learning to become not only forward looking – learning how to think ahead with others – but also outward looking – considering the experience and input of other stakeholders, including the experience of other countries. Such openness to outside input is relatively recent.

This diversification in approaches was recently charted by the UK Policy Lab (see Figure 3.1), a civil service unit that believes "that future public policy should be more open, inclusive, evidence-based, empathetic and informed by both present and future needs."[28] Through its many interventions, the UK Policy Lab has developed a vision it calls "Government as a System."[29] As Table 3.3 indicates, public authorities have at their disposal a variety of governance styles, depending on their propensity to be, on one side of the spectrum, centralized, directive, and hierarchical, or, on the other side, reliant on outside input, collaborative, and open. Combined with seven different possible functions (influencing, engaging, designing, developing, resourcing, delivering, and controlling), the UK Policy Lab identifies 56 very distinct governance approaches and types of action, from an advisory or stewardship role to a more traditional regulatory function.

As the recent past has shown, as well as the stories told here, governments have become adept at mobilizing a variety of governance styles and functions, including to tackle the Covid-19 pandemic. New approaches are being studied, such as "joined-up government" and "networked governance" (Pollitt, 2003; Hartley, 2005; Mulgan, 2009), or "public value governance" (Bryson et al., 2014), highlighted by Helen Liu and Lin Tze-Luen in the case of vTaiwan), that cultivate the core principles of CI. Bryson, quoted by Liu and Tze-Luen, argues that

> The new movement is a response to the challenges of a networked, multisector, no-one-wholly-in-charge world and to the shortcomings of previous public administration approaches. In the new approach, values beyond efficiency and effectiveness—and especially democratic values—are prominent. Government has a special role to play as a guarantor of public values, but citizens as well as businesses and nonprofit organizations are also important as active public problem solvers.

In different ways, the central role of government is being revisited pragmatically, in which it does not "get out of the way" of private initiative, but supports it. The Organisation for Economic Co-operation and Development (OECD)'s Observatory of Public Sector Innovation sees three new types of governance approach thus emerging: what it calls the "invisible government" (in which public authorities develop proactive public services that require little to no action by the user); the "matrixed government" ("making bureaucratic and sectoral boundaries permeable and bringing together different pieces of society

POLICY LAB

Government as a system

	Influence	Engage	Design	Develop	Resource	Deliver	Control
'Softer' powers often shared with others	1 **Advising** Advising citizens and signposting options to help them find support	2 **Listening** Creating platforms for citizens and stakeholders to protect vested rights and interests.	3 **Connecting** Encourage experts and citizens to co-create change.	4 **Championing** Building a case for change and retain alliances for action.	5 **Charging** Collecting charges for service for example prescriptions, passports or parking.	6 **Nudging** Applying behavioural science or encouraging voluntary codes.	7 **Devolving** Devolving decisions to frontline staff, other authorities or citizens.
	8 **Lobbying** Using existing networks and platforms to influence an issue or cause.	9 **Informing** Providing data, sharing knowledge. For example public information advice.	10 **Engaging** Engaging citizens, stakeholders and partners to deliberate on an issue of importance.	11 **Agreeing** Formal agreements e.g. Memoranda of Understanding (MOU).	12 **Incentivising** Promoting behaviour change through grants, subsidies or other incentives.	13 **Educating** Providing materials so citizens know what's available to them.	14 **Providing assurance** Providing assurance / checks and balance on powers.
	15 **Agenda setting** Build awareness & confidence in new opportunities by providing thought leadership.	16 **Consulting** Consulting the public or stakeholders on an issue to understand needs and impact.	17 **Analysing** Analysing and interpreting data from local and international contexts.	18 **Partnering** Establishing formal partnerships on an issue of importance to parties.	19 **Contracting** Utilising public procurement to encourage supply chain innovation.	20 **Building** Making infrastructure investments & public commissions e.g. highways.	21 **Licensing** Providing licenses e.g. Taxis, bars & clubs, traders & markets, and health & safety.
Patterns of action across local, national and international contexts	22 **Role modelling** Role modelling culture or values through local, national or international presence.	23 **Convening** Drawing together expertise from across system. Including deliberative approaches e.g. citizen juries.	24 **Forecasting** Foresight, horizon scanning and predictive analytics.	25 **Planning** Setting strategy and making plans e.g. Industrial Strategy.	26 **Co-funding** Co-funding activity and pooling budgets with domestic or international partners.	27 **Providing** Delivering services directly or indirectly through funding and target setting.	28 **Regulating** Ensuring regulation enables the intended policy outcomes. Also amending rules, statutory instruments and orders.
	29 **Auditing** Auditing and reviewing activities to inform action.	30 **Collaborating** Collaborating with different actors from across the system to deliver outcomes.	31 **Modelling** Modelling different scenarios, shaping and deciding on delivery models.	32 **Commissioning** Commissioning services and outsourcing contracts. Also decommissioning as needed.	33 **Targeting** Utilising initiatives to influence on a particular issue e.g. Cultural programmes	34 **Reforming** Harnessing political will for change to improve outcomes.	35 **Intervening** Making an intervention to correct or improve a market or social context e.g. correcting market failure.
	36 **Governing** Establishing governance and setting up formal structures such as boards.	37 **Negotiating** Early engagement on a shared interest or issue including diplomacy.	38 **Testing** Testing, prototyping and learning to establish efficacy of a proposed intervention.	39 **Interpreting** Translating policies across different places and jurisdictions.	40 **Investing** Investing in various forms including inward investment and foreign direct investment.	41 **Safeguarding** Overseeing the welfare of vulnerable groups.	42 **Enforcing** Support enforcement and harmonise regulatory compliance environment.
	43 **Publishing** Publishing plans, priorities, guidance and reviews.	44 **Running elections** Running democratic services and elections.	45 **Piloting** Small scale trials to learn lessons and establish an evidence base for change.	46 **Drafting** Publishing proposals for consultation and pre-legislative scrutiny e.g. white papers and bills.	47 **Funding** Direct finance to stimulate markets or deliver positive outcomes.	48 **Preventing** Intervening early or investing in preventative measures e.g. Public health.	49 **Sanctioning** Putting in place sanctions e.g. embargoes and political trade restrictions.
More 'formal' power often associated with governments	50 **Scrutinising** Establishing scrutiny committees for example section 15 powers.	51 **Setting standards** Harmonising and setting standards for different stakeholders.	52 **Evaluating** Evaluating efficacy of activities or interventions to establish value for money and impact.	53 **Legislating** (Primary and Secondary) Supporting a bill through parliament and enacting legislation.	54 **Recovering** Recovering debt and other actions to address fraud and error.	55 **Protecting** Protecting consumer rights and supply-chain. Upholding of standards.	56 **Prosecuting** Powers to investigate and prosecute criminal offences e.g. Local Gov Act 1972.

Figure 3.1   Government as a system.

Note: Reproduced with permission from the UK PolicyLab.

in order to work together to achieve goals"); and the "anticipatory government" (that "explores scenarios and takes action today to actively shape tomorrow") (OECD, 2020). This transcends older dichotomies and suggests how public administration is in some places becoming increasingly permeable to outside input and long-term thinking.

All in all, new approaches and concepts are emerging in the field of public governance. Many are at an early stage, as are many of the initiatives in the stories presented throughout the handbook. Technology allowing, new democratic and governance innovations not covered here are yet to flourish, for instance, by voting and making decisions in smarter ways.[30] It is therefore difficult to tell conclusively whether these approaches and concepts are key in securing the role of CI in modern democracies. We do however seem to be in an ebullient phase of exploration.

There is still a lot we don't know

Despite the available evidence, the enthusiasm of many practitioners, and an abundance in methods and governance approaches, and while the positive effects of participation/deliberation on citizen engagement and increased public acceptance of policies have been studied, less attention has been given so far to the impact of CI methods on the quality of decisions. This is, arguably, a complex matter to research. As described in the Paolo Spada's chapter, empirical studies of the real-world effects of crowd-based approaches on the quality of decisions and on the participants remain relatively scarce.

Also, while the toolbox for policymakers inclined to foster CI is rich and expanding quickly (as suggested in Table 3.2), the study and practice of how to combine and sequence these approaches throughout the policy cycle is still limited. Hélène Landemore in *Open Democracy - Reinventing Popular Rule for the Twenty-First Century* seeks to provide an integrative perspective, which practitioners and students of politics and CI alike can build on to address this matter.

Furthermore, crowdsourcing policies may not work in all situations, as argued by University of Illinois professor Tanja Aitamurto (2016). Aitamurto observed, in a policy crowdsourcing process regarding Finnish off-road traffic law reform, how a large number of local crowdsourced inputs may not fit well with the need for the synthesis at a higher level of abstraction that is often the job of policymakers. She noted altogether ten differences in the logic of crowdsourcing and policymaking. This is a challenge addressed as well in the story told by Mark Klein in this book. Thankfully, CI is not limited to crowdsourcing, and crowdsourcing and other CI approaches invite us to rethink traditional policymaking limited to a small set of players.

When considering again the six functions outlined by Mulgan, scholars and practitioners of CI in public affairs may pay more attention to understanding how to nurture the observation, models, and memory functions, possibly creativity to a lesser extent, but less so to the functions of empathy and judgment. John Parkinson, commenting on the lack of satisfying deliberation mechanisms to prepare for the UK referendum on EU membership, argues more generally that we pay insufficient attention throughout the policy cycle – outside electoral campaigns – to what he calls "the political arts" (Parkinson, 2016). The political arts are the factors that psychologists, political communication scholars, specialists of business leadership, cultural theorists, linguists, neuroscientists, and rhetoricians say go into persuasion and the changing of minds: the staging and performance of events, the framing of issues and arguments, the way that the meaning of events is constructed by leaders, background discourses, and the constructive channeling of emotions.

Finally, building on the controversy between Cass Sunstein (2002) and others regarding groupthink dynamics, scholars have shown that "free discussion without rules led to group polarization in like-minded groups, whereas polarization could be avoided in groups with deliberative norms" (Strandberg et al., 2019). More broadly however, we need to understand better how to foster proper deliberation and avoid group polarization online and offline in the public arena as a whole, and not just in controlled mini-publics.

There are many other points deserving our attention. Overall, Nesta and the GovLab note that, "despite some successes, too often leaders do not know how to engage with the public efficiently to solve problems," and that knowing what institutional changes to make to develop new CI capabilities, and knowing "how to redesign the way public institutions make decisions, requires a much deeper and more nuanced understanding of when and how to use collective intelligence" (Ryan et al., 2020).

Hopefully, this handbook helps advance this critical conversation. Beyond what this book can contribute, we will need to continue researching the contribution that CI can make to foster change in government, in particular as new technologies, be they AI and bioethics, AI and predictive policing, or other new powerful tools keep offering new opportunities and presenting new risks to democratic societies everywhere (Lewandowsky et al., 2020).

Conclusion

Why put CI at the heart of politics? The answer may not have seemed obvious till now, considering how recent the interest in the matter is. Is it sufficient to note that public challenges require diverse forms of knowledge, and that harnessing the intelligence of many citizens is necessary to solve the hardest public problems? It is sufficient, in our view, to justify trying. Also, the rising complexity of problems and social pressures force us to explore the matter. When government as usual is no longer adequate, we need to develop new governance models that are smarter and, hopefully, more democratic.

This act of faith is corroborated by the abundant evidence found in this handbook and through the many directories of innovative public projects that can be found online. Today, all those wishing to act in the interest of the people, solve complex public problems, and develop adequate institutions to do so more effectively can benefit from the rich and evolving science of CI. Bearing in mind that, even if individuals within a community are willing to put their heads together to address common challenges, driving the systemic changes that such public challenges require remains very difficult in the face of real-world politics. This is why the science of CI must develop as an interdisciplinary field that brings together research from cognitive science, political science, computer science, sociology, social psychology, and many other disciplines, as we have sought to do in this handbook by calling upon a diversity of contributors. Just as the art of nurturing creative teams, designing innovative workspaces, or developing management practices based on CI principles has been cultivated in the private sector, so are we learning how the factors of CI can contribute in the public realm. At every step of the policymaking cycle, mobilizing CI well and ethically can serve policymakers and the people. Conversely, badly organized citizen engagement and decision-making processes can be counterproductive.

What needs to be stressed also is that CI in public affairs is not a mere teamwork. While politics is a team sport, not all forms of governance produce CI, and, in turn, not all "collectively intelligent" forms of governing produce solutions that are necessarily ethical and/or in the interest of the largest number of citizens. We explore in this handbook some of the

key factors that improve the ability of a decision-making system to produce better solutions. The specificity of politics however, relative to other human activities, lies in the importance of the normative nature of the decisions taken. It is thus inherent to the job of solving public problems that we need to combine the "procedural" dimension of CI (e.g. key conditions such as inclusion, diversity, collaboration methods, and intrinsic motivation), with adequate methodologies and technologies (be they online platforms, deliberative polling, or appreciative inquiry), and with ethical guidelines, noting that any of those principles and methodologies can be mobilized by any type of public authority, whether or not such authorities respect the core principles of freedom of speech and assembly, consent of the governed, the protection of minority rights and other central tenets of democracy. In our view, all the examples chosen for this handbook meet this standard.

We still lack systematic evidence on how politics can best be served at each point of the policy cycle by diverse forms of CI, fostered by different reforms of democratic institutions. As "considerable challenges remain to identify specific conditions facilitating reform and to pinpoint windows of opportunity," (Cerna, 2013) a key question for the near future will be whether the careful nurturing of CI increases the ability of policymakers not only to introduce better reform, but also how this in turn strengthens – or not – the performance of democracy and people's adherence to its principles. We are aware that the intentions of policymakers in the stories told in this book are not always explicitly stated. Taking steps to foster CI is well and good, but sharing transparently how external parties' input is treated is crucial to the long-term credibility and effectiveness of such processes.

Overall, the evidence is nevertheless there that our collective genius can develop smart solutions, from bagless vacuum cleaners to problems as tricky as protecting the ozone layer. While helping CI emerge in public affairs and democracy is very hard because of the conflictual nature of politics, it is precisely because that task is hard that we must explore – enthusiastically and rigorously – new and better ways to make government of, by, and for the people a reality.

Notes

1 The overall erosion of democracy over the past 15 years is apparent in the Economist Intelligence Unit's yearly Democracy Index while various surveys, such as the Pew Global Attitudes Survey, document people's increasing disaffection with representative democracy.
2 For systematic definitions of the terms used throughout the book, readers may revert to the definitions chapter.
3 Tables 1 and 2 borrow from Boucher, 2021b, pp. 13–14.
4 Quoted by Thomas Malone in his *Handbook of Collective Intelligence* (Malone 2015).
5 see also www.mackinac.org/OvertonWindow.
6 See the case study "Challenging Received Wisdom and Spreading Innovation: Lessons from the Youth Justice Board".
7 As compared to, for instance, the CI needed to design a space shuttle or a bagless vacuum cleaner, which are commonly seen as breakthroughs in human ingenuity. These are no small feats, but they only concern a very specific challenge and a very small part of people's lives. The rewards for innovation are relatively immediate in the private sector. The task is as a result comparatively easy as compared to the public sector.
8 Email correspondence, July 22, 2021.
9 Furthermore, the post-Locke tradition is very focused on "negative" freedom (of the "leave me alone" kind) as opposed to the "positive" or collective freedom of ancient Greek thinkers such as Aristotle.
10 It is worth noting here that these are all Western, post-Renaissance thinkers. Other, non-Western views of politics may be more consensus-based.

11 PISA is the OECD's Programme for International Student Assessment. It measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges.

12 Take, for instance, French President Emmanuel Macron's spokesman declaring on November 9, 2021 ahead of a possible 5th viral wave: "We face a hurdle which height we do not know at this point in time…".

13 Meeting for the "Air, Climate and Energy Plan" of the Brussels Region, October 2021.

14 Building a Shared vision; Systems Thinking; Mental Models; Team Learning; Personal Mastery.

15 H2020 project "Making innovation a consistent, reliable and strategic resource for governments" – https://cordis.europa.eu/project/id/870913

16 The OECD held a webinar on May 7, 2020: Public Sector Innovation and Covid-19, visible here: https://youtu.be/JkIhnK7qf-w.

17 Popular folklore is rich on this matter. Even in the academic world, it's interesting to note the editorial success of "number one international bestseller" (according to the book's cover) *The Psychology of Stupidity*, a book recently put together by French academics harping on this theme (and more provocatively titled *Psychologie de la Connerie en Politique* in French, see Marmion 2020). We also recommend *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* by James C. Scott (2020).

18 There is lots of data on the matter of trust, ranging from the Pew Worldwide Values survey, to the annual Edelman Trust Barometer. www.edelman.com/trust/2021-trust-barometer.

19 'Overloaded West Faces Crisis of Democracy - Global Times', accessed 11 February 2021, www.globaltimes.cn/page/202101/1211767.shtml.

20 Novel data sets of Chinese social media posts show that the voices questioning democracy are more pronounced there since 2013: "A Turbulent Decade: The Changes in Chinese Popular Attitudes toward Democracy." https://ash.harvard.edu/publications/turbulent-decade-changes-chinese-popular-attitudes-toward-democracy, accessed May 11, 2021.

21 See for instance the Spring 2020 Global Attitudes Survey, Pew Research Center. www.pewresearch.org/global/database/

22 While many French citizens are willing to consider more authoritarian forms of government, 90% of citizens still believe that democracy is "important" or "very important" according to a survey conducted by the Fondation Jean Jaurès in March 2019, which also showed support for other ways to strengthen democracy: https://jean-jaures.org/sites/default/files/redac/commun/productions/2019/0320/lobservatoire_de_la_democratie_mars_2019.pdf.

23 Spring 2020 Global Attitudes Survey, Pew Research Center. https://www.pewresearch.org/global/database/

24 Hélène Landemore defends five institutional principles as the foundations of an open democracy: participatory rights, deliberation, the majoritarian principle, democratic representation, and transparency.

25 The factors chosen resonate with other categorizations, for instance the six principles identified by the Laboratory of Aragón Open Government (LAAAB 2020), which authored the case about the Hexágono de la Innovación Pública: Open (open up public administrations); Trans (collaborate across disciplines, stakeholders, sectors); Fast (introduce agile dynamics and methodologies); Proto (foster an experimental culture focused on prototyping, piloting and MVP for rapid innovation); Co (all things "co": community, collaboration, co-creation, co-design, collective intelligence – embedded at all levels of government); Tech (IT and digitalization as a transversal element enabling all of the above).

26 Technology can help bring about new forms of CI. The case studies presented in this handbook arguably only provide examples of positive uses of technology, as in the case of crowdsourcing initiatives in the face of Covid-19. We are clear however that the additional brain power provided by machines can also expand the capacity of malevolent political regimes.

27 For those seeking more inspiration, there are countless new technologies, methods, and knowledge repositories being developed. To explore those further, we recommend the Civic Tech Field Guide (https://civictech.guide/author/mlsif/), Participedia (https://participedia.net), the Observatory of Public Sector Innovation (https://oecd-opsi.org), Latinno (www.latinno.net/en/), and NESTA's Trello board of collective intelligence tools (https://trello.com/b/vf3cXUVG/collective-intelligence-tools).

28 https://openpolicy.blog.gov.uk, accessed August 27, 2021.
29 https://openpolicy.blog.gov.uk/2020/03/06/introducing-a-government-as-a-system-toolkit/, accessed August 27, 2021.
30 We recommend to those interested in matters related to voting, judgment aggregation and the latest in social choice theory that they read Bovens et al. 2006; List 2012. For those interested in matters related to liquid democracy, we recommend Blum et al. 2016.

Bibliography

Aili, A. *et al.* (2020) 'Cumulative effects of triadic closure and homophily in social networks', *Science Advances*, 6. doi: 10.1126/sciadv.aax7310

Aitamurto, T. (2016) 'Collective intelligence in law reforms: when the logic of the crowds and the logic of policymaking collide', *49th Hawaii International Conference on System Sciences (HICSS)*, pp. 2780–2789. doi: 10.1109/HICSS.2016.349

Amabile, T.M. (1998) 'How to kill creativity', *Harvard Business Review*, 76(5), pp. 76–87.

Asikainen, A., Iñiguez, G., Ureña-Carrión, J., Kaski, K. and Kivelä, M. (2020) 'Cumulative effects of triadic closure and homophily in social networks', *Science Advances*, 6, N19. doi: 10.1126/sciadv.aax7310

Bason, C. and Carstensen, H.V. (2012) 'Powering collaborative policy innovation: Can innovation labs help?', *The Innovation Journal: The Public Sector Innovation Journal*, 17(1), pp. 3–4.

Baumgartner, F. and Jones, B. (1991) 'Agenda dynamics and policy sub-systems', *Journal of Politics*, 53(4), pp. 1044–1074.

Baumgartner, F. and Jones, B. (2009) *Agendas and Instability in American Politics*. 2nd edn. Chicago: University of Chicago Press.

Bennett, C. and Howlett, M. (1992) 'The lessons of learning: Reconciling theories of policy learning and policy change', *Policy Sciences*, 25, pp. 275–294.

Bennett, N. and Lemoine, J. (2014) 'What VUCA really means for you'. *Harvard Business Review*, 92, No. 1/2. Available at SSRN: https://ssrn.com/abstract=2389563

Bettis, R.A. and C.K. Prahalad (1995) 'The dominant logic: Retrospective and extension', *Strategic Management Journal*, 16(1), pp. 5–14. doi: 10.1002/smj.4250160104

Blondiaux, L. and Traïni, C. (2018) *La démocratie des émotions*, Paris: Les Presses de Sciences Po.

Blum, C. and Zuber, C.I. (2016) 'Liquid Democracy', *Journal of Political Philosophy*, 24, pp. 162–182. https://doi.org/10.1111/jopp.12065

Boston, J. (2016) *Governing for the Future: Designing Democratic Institutions for a Better Tomorrow*. Bingley: Emerald Group Publishing.

Boucher, S. (2021a) 'Age of stupid: How to (not) kill creativity in government', State as Catalyst: When Collective Intelligence is Placed at the Heart of Democracy. Available at: www.civichall.brussels/manifesto (Accessed: 12 November 2021).

Boucher, S. (2021b) 'Age of smart: Is the state equipped for troubled times?', State as Catalyst: When Collective Intelligence is Placed at the Heart of Democracy. Available at: www.civichall.brussels/manifesto (Accessed: 12 November 2021).

Bovens, L. and Rabinowicz, W. (2006) 'Democratic answers to complex questions – An epistemic perspective', *Synthese* 150, pp. 131–153. https://doi.org/10.1007/s11229-006-0005-1

Bryson, J.M., Crosby, B.C. and Bloomberg, L. (2014) 'Public Value Governance: Moving Beyond Traditional Public Administration and the New Public Management', *Public Administration Review*, 74, pp. 445–456. https://doi.org/10.1111/puar.12238

Cerna, J. (2013) 'The nature of policy change and implementation: A review of different theoretical approaches', OECD.

Colander, D. and Kupers, R. (2014) *Complexity and the Art of Public Policy: Solving Society's Problems from the Bottom Up*. Princeton University Press. ISBN: 978069116913

Colander, D., Roland Kupers (2016) *Complexity and the art of public policy: solving society's problems from the bottom up*. Princeton: Princeton University Press.

Csikszentmihalyi, M. (2013) *Creativity: The Psychology of Discovery and Invention*. New-York: Harper Perennial.

Dewey, J. (1927) *The Public and its problems*. Ohio: Ohio University Press.

'Divist' (2008)'The economist intelligence unit's index of democracy', The Economist, 2008. Available at: from: https://graphics.eiu.com/pdf/democracy%20index%202008.pdf (Accessed: 11 November 2021).

'Divist' (2020) 'Modelo HIP (Hexágono de Innovación Pública)', LAAAB 27 November. Available at: www.laaab.es/2020/11/modelo-hip/ (Accessed: 20 September 2021).

'Divest' (2021) 'India is now only "partly free" under Modi, says report', *BBC News India*, 3 March 2021. Available at: www.bbc.co.uk/news/world-asia-india-56249596 (Accessed: 11 November 2021).

European and World Values Survey, 'Global rise in share of citizens wishing for a strong leader "Who does not have to bother with elections"', Cited by Foa, R.S. Mounk, Y. (2017) 'The signs of deconsolidation', *Journal of Democracy*, 28(1).

Evans, M. (2009) 'Policy transfer in critical perspective', *Policy Studies*, 30(3), pp. 243–268. doi: 10.1080/01442870902863828

Evans, M. (2017) *Policy Transfer in Global Perspective*. 2nd edn. London: Taylor & Francis.

Finger, M. and Bürgin Brand, S. (1999) 'The concept of the "Learning Organization" applied to the transformation of the public sector: conceptual contributions for theory development', in Easterby-Smith, M., Burgoyne, J. and Araujo L. (eds.) *Organizational Learning and the Learning Organization: Developments in Theory and Practice*. London: Sage, pp. 130–156.

Fishkin, J. S. (2018) *Democracy when the people are thinking: Revitalizing our politics through public deliberation*. Oxford: Oxford University Press.

Fourquet, J. and Sibai, S. (2018) 'Les Français et le pouvoir', IFOP, 31 October 2018. Available at: www.ifop.com/publication/les-francais-et-le-pouvoir/ (Accessed: 11 November 2021).

Gladwell, M. (2006) *The Tipping Point: How Little Things Can Make a Big Difference*. New-York: Little, Brown and Company.

Graeber, D. (2015) *The Utopia of Rules: On Technology, Stupidity, and the Secret Joys of Bureaucracy*. Brooklin: Melville House.

Greener, I. (2002) 'Understanding NHS reform: The policy-transfer, social learning and path-dependency perspectives', *Governance*, 15(2), pp. 161–183.

Guéguen, D. (2021) *A Lobbyist*. Bruges: Die Keure.

Harris Interactive survey for LCI, Apr.29, 2021

Hartley, J. (2005) 'Innovation in governance and public services: Past and present', *Public Money and Management*, 25(1), pp. 27–34.

Heclo, H. (1974) *Social Policy in Britain and Sweden*. New Haven: Yale University Press.

Howe, J. (2006) 'The rise of crowdsourcing', *Wired Magazine,* June 2006. Available at: www.wired.com/wired/archive/14.06/crowds_pr.html (Accessed: 11 November 2021).

Israeli, O. (2020) *Complex Effects of International Relations: Intended and Unintended Consequences of Human Actions in Middle East Conflicts*. New York: State University of New York Press.

Johnson, P. (2005) *Habermas: Rescuing the Public Sphere*. London: Routledge. Doi: 10.4324/9780203020166

Lakoff, G. (2014) *The ALL NEW Don't Think of an Elephant!: Know Your Values and Frame the Debate*. Chelsea: Chelsea Green Publishing.

Landemore, H. (2008) 'Democratic Reason: the Mechanisms of Collective Intelligence in Politics', presentation given to the Collège de France, Available at www.college-de-france.fr/site/jon-elster/symposium-2008-05-23-10h00.htm (Accessed: 1 June 2021).

Landemore, H. (2012) *Democratic Reason: Politics, Collective Intelligence, and the Rule of the Many*. Princeton: Princeton University Press.

Landemore, H. (2020) *Open democracy - reinventing popular rule for the twenty-first century*. Princeton: Princeton University Press.

Lewandowsky, S. *et al.* (2020) *Technology and democracy: Understanding the influence of online technologies on political behaviour and decision-making*. Luxembourg: Publications Office of the European Union. doi: 10.2760/593478, JRC122023

List, C. (2012). The theory of judgment aggregation: an introductory review, *Synthese*, 187(1), 179–207. http://www.jstor.org/stable/41494956

Lu, H. and Page, S.E. (2001) 'Problem solving by heterogeneous agents', *Journal of Economic Theory*, 97(1), pp. 123–163. Doi: 10.1006/jeth.2000.2709.

Mackay, C. (1841) *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds, Volumes I, II and III*. London: Richard Bentley.

Malone, T. and Bernstein, M.S. (2015) *Handbook of collective intelligence*. Cambridge: MIT Press.

Marmion, J. (2020) *Psychologie de la Connerie en Politique*. Editions Sciences Humaines.

Mulgan, G. (2009) *The Art of Public Strategy.* Oxford: Oxford University Press.

Mulgan, G. (2019) *big mind: How Collective Intelligence Can Change Our World.* Princeton University Press.

Mulgan, G. (2020) 'Government as a brain: How can governments better understand, think, create and remember, and avoid the traps of collective stupidity', Bennett Institute for Public Policy, Cambridge, published online. Available at: www.bennettinstitute.cam.ac.uk/publications/bennett-2020/#PAPER1 (Accessed: 20 September 2021).

OECD (2020), *Embracing innovation in government - Global Trends 2020.*

Page, S. (2008) *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies.* Princeton: Princeton University Press.

Parkinson, J. (2016) 'Brexit, Deliberative Democracy, and the Unforced Force of the Better Argument', John Parkinson, 5 July 2016. Available at: https://johnrparkinson.wordpress.com/2016/07/05/brexit-deliberative-democracy-and-the-unforced-force-of-the-better-argument/ (Accessed: 10 July 2021)

Pew Research Center (2020) Global Attitudes Survey. www.pewresearch.org/global/database/

Pierson, P. (2000) 'Increasing returns, path dependence, and the study of politics', *The American Political Science Review*, 94(2), pp. 251–267. https://doi.org/10.2307/2586011

Pisano, G. and Verganti, R. (2008) 'Which Kind of Collaboration Is Right for You?', *Harvard Business Review.*

Pollitt, C. (2000) 'Institutional Amnesia: A Paradox of the 'Information Age'?', *Prometheus − Critical Studies in Innovation*, 18(1), pp. 5–16. doi: 10.1080/08109020050000627.

Pollitt, C. (2003) *The Essential Public Manager.* Buckingham: Open University Press.

Pollitt, Christopher. (2006) 'Performance information for democracy. Miss. Link?', *Evaluation: International Journal of Theory, Research and Practice*, 12, pp. 38–55.

Rauch, J. (1994) *Government's End: Why Washington Stopped Working.* New York: PublicAffairs.

Rosanvallon, P. (2021) *Les épreuves de la vie.* Paris: Le Seuil.

Ryan, M., Grambell, R. and Noveck, B. (2020) *Using Collective Intelligence to Solve Public Problems*, Nesta/The GovLab.

Scharpf, F. W. (1999) *Governing in Europe: Effective and democratic?* Oxford: Oxford University Press.

Schmidt, V. A. (2013) 'Democracy and legitimacy in the European Union revisited: Input, output and "throughput"', *Political Studies*, 61(1), pp. 2–22. doi: 10.1111/j.1467-9248.2012.00962.x

Scott, J. (2020) *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* New Haven: Yale University Press.

Senge, P.M. (1990) *The Fifth Discipline.* New York: Doubleday.

Senge, P.M. (2014) *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization.* Crown Business.

Shipan, C. and Volden, C. (2008) 'The mechanisms of policy diffusion', *American Journal of Political Science*, 52(4), pp. 840–857.

Strandberg, K., Himmelroos, S. and Grönlund, K. (2019) 'Do discussions in like-minded groups necessarily lead to more extreme opinions? Deliberative democracy and group polarization', *International Political Science Review*, 40(1), pp. 41–57. doi: 10.1177/0192512117692136.

Sunstein, C. (2002) 'The law of group polarization', *Journal of Political Philosophy*, 10(2), pp. 175–195.

Surel, Y. (2000) 'The role of cognitive and normative frames in policy-making', *Journal of European Public Policy*, 7(4), pp. 495–512. doi: 10.1080/13501760050165334.

Welzel, C. (2021) 'Why the future is democratic', *Journal of Democracy* 32(2), pp. 132–144.

Wen, W. (2021) 'Overloaded west faces crisis of democracy', *Global Times*, 4 January. Available at: www.globaltimes.cn/page/202101/1211767.shtml (Accessed 19 July 2021).

Wike, R. and Fetterolf, J. (2021) 'Global Public Opinion in an Era of Democratic Anxiety', Pew Research Center, 7 December. Available at: www.pewresearch.org/global/2021/12/07/global-public-opinion-in-an-era-of-democratic-anxiety/ (Accessed: 11 December 2021).

4

COLLECTIVE INTELLIGENCE AND GOVERNANCE

Imagining government as a shared brain

Sir Geoff Mulgan

Introduction

The early writings on collective intelligence said little about government. The theorists of the Internet imagined it as a collective exercise that was very much rooted in society, not the state, and in equality rather than hierarchy (despite the Internet's origins in two public agencies: Defense Advanced Research Projects Agency (DARPA) and European Organization for Nuclear Research (CERN). Writings on fields such as crowdsourcing and citizen science likewise emphasised bottom-up collaboration, sometimes with an explicit or implicit hope that these new forms of cooperation would somehow obviate the need for governments, particularly in works linked to the US traditions of libertarian thought.

Yet government is and was the most powerful, and sometimes dangerous, tool available for any society to harness its collective intelligence, solve problems and prepare for the future. No plausible picture of the next century can ignore government, and whenever serious crises hit, whether wars, financial shocks or pandemics, the central importance of government quickly becomes clear.

I have been interested in the links between **government** and **collective intelligence** for several decades, from running strategy teams in governments where we tried to tap into citizen intelligence as well as formal evidence and data; then through work in Australia in the 2000s linking collective intelligence to **social innovation** and government; and then in the 2010s through work with individual governments and the United Nations, using collective intelligence methods to accelerate progress on the **Sustainable Development Goals**.

In this chapter, I share perspectives on how to think of government as part of societal collective intelligence – making it more like a **shared brain** that can combine observation, prediction, judgement, creativity and imagination in the way that individual brains do. Seeing governance through the lens of collective intelligence encourages a focus on issues such as how to mobilise data and citizen insights; how to open up problem solving far beyond traditional bureaucracies; and how to embed rapid learning from those involved in and affected by policies. These are in many ways radically different approaches to traditional public administration and they are still very rare in most governments. They have only

become technically feasible very recently. But they open up ways for governments to become much better servants of society, and more capable at dealing with big tasks and challenges.

Background

The idea of **government as a brain** is very old. The earliest symbol of governance, the Sumerian symbol of the ruler, was the rod and line – a symbol of a surveyor not a warrior: analytical, cognitive and controlling. And for millennia government was often imagined as a head, with the ruler's head put on coins.

But we know little about what could be called the neuroscience of the state or, more broadly, the science of how government thinks. How does it remember or forget? How does it create? Does it suffer delusions and fantasies? What makes some governments amplify the intelligence of their society while others do the opposite? To answer these questions, we can usefully draw on recent understandings of intelligence in the brain. Our understanding of the individual brain has been transformed over the last generation, from an assumption that it contained a single source of decision-making, a control centre, towards seeing it as a distributed system of multiple modules, effectively voting on what to do and how to interpret a signal. In other words, individual intelligence turns out to be a lot more like collective intelligence than used to be understood.

This transformed metaphor for intelligence at the individual level is also helpful for thinking of how governments work since although they appear to have a tight hierarchical structure, with a President, Prime Minister or Mayor at the top, in reality they are also less like a formal hierarchy and more like a flotilla of different departments, agencies and interests, with varying powers to act or block action by others. It becomes even more relevant if we recognise that governments are embedded in their societies and economies, dependent on flows of information and influence, with the most democratic also being most embedded, without any clear external boundary to the state.

Government as intelligence

The next useful starting point is to look at how governments think: how do they observe, analyse, predict, remember and create in order to guide their actions. In my book ***Big Mind***, I showed that all forms of collective intelligence can be analysed in terms of their capacity to undertake these core functions of intelligence, and then in terms of how they organise a series of loops which either use new data to make decisions, or in some cases generate new categories, or in some cases lead to the creation of new models of cognition.

As I will show, the application of collective intelligence methods to the practical work of government helps them to become more open, engaged and hungry for information, insights and ideas from any source.

So we start, first, with **observation** as the foundation of government intelligence. From the Domesday book – which recorded the 'Great Survey' of much of England and parts of Wales completed in 1086 – to the 18th-century pioneers of statistics to intelligence agencies today, this has been core to how governments work, and coronavirus disease (COVID-19) has reinforced how vital it is to observe the right things – with some governments incredibly energetic in testing and tracking, and others wholly lax. Taiwan's 'digital fences' and Singapore's use of mobile phone data to trace contacts show just how helpful the right kinds of observation can be.[1] In India, for example, mass serological testing (done outside

government) showed far higher levels of past infection than the government realised, while testing of sewage provided a novel measure of infection rates.

What government observes changes over time, with isolation and loneliness being a good example that in the recent past was not measured at all, but is now seen as hugely important to physical and mental health. But in parallel, how governments observe changes too, for example, now with scraping the web or using images from microsatellites.

Just as citizen science has started to transform science by bringing in new sources of observation, so is something similar potentially happening to governments, as citizens' own observations are gathered as a real-time complement to the classic methods of surveys and statistical offices.

Second, **models** – a big lesson of recent neuroscience is that models precede observations; they determine what we see as well as what sense we make of it. So the mark of smart government is that it has many models, and constantly refines and improves them. Again COVID-19 has reemphasised this. It saw the use of hundreds of epidemiological and economic models but also showed the risks of over-dependence on single models to make predictions. As Scott Page put it in his brilliant book *Model Thinking*, for any complex phenomenon we need many models that can challenge each other, including in this case not only epidemiological ones but also economic and social ones.

Third, **creativity** – COVID-19 prompted an extraordinary acceleration of innovation, from India turning 10,000 train carriages into ambulances; Bogota quintupling bike lanes; Rwanda introducing hand sanitisers in urban centres; and extraordinary efforts to accelerate production of ventilators or development of vaccines. The rapid adoption of digital learning in schools and universities across the world happened alongside rapid innovation in welfare and income support. In much of business innovation and research and development (R&D) are serious activities, with big investments of money and time. Governments are far less systematic and even in the best cases innovation is piecemeal, ignored in public finance and rarely linked to strategic priorities like solving the care crisis. The UAE remains the only government with a significant budget allocation for its own R&D. Some public agencies – like National Aeronautics and Space Administration (NASA) – have embraced collective intelligence, opening up innovation tasks like designing space suits or writing code to anyone anywhere, they are very much the exception.

The most radical uses of collective intelligence methods open up this kind of innovation so that it is part of the operation of public services rather than the exception: for example, encouraging schools to test and experiment with new teaching methods, or using test beds and living laboratories to explore new models of welfare or care for the elderly.

Fourth, **memory**, one justification for a permanent civil service. This used to be organised in files of all kinds. One odd effect of digitisation is that in some governments it appears to have led to a deterioration in memory. However, a counter trend is to externalise memory, notably through the dozen or so What Works Centres that act as a common store of memory for fields like healthcare, policing, education and children's social services. I have recently helped run the International Public Policy Observatory for COVID, which links over 100 countries to synthesise evidence and experience in real time, one example of many that are attempting to organise knowledge at a global scale.[2]

Fifth, **empathy**. Robert MacNamara, once the boss of Ford, the Pentagon and the World Bank, commented that the lack of empathy – the ability to feel and see from the perspective of another country or people, whether a villager in Vietnam or an unemployed 55-year-old, often lay behind the biggest failings of governments. Empathy can be organised deliberately,

for example, by getting civil servants out and about, engaging beneficiaries in the design of policies and ensuring listening to lived experience. I've long advocated triangulation: that civil servants and advisers should never believe anything the system claims unless it has been checked first-hand, in a local school, business or GP's surgery. Sitting in an office and relying on papers and emails, unfortunately, guarantee a distorted view of reality.

Finally, there is **judgement and wisdom** – which, as in other fields, draws on experience, ethical sensitivity and the ability to take a long view, and is often best cultivated by being quite explicit about what you expect to happen and then having open ways to assess why things turn out differently.

This very cursory description of the core functions of intelligence provides a starting point for understanding government as a system for thought and action. It also provides a diagnostic framework as well as a way for thinking about how new data tools or AI can be applied. There are of course many other aspects to government cognition – the types of learning that are vital; the ability to repel and confront misinformation or to resist groupthink, particularly at the centre of government where there are the biggest risks of error due to lack of sleep, the delusions of spin and sycophancy. Four key issues follow on immediately.

1. Open or closed?

The first is whether these intelligences are open or closed, shared with the wider society or hoarded within government, or within the higher levels of hierarchy in government. Hoarding was certainly the traditional approach. Intelligence was a scarce resource and had to be guarded carefully. But over the last century much innovation in governance has opened it out. Statistics and data are increasingly open and shared, with machine readable code. Interpretations and models are open. Policy deliberation can be opened up too, including through the use of democratic innovations like Citizens Assemblies.

2. Assemblies or silos?

A second issue is connectivity. A vital lesson from any analysis of intelligence is that – as with the human brain – the elements of intelligence work best if linked together, in real time. This kind of 'intelligence assembly', which we take for granted in our personal lives, will be critical for the future of government. COVID-19 has forced faster action to create such assemblies (connecting multiple data sets) and in time comparable arrangements will be needed for other much slower burn crises like climate change or ageing – linking observation, models, memory and creativity in coherent ways that help the system as a whole to think.

3. Evidence and impact

A crucial aspect of applying new intelligence methods to government is feedback. This is part of the justification for innovations in democracy, such as citizen engagement on platforms like vTaiwan, participatory budgeting or citizen score cards. It also relates to the more systematic gathering of evidence on outcomes achieved, and its use in the allocation of resources and setting policy priorities. A recent paper sets out how finance could be reformed in the future to make the most of data and intelligence on long-term results.[3]

4. Strategy and collective intelligence

A fourth point is the relationship between **collective intelligence** and **strategy**. I became interested in government's thought processes through a career that included spells in local government and the European Commission, and then in the UK Prime Minister's office. A first attempt to apply these ideas came with setting up the Social Exclusion Unit. To develop better solutions for poverty and social exclusion we created mixed teams of insiders and outsiders, working on very clearly defined problems, and using cross-cutting policy, budgets, data and implementation teams to achieve targets like cutting homeless rough sleeping by two-thirds, halving teenage pregnancy and reducing the gap between poorest neighbourhoods and the average (perhaps surprisingly, all of these targets were met). The people most affected by issues were involved in policy design – and sometimes asked to present directly to Cabinet (e.g. young people on deprived housing estates or the homeless).

The Strategy Unit which I oversaw provided a similar capacity for problem solving and longer-term thinking across all areas of policy, again linking the core functions of intelligence mentioned earlier. There was to be explicit use of evidence (published at the beginning of projects); gathering of data; open processes; mixed teams of civil servants and outsiders, experts and generalists; and active use of methods like red teams and scenarios and formal modelling. One of our best innovations was anonymised exercises to get the true beliefs of the top ministers and civil servants to surface what they thought but couldn't say. Another project helped put in place a comprehensive system for managing risk – including the framework that identified pandemics as the UK's top risk – which, again, involved linking observations of possible threats, analysis, prediction, memory and judgement.

The guiding principle was to understand government as a system of cognition, and one that is constantly in a struggle not to be deceived, diverted and deluded, and wherever possible to democratise strategy, so that more of the work of analysis, assessment and policy creation was opened up to the vast majority of citizens who are not directly employed by the state, both to improve its quality and to enhance trust in democracy.

Within governments multiple different ways of thinking combine and collide. They include three types of thought that Aristotle described: ***techne*** – the practical knowledge on how to build a hospital in a week or distribute emergency loans, which is closest to engineering; ***episteme*** – the more analytic knowledge of macroeconomics, or evidence on what works, or the modelling of pandemics, closer to what we call science; and ***phronesis*** – the practical wisdom that comes from experience, and includes an ethical sense and an understanding of contexts.

They also include the kinds of knowledge owned by different professions within government which form part of governments' ability to think:

- Statistical knowledge (e.g. unemployment rises in the crisis);
- Policy knowledge (e.g. what works in stimulus packages);
- Scientific knowledge (e.g. antibody testing);
- Disciplinary knowledge (e.g. from sociology or psychology on patterns of community cohesion);
- Professional knowledge (e.g. on treatment options);
- Public opinion (e.g. quantitative poll data and qualitative data);
- Practitioner views and insights (e.g. police experience in handling breaches of the new rules);
- Political knowledge (e.g. when parliament might revolt);

- Legal knowledge (e.g. on what actions might be subject to judicial review or breach Human Rights Conventions);
- Implementation knowledge (e.g. understanding the capabilities of different parts of government to perform different tasks);
- Economic knowledge (e.g. on which sectors are likely to contract most);
- 'Classic' intelligence (e.g. on how global organised crime might be exploiting the crisis);
- Ethical knowledge about what's right (e.g. on vaccinating children who may have relatively little risk from a disease);
- Technical and engineering knowledge (e.g. on how to design an effective tracing system or build a new high-speed rail line);
- Future knowledge (foresight, simulations and scenarios, for example, about the recovery of city centres);
- Knowledge from lived experience (the testimony and experiences of citizens, usually shared as stories, for example, about experiences of the pandemic).

None of this knowledge is monopolised within government. Much of it is increasingly organised in varied forms of collective intelligence, influenced by civil society, media, academia and business. Moreover, within government there is no monopoly of authority and no meta-theory to tell which you should pay most attention to at which time. Faced by an epidemic it's wise to lean on your scientists – but they can't tell you whether it will turn out to be socially acceptable to ban human contact, close the schools or arrest people for leaving exclusion zones, and in most cases the different types of knowledge will point in conflicting directions.

So any government badly needs the integrative intelligence of *phronesis*, or wisdom. That means being fluent in many frameworks and models and having the experience and judgement to apply the right ones, or combine them, to fit the context.

Yet this kind of wisdom is scarce at the best of times. Leaders with backgrounds in law, journalism or economics may have little sense of neighbouring disciplines and the same may be true of civil servants. Most of this training is poorly suited to today's problems like pandemics or climate change or regulation of global financial markets, which instead require familiarity with systems thinking and complexity, science and psychology. Moreover, few have learnt how to work with external collective intelligence – how to mobilise information, ideas and insights from the public.

So, for government to work well as a brain, it needs not only the infrastructures and systems described above, but also people prepared with a new curriculum that's better suited to the tasks they'll face, a curriculum that helps them how to use, question and synthesise multiple kinds of insight, models and knowledge, and that gives them a feel for how complex and dynamic systems behave in practice.

The United Nations Development Programme (UNDP) and collective intelligence

Collective intelligence methods have been experimented with by many governments, from Taiwan to Bangladesh, though they remain more unfamiliar in some. They have also been used in cities, for example, in Milan, Helsinki or Barcelona, to guide planning and the allocation of resources. In recent years the **UNDP** has been an energetic advocate of their use as a new approach to governance, particularly through the new Accelerator Labs set up in 2019–2020 in over 100 countries to speed up innovation around the SDGs. A recent report

provides a series of case studies and analysis of how different collective intelligence methods could be used.[4] For governance and accountability, it highlights methods such as eye-witness video and crowd-mapping which are being used to document violence or human rights abuses, with a view to holding perpetrators to account. There are many examples of governments crowdsourcing ideas and opinions from citizens during policy making, as well as citizens generating new forms of data to monitor policy implementation. The report describes the use of collective intelligence methods to anticipate, monitor and adapt to systemic risks, including real-time monitoring of the environment (e.g. deforestation and air quality), helping organisations to improve their capacity for early warning, monitoring and response to natural disasters, conflict and epidemics. These include working with on-the-ground volunteers to provide data about emerging issues, or with crowdmappers to capture location information for crisis preparedness. Others combine data sets, including web-scraped social media data, for real-time public health surveillance, or ask large groups of people to forecast geopolitical events. One interesting aspect of this work is the growing number of cases that combine artificial and collective intelligence together, whether for monitoring or problem-solving.

The UNDP work is a pointer to a future model of government and public administration that puts a much greater emphasis on the mobilisation and deployment of knowledge and data of all kinds, with the orchestration of collective intelligence brought into the core of how government works.

Conclusions

Most governments throughout history were designed with an assumption that intelligence should be hoarded and kept internal. The practice and mentality of collective intelligence turns this on its head, emphasising shared intelligence of all kinds, and around the world there are many impressive attempts to mobilise collective intelligence of all kinds – like vTaiwan involving millions in decision-making, the widespread use of experiments in countries like Canada and Finland, the open data movement, the evidence movement and the creation of large-scale societal platforms like India's Aadhaar project and its spin-offs.

Although these remain relatively marginal, it's not too hard to describe a more ideal kind of government: one that attends to the various elements of intelligence it needs, from observation to empathy to prediction; that links them together in intelligence assemblies for all the tasks that matter most; and that is led by officials and politicians with sufficient integrative skills that they can make sense of complex systems and the messages that come from very different ways of seeing and knowing.

COVID-19 has shown once again just how utterly dependent we are on the quality of government. Improving its ability to think, act and learn, and make the most of collective intelligence in all its forms is probably the greatest meta-task of our times, vital not only for the pandemic but also for the big tasks ahead. COVID-19 has been a horrible shock and a horrible test for governments. But one of its legacies may be to remind us that government is, and should be, quite like a brain, and that on balance it would be better to have one that isn't trapped in delusions but is able to face up to the world as it is, and then change it for the better.

Notes

1 We will increasingly need new arrangements to govern that data, some of the options for which are explored here: www.nesta.org.uk/blog/new–ecosystem–trust/
2 www.covidandsociety.com
3 This paper on 'Anticipatory Public Budgeting' sets out the key ideas: https://gic.mbrcgi.gov.ae/storage/post/f6bTTIppsLhLElDnEVTTTRm36I3t70HP4rY722t0.pdf
4 https://acceleratorlabs.undp.org/content/acceleratorlabs/en/home/UNDP-AcceleratorLabs-Nesta-CollectiveIntelligence-Design-Innovation-Data-Technology-SustainableDevelopment-SmarterTogether-Report-Event-Launch.html

MEASURING THE EFFECT OF COLLECTIVE INTELLIGENCE PROCESSES THAT LEVERAGE PARTICIPATION AND DELIBERATION

Paolo Spada and Lex Paulson

Introduction[1]

Harnessing collective intelligence for public good requires an effective method to bring people together, elicit their participation, and synthesize their contributions. Some of these methods, like open-innovation contests, aggregate the contributions of many individuals without obliging them to interact; other methods, like citizens' assemblies (CAs), ask group members to deliberate over which options may be best.

In recent decades many definitions have emerged for collective intelligence, participation and deliberation, with more or less extensive boundaries. For some, "collective intelligence" is a superset that includes participation and deliberation; for others, "participatory processes" is the superset encompassing all others. Providing a taxonomy and a more precise analysis of the intersections and relationships of these three categories of processes is beyond the scope of this chapter. For our purposes, what is important is to note the significant overlap of these three categories of processes, and to propose that the nascent field of collective intelligence can benefit from decades of work in the social sciences on the impact of participatory and deliberative processes (henceforth "PDPs"). In what follows, we seek to give an overview of the empirical literature on the effects of PDPs, offering scholars and practitioners of collective intelligence a guided tour of this large and growing body of work.

Given the gargantuan amount of scholarship on participation and deliberation, the present chapter seeks to give an initial primer on what we consider the main topics present in the literature. For the same reason, the literature included here should not be seen as exhausting all the themes in this vast field, and instead should be interpreted more as a "guided tour" rooted in a years-long struggle to break down conceptual silos in this field. Biases and omissions will

inevitably arise, due to our own blind spots, but we hope it will prove useful both to those readers that approach the topic of evaluating collective intelligence processes for the first time, as well as specialists interested in an interdisciplinary approach.

A brief genealogy of participatory and deliberative processes

Modern PDPs have multiple progenitors in a variety of fields and policy domains. Defining these processes is quite complex, with boundaries that are often blurred, and with different disciplines highlighting different characteristics of deliberation and participation (Reed, 2008; Elstub and Gagnon, 2015; Florida, 2017). Using the flexible and ecumenical language of democratic goods introduced by Saward (2003) and popularized by Smith (2009), "participatory" approaches to citizen engagement tend to promote more popular control, that is, providing citizens actual control over the outcomes of a process, while "deliberative" methods, instead, focus on fostering considered judgment, that is, giving the participants a framework to consider all possible options and points of view. Thus, participatory approaches include national "direct democracy" devices such as referenda and local participatory governance devices such as participatory budgeting (PB), while deliberative approaches include devices such as Deliberative Polls, CAs, Citizens' Juries, and a variety of practices that promote considered judgment within organizations.

Both participatory and deliberative approaches aim to include citizens in public decisions in new ways. Some processes seek to involve as many citizens as possible, while other processes focus on mechanisms of representation or sortition to make policy choices more legitimate and allow for more intense deliberation only achievable in smaller groups. Both approaches have been applied to a variety of complex problems, from new methods of taking decisions in a private organization to city budget allocation and multinational discussions.

Nevertheless, the participatory and deliberative approaches have often been in tension. Large-scale participation makes high-quality deliberation more difficult. Such tension has been explored at length by political theorists (see Cohen and Fung, 2004; Lafont, 2015). For our purposes, both approaches rely on the empirical benefits of using collective intelligence to address public problems. Therefore, in what follows we explore the literature on impact evaluation of PDPs to draw lessons on how to evaluate the use of collective intelligence for public good.

Different social sciences, from social psychology to pedagogy, have proposed methods to evaluate PDPs since their inception. In the 1940s, Lewin, often considered the founding father of social psychology, piloted approaches to planned organizational change leveraging a sequence of steps involving participatory decision-making and scientific evaluation (Lewin, 1948). Freire, one of the founding fathers of critical pedagogy, piloted processes of participatory pedagogy and participatory action research that linked practice and evaluation (Freire and Ramos, 1970). In the 1980s, Chambers and Korten systematized more than a decade of approaches to the inclusion of farmers in the development of interventions and rural appraisals generating the academic basis of participatory development (Chambers, 1994; Chambers, 1997; Korten, 1980). In political science and sociology, some scholars trace the emergence of a "participatory turn" in the scholarship on democracy starting in the 1960s (Bherer, 2016).

Regardless of when this paradigm shift took place, fields as diverse as theater, architecture, geography, economics, healthcare, public administration, technology studies, computer science, and management have now explored participatory and deliberative methods of problem-solving. A comparative history of each of these disciplines' approach to PDPs is

long overdue, but is beyond the scope of this chapter. In what follows we will primarily draw examples from political science, economics, and psychology.

For many years, the effects of collective participation and deliberation have been studied with very limited cross-fertilization among the fields concerned. The results have been overlapping jargon and learnings kept in siloes. The proliferation of names for substantially identical processes is one of the legacies of this compartmentalization: projects such as Participedia[2] still struggle with this "tower of Babel" as they seek to provide coherent global maps of participatory and deliberative processes.

A more general systematization began to emerge only in the mid-1990s, propelled, in our opinion, by four factors.

First, the collapse of the Eastern bloc made the study of these collaborative processes less politically contentious, given that communist states had used the rhetoric of participation and collectivism extensively. Second, the emerging crisis of representative democracy and traditional forms of civic participation generated a need for progressive organizations and parties to experiment with novel participatory and deliberative strategies. PB, for example, was developed in Brazil by a coalition of progressive social movements and the Workers' Party as a tool combining the Latin American tradition of participation rooted in the radical left with a clear support for democracy and a modern neoliberal language of good governance, a strategy whose goal was attracting the votes of a broader set of the population (Gret and Sintomer, 2005). PB was just one of the tools of this repositioning strategy that propelled the party to the forefront of Brazilian politics for more than a decade and enabled significant transformations achieving, among other things, significant decreases in poverty and economic inequality.

The proliferation of deliberative experimentation in the global North was similarly propelled by progressive organizations, such as the Kettering Foundation in North America, as a tool to reinvigorate democracy.[3] "Third way" political parties also promoted dialogue-based solutions to social conflict and eschewed more traditional confrontational strategies (Giddens, 1998). While some of these new pilots were tokenistic – more designed to support a partisan communication campaign or an academic publication than to generate significant political transformation – the new vocabulary of participation and deliberation began to enter the mainstream (Davidson and Elstub, 2014). The result was a period of political experimentation that paved the way for the current "deliberative wave" (OECD, 2020).

Third, the failures of liberal models of economic and social development, exemplified by the Asian crises of 1997, pushed the repositioning of international aid organizations such as the World Bank, the International Monetary fund (IMF), and state donors such as the United States Agency for International Development (USAID) to invest more in "participatory development" approaches (Jennings, 2000; Rowden and Irama, 2004; Mansuri and Rao, 2013).

Lastly, the increasing number of pilots and case studies around the world had finally made a more systematic research agenda possible. Pioneers of the field of deliberation in the US, Germany, and Denmark had created well-structured and easily reproducible pilot processes such as Deliberative Polls, Citizens' Juries and Consensus Conferences in the 1970s and 1980s, yielding an expanding set of case studies on what we now call "minipublics" (Ryan and Smith, 2014). Psychologists developed an entire sub-field focused on group decision-making, highlighting the relative strengths of various processes and methods (Seibold and Meyers, 1996), and economists were developing a sub-field on the "management of commons" (Olstrom, 1990). Development scholars were revolutionizing the

field by systematizing action research and bottom-up approaches (Cornwall and Scoones, 2022). Community-driven development (CDD) projects, such as PB processes in Brazil and Participatory Councils in Kerala, India, boasted over a decade of experiences and case studies for systematic review (Abers, 2000; Parayil, 2000). Political philosophers call this emergence of a more systematic analysis "the empirical turn in deliberative democracy" (Elstub and Gagnon, 2015).

The instruments of evaluation developed for this vast array of more-or-less "academic" PDPs came to include case studies, lab and field experiments, surveys of stakeholders, surveys of the general public, and observations of participants that could be easily reproduced. Earlier empirical investigations of PDPs often analyzed participatory processes using in-depth intensive ethnographic work and critical methods that were less amenable to systematization.[4]

Strengthening the dialogue between the two "epistemic souls" of participatory and deliberative methods is a challenge that can bear important fruit. We do not propose a novel combination of these approaches; rather, we aim to dispel certain misconceptions and oversimplifications that bedevil scholars in each field, and suggest parallel research designs that could explore the same research questions from a combination of these two perspectives.

PDPs: Three dimensions of effects

There are a variety of ways to systematically reorganize the literature on PDP effects in thematically homogeneous clusters. Most authors writing within the boundaries of a specific discipline focus on dimensions of effects that relate to specific research questions derived from theoretical approaches that are at the core of such discipline. For example, Geissel (2012) divides the literature on the impact of PDPs in democracy studies into four families of effects:

(1) Input legitimacy (the ability to include citizens and to increase the perception of legitimacy);
(2) Democratic process (the ability to increase the quality of democracy and of deliberation in particular);
(3) Effectiveness (the ability to identify collective goals and promote their achievement);
(4) Civic education (the ability to support acquisition of skills and knowledge).

These families are chosen because they reflect a large body of scholarship within the democratic innovations field.

In this chapter we seek to generate insights for the field of collective intelligence by reorganizing the literature on PDPs, leveraging a more interdisciplinary approach. Instead of starting from thematic research questions, we focus instead on the level of magnification of the researcher's perspective and the required data-collection strategies.

In what follows we will analyze three dimensions:

(1) Effects that can be captured when analyzing the level of **individual participants** (e.g., civic knowledge and skills);
(2) Effects that require investigating **group-level metrics** (e.g., quality of deliberation or group polarization);
(3) Effects on **society as a whole**, beyond the citizens that participated directly (e.g., knowledge transmission effects, social welfare, effects on institutions and policies).

Methodologically, the unit of analysis of each of the three dimensions will be the individual, the group, and the organization/institution/system adopting the process, each generating different types of problems that a research design needs to solve.

Sometimes primary data at the group or societal level is not available (e.g., metrics of local government responsiveness), and thus researchers in this field have commonly used mediated information at the individual level, asking experts, participants, and the public on a set of research questions. In what follows we will categorize the latter approach as investigating group/societal level units of analysis, even if the data-collection strategy is based on individual-level surveys.

We do not claim any absolute superiority of our clustering approach over any other in the literature.[5] Each approach has advantages and disadvantages. Our aim is to promote interdisciplinary dialogue while taking into account the specificity of the research questions at each of these three levels.

All clustering endeavors should be taken with precaution, since they are based on "ideal types" that divide the literature artificially for pedagogic purposes. In our case, many studies will work on multiple dimensions, tracing, for example, the impact of a PDP on indicators of both individual and group performance. Effects at different levels are often interlinked: for example, the impact of a PDP on an individual's critical thinking abilities will affect the group-level capacity to forecast policy outcomes. Thus, our pedagogical division should not be considered as a recommendation for isolated research designs.

Inevitably, experts of a given discipline, such as psychology or political science or economics, will find gaps in our coverage of their areas of expertise. We hope nevertheless that the benefits of increased dialogue among disciplines will compensate for our inevitable simplifications. One of the crucial limits of the current state of the literature on the impact of PDPs is precisely this lack of dialogue: instead of recognizing each other's specific advantages, scholars too often attempt to reinvent "in-house" entire fields while ignoring decades of studies outside their immediate domains. We hope that the reader will forgive us our simplifications and appreciate the spirit of this chapter as an attempt at a more ecumenical approach to collective intelligence studies.

Before delving into the analysis of these three dimensions of effects, we highlight a fourth dimension that is often used in models of impact evaluation. These models, especially common in nongovernmental organizations (NGOs) and international organizations' reports, assume a simplistic linear relationship between the environment, the PDP, and its effects (see Figure 5.1).

Such a model does not account for feedback loops and is most appropriate for describing a laboratory experiment in which inputs and processes can be fully controlled by the researcher, rather than being endogenously generated by a complex sociopolitical system.
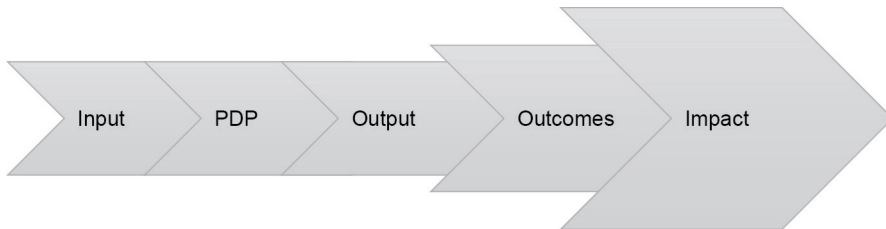

Figure 5.1 A simple linear model of a Participatory/Deliberative Process (PDP).

Linear models are rarely able to problematize of the relationship between the design of a participatory or deliberative process and the process as it actually unfolds. The distance between process design and its effects is represented by a temporal sequence. In such models, the immediate effects that can be automatically expected if the process is implemented as designed are described as "outputs." For example, the immediate "output" of a deliberative mini-public could be to generate, rank, and justify a number of ideas of reform of an electoral system. In this sequence, outputs lead to intermediate "outcomes" and longer-term "impacts" that are progressively wider in scope and reach. Continuing the example, an outcome of the mini-public could be that the media publicizes the result of the mini-public, and an impact could be that a proposal to change the electoral system is approved by the parliament.

In this chapter, we purposely *avoid* the distinction between inputs, outputs, outcomes, and impacts. We do so because, following modern policy evaluation scholarship (Cairney, 2019), we ascribe to a more complex sociopolitical interpretation of PDPs that cannot be represented by the simplistic linear model described in Figure 5.1. In part, this is due in part to the difficulty of distinguishing these categories in practice, and in part because they interpreted so variously by different disciplines that they become more of a hindrance than a support.

Notwithstanding its limitations, the linear model retains its relevance for pedagogic purposes to remind us in a simple way of the distinction between the design of the process and its actual effects. Keeping in mind how close an effect is to the design will help us create testable hypotheses regarding a set of average minimum effects for such a category of PDPs, and will prevent us falling into common pitfalls of attributing too much importance to the design without sufficiently considering moderating factors. Moreover, analyzing critically the temporal dimension of the effects reminds us to pay attention to their long-term stability. For example, when looking at PDPs that include significant framing and priming components, the results we might find in surveys deployed immediately after the process might be temporary (e.g., self-reported increases in personal efficacy). Another cross-cutting dimension to consider when analyzing the effects of PDPs, therefore, is to think about the "more-or-less automatic effects" of the design that are *least* likely to be affected by local conditions and social or political constraints before and after the process is enacted.

In what follows we will continue to use the generic word "effects," instead of distinguishing between outputs, outcomes, and impacts. We will also highlight the temporal dimension, scope, and nature of each effect and its "distance" from the design of the process. For readers interested in the critical analysis of the idea of design and the transferability of PDPs, we recommend the classic studies on policy diffusion in public policy (Shipan and Volden, 2008; Gilardi and Wasserfallen, 2019), as well as the excellent work on the diffusion of PB that has tackled the issue more systematically (Ganuza and Baiocchi, 2012; Porto De Olivera, 2020).

Effects of collective intelligence processes on individuals

The study of the effect of civic participation on individual citizens has a long tradition. In his *Politics* and *Nicomachean Ethics*, Aristotle argues that every living creature is designed by nature to achieve a τέλος (*telos*), a kind of fulfillment of potential unique to that kind of creature. The nature of that *telos* can be divined by how that creature naturally develops when it has the resources necessary to flourish. Based on observations of 150 human societies and a range of animal species, Aristotle proposed that what humans do most naturally and uniquely is form communities and talk. By reasoning in public in a certain way – prudently,

moderately, with justice and courage – humans can achieve εὐδαιμονία (*eudaimonia*), literally "a well-being of spirit" (*Ethics*, Book 1). More recently, researchers such as Tomasello and Henrich have traced the mechanisms of shared intentionality and social reasoning that enable our unique modes of collaboration, and derive meaning and happiness therefrom (Tomasello, 2019; Henrich, 2015). Interestingly, contemporary social science has gone a long way toward proving Aristotle's hypothesis correct – that collaboration is beneficial for *Homo sapiens* in a way that goes beyond whether we accomplish a given task.

Applying this "eudaimonic" lens onto collective intelligence suggests a first set of questions that explore whether as a result of participating in a given civic process, a person (i) is more knowledgeable, (ii) has different attitudes or preferences (trust, empathy, or personal efficacy), (iii) is more likely to adopt certain civic or pro-social behaviors (voting, donations, tax compliance, or participation in subsequent initiatives), or (iv) has developed their cognitive abilities (critical and probabilistic thinking, communication skills, and so on). There are numerous other potential effects on individuals' attitudes, emotions, and skills (e.g., does participation promote happiness? does it enable personal development?), so the following analysis should not be taken as a complete taxonomy of all possible effects. It is also important to keep in mind that our stark categorization has been designed for pedagogical purposes. Most studies focus on a variety of individual effects of deliberative and participatory processes and thus could be placed in multiple categories, and some of the metrics used in these studies are contested and often overlap.

Acquiring useful knowledge

One way to measure the effect of a PDP is to ask, "Do participants have more useful knowledge than they did before?" There is a growing body of evidence that deliberative processes increase knowledge about the topic of discussion (Fishkin et al., 2000; Luskin et al., 2002; Hansen and Andersen, 2003; Blomquist and Ostrom, 2008; Fournier et al., 2011; Michels, 2011). This result is not particularly surprising given that most deliberative processes include significant information packages, interaction with technical experts, and dedicated capacity-building components.

What is more difficult to assess is the role of deliberation itself separated from the dedicated instruments for learning. While the literature in pedagogy offers support for more interactive and deliberative learning in the classroom (Diedrick, Grattan, and Dienstfrey, 2008; Diaz and Gillchrist, 2010; Johnson et al., 2014), there is very limited cross-fertilization between recent literature in pedagogy and on deliberative democracy (McMillan and Harriger, 2007; Shaffer, 2014; Prosser et al., 2018), even if Freire is recognized as a pioneer in both fields. Moreover, the usage of randomized controlled trials (RCTs) that test the impact of deliberation on knowledge formation outside the classroom is still rare (Gronlund, Setala, and Herne, 2010), limiting our ability to separate the impact of deliberation itself from possible confounds such as information provision, age, and individual capacities prior to the process. When we look at processes such as PB that tend to involve less dedicated capacity-building and deliberation than a typical mini-public, we find a body of qualitative research that identifies the role of "learning by doing" as a driver of increased civic knowledge, with roots in Freire's and Pateman's intuitions, but very little experimental evidence (Van Der Veen et al., 2007; Lerner, 2010; Cohen, Shuguresnky, and Wiek, 2015; Melendez, 2021).

Thus, while there is reasonable evidence linking deliberative and participatory processes to individual learning, we should be very careful about the exact mechanisms at play. Do

deliberative/participatory processes improve our lives *per se*, or are they catalysts that reinforce traditional pedagogic methods that are the main driver in these individual-level outcomes?

Changing attitudes, preferences, and perspectives

An alternative way of measuring impact on individual participants is through changes in their beliefs as well as their attitudes toward others, toward institutions, and toward themselves. Fishkin (2018) has pointed to the significant proportion of participants in Deliberative Polls, a widely adopted deliberative process, who report having substantially changed their views by the end of the exercise. Some deliberative processes have also been shown to have positive effects on empathy, interpersonal trust, trust in the institutions that organized the PDP, and perceived legitimacy of the decision-making process (Reed et al., 2010; Karna, 2012; Caluwaerts, and Reuchamps, 2016, Grönlund et al., 2017). However, empathy and interpersonal trust are also important *preconditions* of high-quality deliberation; thus, we can't discard the possibility that the current generation of studies is overstating these effects due to a reverse-causation bias (Morrell, 2010). In other words, it is possible that those citizens who are willing to participate in a mini-public have higher-than-average levels of empathy, for example.

Deriving general rules from individual studies should be done with great care; it is possible that these positive effects on social attitudes may be transitory or localized. While it is fairly intuitive that a successful participatory process that makes local institutions more responsive should generate more trust in those institutions, there is no clear reason as to why participants should trust other, national-level institutions that have not been similarly "opened up", nor that these change in attitudes would endure if most other public institutions are neither participatory nor deliberative (Spada, 2019).

From a eudaimonic perspective, the development of personal or collective efficacy – the belief that we have the power to take action and see those actions bear fruit – can be one of the most positive personal impacts of PDPs. To this end, cultivating a sense of efficacy has been a guiding principle for many designers and facilitators of civic engagement. For both Freire (Freire and Ramos, 1970) and Pateman (1970), "learning by doing" was the only sure way to acquire the skills of effective citizenship. While subsequent scholars and practitioners continue to emphasize the ability of PDPs to promote internal, external, and collective efficacy,[6] the empirical research is still underdeveloped and has proceeded in a nonsystematic fashion (Nabatchi, 2010; Geissel and Hess, 2020). While scholars and practitioners agree that successful deliberative and participatory processes promote a greater sense of internal, external, and collective efficacy, the exact mechanism is not clear and the empirical literature shows mixed results. Here the work of psychologists (Bandura, 1997) and pedagogists (Dinther, Dochy, and Segers, 2011) on efficacy should be integrated in studies that explore these effects of deliberative and participatory processes.

Another potential impact of PDPs is to mitigate overconfidence, "one of the most consequential of the many biases to which human judgment is vulnerable, both because of its ubiquity and because of its role in facilitating other biases and errors" (Moore et al., 2017). The literature on psychology offers a somber view of small group discussion *per se*. Small-group discussion can lead to increased confidence on a given issue and thus contribute to overconfidence (Buehler et al., 2005), especially when the most confident people in the group are the most influential (Anderson et al., 2012). Not all group discussion is deliberative, of course, and when the process asks participants to provide justification for an answer, experiments have shown that overconfidence can be dampened (Arkes et al., 1987; Kunda, 1990; Mercier

and Landemore, 2012). Analysis of the pattern of preference changes in Deliberative Polls also shows a decrease in the confidence of participants toward extreme positions – that is, a decrease in political polarization, an important finding given the salience of this problem in much of the world (Fishkin et al., 2021). We will return to the latter when analyzing group-level outcomes such as polarization of group discussion.

Overall, the literature provides mixed and limited results with respect to the ability of PDPs to promote general system-level effects on attitudes and perceptions, such as trust in democracy. Instead we find more clearly positive results in generating localized effects, such as on the perceived usefulness of the PDP itself, or gains in knowledge regarding the issue at hand. Returning to our discussion on the distance of the effect from the process, this should not come as a surprise: the more we move from attitudes and preferences that are close to the process (e.g. learning something new on the specific topic or trust in fellow participants), into exploring impacts on more general preferences and attitudes (e.g., a general sense of personal efficacy) the more intervening variables beyond the process will affect results.

Increasing civic and pro-social behaviors

In many countries, participation in traditional forms of civic life has been in decline or at least has moved away from traditional forms of participation. PDPs, in addition to being a potentially more effective way than elections at harnessing collective intelligence, may also help breathe life into more traditional forms of participation.

Impacts on these positive social behaviors might be mediated by the impact on attitudes described before. For example, if taking part in a PDP produces higher levels of personal efficacy, this may have measurable effects on behaviors like voting, contacting representatives, tax compliance, and charitable donations. Several studies have noted a correlation between higher levels of efficacy and greater involvement in other civic activities (Balch, 1974; Craig, 1979; Finkel, 1985; Jung et al. 2011; Moeller et al. 2014). Some scholars have explored how participating in a PDP designed to promote the respect of other people's opinions increased pro-social behaviors such as donations (Grönlund, Herne, and Setälä, 2017). This result needs to be evaluated with care, however, given the complex links between PDPs and efficacy. Moreover, the literature on donation-related experiments offers a less positive outlook on deliberation (Small, Lowenstein, and Slovic, 2007; Zhong, 2011). As before, the difference might be a feature of the limited external validity of the synthetic laboratory setting, or it might be due to the fact that those who elect to participate in PDPs are particularly susceptible to these behavioral impacts, while the sampling strategies used in lab settings do not suffer this problem.

Some scholars have used surveys to explore the link between self-reported rates of online participation and civic participation (Kim, 2006). Others have shown that PB at the city level generates higher turnout in elections (Kukučková and Bakoš, 2019; Johnson, Carlson, and Reynolds, 2021). Sjoberg, Mellon, and Peixoto (2015), leveraging a unique data set collected of 400,000 "Fix-my-street"[7] users, provide a first clear test of the efficacy feedback loop mechanisms. The study shows that users whose highest priority issue is fixed by a city council adopting the "Fix-my-street" platform have a higher probability of reporting further issues of interest to them. Overall this literature includes some theoretical mechanisms and growing evidence that PDPs can promote civic and pro-social behavior in some cases, but we are not yet able to disentangle the specific effect of PDPs from platform-design features, sampling biases, and local conditions.

Improving cognitive capacities

Could thinking in a group make us smarter as individuals? From an epistemic perspective, any process that not only generates ideas to solve a public problem, but also makes its participants more effective thinkers and communicators, will have accomplished something quite useful for society. From a eudaimonic perspective, learning how to think more critically and communicate more powerfully would seem to have benefits in nearly all areas of life. And yet, these gains in cognitive capacity have proven much more difficult to measure than new civic facts that have been learned or political preferences altered.

Early research in psychology showed that small-group discussion could increase accuracy (Stasser and Davis, 1981), promote self-critical reflection, and help reduce overconfidence (Lerner and Tetlock, 1999; Sniezek and Henry, 1989). More recent studies of deliberative processes have observed an improvement in participants' abilities to think critically about a public problem (Goodin and Stein, 2008). Other studies have observed improvements in creative thinking (Küçük and Isleyen, 2015). A significant literature has explored the impact of a PDP on the capacity of individuals to forecast (Arrow et al., 2008). Given that these studies often compare individual performance with aggregated group performance, we will cover them in the next section as well.

An interesting experiment from Druckman and Nelson explored the ability of deliberation to create "antibodies" that could defend participants from framing effects (Druckman and Nelson, 2003). Some participants in PDPs report being more confident in their ability to communicate their ideas effectively (Morrell, 2005; Dryzek, 2007). However, using surveys to collect participants' self-reported perceptions might confound the effect on participants' efficacy and confidence with impacts on their actual abilities. More generally, scholarship on the effects of deliberation and participation on creativity, critical thinking skills, and other cognitive capacities is not sufficiently integrated with the literature in psychology and pedagogy that have studied the development of such capacities in detail. More than 30 years of psychological and pedagogical inquiries on the subject of critical thinking, for example, warn us about the complexity of defining the concept itself and the difficulties of designing experiments to measure critical thinking in a classroom setting (Abrami et al., 2008).

Effects of collective intelligence processes on groups

One of the most important research questions in the field of collective intelligence is also one of the most straightforward: how well did the group solve the problem? Beginning in the 1990s, researchers such as Tetlock showed how the predictions of a large group of individuals could be aggregated and measured through digital platforms organized as markets or prize-backed contests, with results that were consistently more accurate than individual experts (Arrow et al., 2008). The pioneering studies of Hong and Page (2004) demonstrated the crucial role of cognitive diversity in boosting a group's problem-solving potential. While these initial studies were wary of small-group discussion due to its potential of biasing individual knowledge (Larrick et al., 2012), at the same time the literature on deliberative mini-publics was showing the effectiveness of certain types of group discussions (Luskin et al., 2017). The two literatures have recently converged (Mercier and Landemore, 2012; Landemore and Page, 2015). The IARPA forecasting tournament is the most famous attempt at exploring the integration between collaborative group discussion with forecasting market-style competition to optimize forecasting (Mellers et al., 2014). Differently from previous studies in this research, five different research teams leveraged group discussion to compete against each

other in achieving the best predictions. The capacity of these teams to match (and sometimes outperform) expert predictions has propelled the interdisciplinary cross-fertilization between collaborative and competitive approaches to problem-solving.

The task of analyzing the performance of group problem-solving abilities is easier, of course, when the process can generate an objective and verifiable right answer. In a prediction task, for example, we can evaluate whether the predicted event in fact occurred; or in Condorcet's famous example, whether the jury correctly found a defendant innocent or guilty (List and Goodin, 2001). A recent experiment (Mercier and Claidière, 2022) has shown that group discussion, from medium to large size (N=20 to N=208), significantly improves answers to factual problems, but does not improve answers to demonstrative[8] or ethical problems.

These results suggest that discussion in large groups does not make the crowd less wise, measured by their ability to identify "right answers" and reduce mistakes, and that discussion may indeed improve collective performance. In most cases analyzed by the PDP literature, however, "right answers" can often be multiple, contradictory, and fiercely contested. A citizens' assembly on immigration that results in a significant increase in foreign workers may serve as an exemplary case of collective intelligence or of collective stupidity, depending on one's political views. For this reason, and given that this is the core literature from which the collective intelligence field has developed, the PDP literature has actually less to offer and more to learn in terms of strategies for evaluating collective intelligence.[9]

The PDP literature has much to offer, however, concerning specific effects linked to the design of each process. For instance, does an ideation process leveraging group deliberation outperform a survey of individuals' ideas in terms of the number and quality of ideas? Which designs generate the richest small-group deliberations? What features of PDPs promote or hinder group polarization? These types of questions explore how the design of a PDP affects intermediate outcomes of potential interest to society, and thus the unit of analysis of the scholarship interested in these studies is not the individual, but the group itself. Taking inspiration again from the field of PDP, in what follows we discuss two "families" of group-level effects.

Impacts on quality, cognitive complexity, and group toxicity

Many collective intelligence processes employ devices that promote verbal or text-based interaction among participants on a public issue. And, as we have seen, some of the desired effects of PDP hinge on the quality of the deliberation that occurs. But what constitutes high-quality deliberation?

One instrument used to answer this question is the Discourse Quality Index (DQI), an analytical model that codes and assesses all individual speech acts (Searle, 1969) during a deliberative exercise on the basis of certain normative goals decided in advance (Steenbergen et al., 2003). For each speech act, researchers score the level of respect shown to other speakers (e.g., answering questions others had posed, referring favorably to their arguments, and the frequency of interruptions); the level of justification for arguments given; the content of those justifications (e.g., benefits for one's own group vs. appeals to the common good); the use of stories or foul language; and the Habermasian "unforced force of the better argument," that is, admissions that the speaker has modified her position based on what others have said. Originally conceived as a method of analyzing parliamentary debates, the DQI has now been applied in a range of deliberative settings (Beste, 2013) – for example, during peacebuilding dialogues with Colombian ex-paramilitaries.

The DQI has evolved over time. Jaramillo and Steiner (2020) propose a new element in the DQI, the logging of "deliberative transformative moments," speech acts that shift the quality of a group interaction from "low" to "high" or vice versa, where "high" indicates the discussion flowing in an interactive and respectful way on a single sustained topic. Jaramillo and Steiner propose that with this innovation, the DQI is better suited to capture "the quick give-and-take of discussions of small groups of ordinary citizens."

The DQI is probably the most famous example of these types of group-level metrics and has generated a small literature on its advantages and possible modifications, particularly for online deliberations (Mendonça, R.F., 2015; Esau, Fleuß, and Nienhaus, 2021). Other metrics explore the cognitive complexity of a discussion (Scott, 1962), or the level of toxicity of messages sent within a group (Jakob et al., 2022). If constructive dissent has proven benefits for collective intelligence (Edmonson and Moingeon, 1998), disparaging or abusive comments appear to have the opposite effect. Toxic comments have been shown to reduce team performance in a range of settings (Fredheim, Moore and Naughton, 2015; Neto et al., 2017) and therefore it becomes relevant to understand how to design PDPs that can limit toxicity. The advent of communication via voice, video, and text has generated a novel set of research questions on the effect of each medium on the quality of group discussion. We do not have the space to do justice to such literature, but what is relevant for our chapter is that the unique level of controls that designers have over a certain medium allows a novel set of research designs and experiments (Davies and Gangadharan, 2009; Iandoli et al., 2018; see also Klein et al., Handbook).

Overall, these transcription-based metrics offer useful insight into the quality of deliberation, but they are expensive and difficult to scale due to the time it takes to process the transcriptions, and they can suffer from intercoder reliability bias. Though the current generation of natural-language technologies that can help analyze transcriptions and video recordings is still rudimentary, artificial intelligence-driven tools are starting to be able to classify communications by topic and recognize emotions from video recordings. Nevertheless, they are still far away from the capacity of human researchers to analyze text, despite the potential bias that goes along with it (Fournier-Tombs and Di Marzo Serugendo, 2020). Thus, while it is foreseeable that the cost of collecting and processing this group-level data will decrease, the biases and ethical quandaries introduced by these methods will inevitably generate a new set of problems for the coming generation of researchers.

An alternative approach to measure the quality of the deliberative process is to ask the participants themselves. Participant surveys have the benefit of being cheaper to administer, and thus have been commonly adopted by practitioners. This approach suffers from all the usual biases that self-reported metrics generate, but at the same time offers the unique opportunity to tap into the expertise of participants, an approach that lies at the core of the constructivist tradition and participatory action research. In the latter approaches, the biases that "naturalist" researchers try to minimize – the stereotypes and judgments imposed by researchers on certain communities – become crucial narratives of a complex sociopolitical tapestry that needs to be unearthed and explored. Notwithstanding these challenges, the most interesting insights on the quality of a process may emerge from the citizens themselves.

Impacts on group-level preferences: Consensus, polarization, and dissent

How important is consensus to collective intelligence, and how should it be measured? Could small-group deliberation end up deepening polarization, or conversely, will the pressure to

conform paper over useful differences of perspective? Will the group end up reproducing the same power dynamics that lower the quality of discourse in the community as a whole?

The scholarship on the effect of PDPs on participants' views and preferences is one of the oldest and most developed. Initial studies in psychology offered a mixed set of results on the effect of group discussion. Some studies showed that group discussion could contribute to polarizing attitudes (Moscovici and Zavalloni, 1969) and reinforced biases (Stasser and Titus, 1987). Other studies highlighted how consensus might be generated by the desire to seek harmony (Janis and Mann, 1977) and conformity (Larsen, 1974), or the pleasure of being part of a cohesive team (Dobbins and Zaccaro, 1986).

In parallel with these studies, political scientists, sociologists, and development scholars and practitioners were developing best practices that were anecdotally at odds with some of the findings of the psychologists. Case studies from this latter group of scholars kept showing that common citizens were perfectly capable of collaborating in a variety of complex tasks that were traditionally reserved to experts, from budgeting to policy-making (Smith, 2009).

An influential series of papers from Sunstein (2000, 2002, 2009; Sunstein and Hastie 2015) provided a powerful interdisciplinary bridge between the two fields. He highlighted how deliberation in real-life juries tends to homogenize opinions *within* groups while polarizing them *across* groups. In these papers, Sunstein put the concepts developed in the psychological literature into the context of the work on citizen participation and deliberation. At the same time, other scholars highlighted how inequality of skills, social pressures, conformity, and discrimination might generate post-deliberation patterns of preference that better reflect socially advantaged participants (Sanders, 1997; Young, 2000).

Thus emerged a unique cross-fertilization between the two fields. With the help of these insights from psychology, scholars of democratic innovation began investigating group-level effects more rigorously. In particular, Deliberative Polls have offered a unique platform to study these issues due to their replicability and transferability across different populations. Luskin and Fishkin accumulated a growing body of knowledge that counters not only the homogenization and polarization hypotheses, but also the critique from feminist scholars that deliberation tends to reproduce inequalities present in society (see, for example, Luskin et al., 2017; Fishkin, 2018; Fishkin et al., 2021).

The debate is not concluded, and the exact mechanisms driving these effects are not immediately clear. Many scholars point out the potential impact of facilitators, who are present in PDPs and not present in the small-group laboratory experiments on deliberation (Karpowitz and Mendelberg, 2014). The issue of "who moderates the moderators" becomes even more relevant as a consequence (Spada and Vreeland, 2013). Other scholars highlight the importance of argumentation as a mechanism that can dampen both the overconfidence of individuals and their desire to conform, potentially leading to less homogenization and more polarization (Mercier and Landemore, 2012). Research on forecasting tournaments highlights the importance of training and timely feedback on debiasing, and mini-publics such as Deliberative Polls include capacity building and feedback devices (Mellers et al., 2014).

This crucial debate on the effects of deliberation on group preferences has also contributed to the repositioning of some scholars away from consensus as a normative good (Friberg-Fernros, Shaffer, and Holst, 2019). Currently the theory of deliberative democracy has softened the focus on consensus as one of the key outcomes of deliberation, moving toward the idea that deliberation can increase the probability of achieving consensus, but can also sharpen each individual's point of view. This shift complements the recent literature in social psychology that points to the benefits of constructive dissent on group decision quality (Schulz-Hardt et al., 2006), and the potential for diverse opinions to reduce the impact of

certain cognitive biases (Klocke, 2007). Management theorists have also found that recognizing and protecting principled dissent can be a crucial lever for transforming organizations (Shahinpoor and Matt, 2007). Argyres and Mui (2007) propose a game-theoretical approach for choosing "dissent regimes" that encourage group members to challenge the majority view in ways that provide the group with informational benefits while minimizing related hazards. It is logical that without some minimum level of consensus, collective action is impossible; empirically, without some minimum level of dissent, collective intelligence diminishes. Where are these minimum levels, and which design choices will help sustain them? These are important questions for future research.

Impacts of collective intelligence processes on society

For designers of collective intelligence for public good, the most important indicator of impact may be on the policies that result from the citizens' input and the impact of these policies on society. Here measurements must be taken, and causal inferences drawn, with extreme care: the distance between the process and the effects is the largest, and thus the number of intervening factors and potential confounds is significant.

Beyond this basic observation, there is also the difficulty of saying, on any policy question, whether the "right answers" were found by the participating citizens. The more fundamental the policy question – who enjoys which rights, who pays what level of taxes, who is allowed to enter the community and benefit from its services – the more likely it is that any decision will be contested by those whose principles differ.

As the realm of debate moves from ends to means – how to keep the population healthy, how to keep public spaces clean – the "right answer" can be understood as the one that achieves the intended policy goal at the lowest cost, or achieves the most good with the resources at hand. This utilitarian approach, while conceptually easier to handle, is extremely difficult to assess empirically, and is explored primarily by scholars in the "epistemic" tradition of democratic theory (see Landemore, 2012).

As mentioned before, while the epistemic research agenda is critical for the collective intelligence field, we do not yet have empirically sound strategies to evaluate it on the ground. A review of such literature is beyond the scope of the chapter and we refer to the excellent work of Landemore (2012, 2020) for those that are interested. In what follows instead we will focus on the more humble middle-level theories that can be more easily empirically tested (Mutz, 2008). This literature sidesteps the epistemic research question and instead studies the effect of PDPs on macro-level indicators of development such as welfare, poverty, corruption, and tax revenues, or evaluates effects on public opinion, on elections, and on institutions, laws and regulations.

Impacts on community well-being

A long tradition in development studies explores whether participatory (and to a lesser extent, deliberative) methods can play a positive role in improving public health (Björkman and Svensson, 2009; Gonçalves, 2014; Touchton and Wampler, 2014) or on lowering poverty directly (Marquetti, 2009) or indirectly via better targeting and less "leaking" of government subsidies (Olken, 2019), raising tax compliance (Beuermann and Amelina, 2018; Touchton et al., 2019), reducing public corruption (Olken, 2012) and a variety of other development indicators (Mansuri and Rao, 2013). In environmental studies, it is argued that participation enables interventions and technologies to be better adapted to local social

and environmental conditions and that this in turn may enhance their rate of adoption and diffusion among target groups, and their capacity to meet local needs and priorities (Martin and Sherington, 1997; Reed, 2008; Dougill et al., 2012; Muiderman et al., 2020).

There is also a more fundamental literature on participatory development that explores larger research questions such as empowerment and the intrinsic value of participation that predates the current generation of studies using RCTs and leverages participatory action research (Korten, 1980; Chambers, 1994; Chambers, 1997; Kindon, Pain, and Kesby, 2007). The latter literature has the most sophisticated analysis of power relations, and it criticizes the idea that PDPs can be a neutral instrument of governance. These studies call into question the "evangelical approach" to citizen participation that assumes an intrinsic value of participation without sufficiently problematizing it (Cook and Kothari, 2001; Henkel and Stirrat, 2001; Williams, 2004).

The umbrella terms used in the development literature to identify PDPs are "participatory development projects" and "Community Driven Development (CDD)." The type of interventions explored in this literature include self-initiated processes by the unit of adoption (a community, a city, a village, or a country) and processes that are implemented with the support of international donors. The latter is one of the key characteristics of this literature that generates unique advantages and disadvantages. Countries receiving substantial aid often allow international organizations to explore large-scale modification of governance structures, particularly at the subnational level, and allow the implementation of large pilot studies on PDPs that would be less feasible in the global North.

Indonesia and India, for example, have become in recent decades a unique laboratory of large-scale RCTs that randomly assign hundreds of villages to institutional-level treatments modifying the governance of subsidies and service delivery from health to education, generating a unique amount of fascinating data. The Nobel Prize awarded to Banerjee, Duflo, and Kramer in 2019 recognizes their contribution to the new empirical approach "that has transformed development economics, and has considerably improved our ability to fight global poverty."[10] At the same time, critics of modern development strategies based on RCTs highlight a host of ethical issues associated with certain field experiments, in particular those that use deception (Teele, 2014), and warn us against the complex interaction between colonialism, neoliberalism, and behaviorism (Webber and Prouse, 2018).

In particular, the fact that the regions or countries that host these interventions are in need of aid implies that the desire of receiving financial support may distort the political system's reactions to the participatory processes introduced. Participants, groups, and institutions might "put on a show" by implementing a donor-introduced PDP in order to secure further aid. These are general problems of the modern approach to development that go beyond the analysis of participatory processes, but they must be considered to understand the external validity of the results and the choice of certain research questions over others. Critics of participatory development highlight

> three interrelated failings: of emphasizing personal reform over political struggle, of obscuring local power differences by uncritically celebrating 'the community', and of using a language of emancipation to incorporate marginalized populations of the Global South within an unreconstructed project of capitalist modernisation.
> *(Williams, 2004)*

While a full discussion of the development field is beyond the scope of this chapter, we note a potential "legacy bias" associated with the entire development field regarding the

evaluation of PDPs. What might be the subtle and lesser understood biases of other fields? Paradoxically, should we be *less* concerned about biases in the current development literature, given the criticisms that scholars have now been led to address?

Overall, both the qualitative and experimental literature paint a mixed picture of the impact of CDD on service delivery, governance, and social welfare (Cook and Kothari, 2001; Henkel and Stirrat, 2001; Reed, 2008; Mansuri and Rao, 2012; Joshi and Houtzager, 2012; Fox, 2015; Arkedis et al., 2021; Wong and Guggenheim, 2018; Olken, 2019). The literature on these interventions highlights the crucial factors of local conditions, how intervention designs can vary wildly, and how CDD works best when it is part of a broader strategy that includes reforms to governance, investments in productivity, and improvements in service delivery. In other words, PDPs may work best not when they are "parachuted" from abroad but rather when they are supported by a holistic set of reforms that then, paradoxically, makes it more difficult to assess the impact of any individual PDP. While it would be easy to dismiss the somewhat obvious conclusion that it is difficult to transplant PDPs, this literature still offers a host of illuminating results, particularly when a PDP is successful (Björkman and Svensson, 2009).

Impacts on laws, constitutions, and public policies

While modern public policy studies caution us about the difficulty and complexity of exploring the policy generation process (Weible and Sabatier, 2018), a growing number of interesting studies have tried to trace the impact of PDPs on laws, constitutions, and policies. Most studies employ one of three methods: (1) interviews/questionnaires with experts, civil servants, and politicians on their perceptions of impact; (2) qualitative case studies of single PDPs; or (3) comparative approaches that attempt to trace the fate of ideas and projects' proposals that emerged in the PDP.

The tradition of investigating the attitudes of public officials is typical of the public administration and political science scholarship. Lowdes et al. (2001) analyzed the results of a questionnaire sent to the chief executives of all principal local authorities in England in January 1998, exploring the usage of 19 different forms of participation. With a response rate of 85%, the experts reported that these processes had negligible impact from their perspective. More than ten years later, using a multinational questionnaire covering 15 EU countries and Israel (N=12,000), Sweeting and Copus (2013) found that councilors in local authorities

> tend to display a luke-warm, unenthusiastic attitude towards many participation mechanisms, though this picture is nuanced by councillors in certain countries, and councillors of certain types, holding a more positive stance to some of the ways in which citizens can engage with local government.

A more recent paper investigating the same data set using quantitative methods confirms the preliminary descriptive results (Alibegović and Slijepčević, 2018).

Yang and Callahan (2007) report the result of a national survey sampled to represent a variety of county and city administrators in the US (N=428 valid survey out of 932 mailed). Chief administrative officers (CAOs) were chosen as the target respondents rather than elected officials because this research focuses on citizen involvement in administrative processes. On average, the results show that although local governments frequently use participatory methods to gather ideas or feedback, they are less likely to use citizen input at the decision phase. CAOs from larger communities reported more positive attitudes toward

citizen participation. Larger communities also reported higher levels of use of participatory methods. Similar to the results obtained when investigating elected officials, the cultural acceptance of political participation appears to be one of the most influential explanatory variables explaining the level of citizens' involvement in local government.

Beswick and Elstub (2019) interviewed 60 members of the UK parliament, including staff and elected politicians, to gain insights into their perspectives on evidence diversity in policymaking and the potential of mini-publics to diversify the sources of evidence available to select committees, and found that traditional approaches to evidence gathering are still favored.

Overall, the literature shows an increased interest in participatory processes over the last few decades, as well as a lingering tension between the respective powers of elected officials, administrators, and citizens. The attitudes of administrators and civil servants, in particular, has emerged as a key factor on whether participatory channels are created and maintained.

The literature exploring the impact of specific PDPs is the most developed across all disciplines (Nabatchi and Amsler, 2014). Many qualitative case studies of PDPs include an assessment of impact or potential impact on public policy. A complete review is beyond the scope of this chapter, and thus we will focus on the qualitative literature on PDPs specifically designed to modify laws: Citizens' Assemblies.

CAs are a complex form of PDP that combine multiple deliberative and participatory devices. Since their inception in Canada in the British Columbia Citizens' Assembly (BCCA), CAs have been specifically designed to propose or amend laws (Warren and Pearse, 2008). The BCCA was not successful in modifying the electoral law of BC, but it paved the way for a number of replications in Canada and abroad, culminating with the recent assembly in Ireland that is considered by many the first example of a CA that successfully altered a major piece of legislation. The Irish CA led to the successful referenda on same-sex marriage (2015) and the legalization of abortion (2018) that modified the Constitution of Ireland, addressing issues that had languished in political gridlock for decades (Farrell, Suiter, and Harris, 2019). The number of CAs worldwide has grown significantly in the last three years. National-level assemblies on climate change have taken place in France (2019–2020), the United Kingdom (2020), Scotland (2020–2021), Denmark (2020–2021), Germany (2021), Finland (2021), Austria (2022), and Spain (2021–2022). An even larger number of assemblies are being organized at the subnational level; thus, the first comparative research designs are emerging (Wells, Howarth, and Brand-Correa, 2021; Stack and Griessler, 2022). It is simply too early to evaluate the impact of these assemblies on climate policies, but initial comparative scholarship highlights a variety of moderating factors that might support or hinder the impact on laws and policies (Willis, Curato, and Smith, 2022).

While many case studies trace the subsequent fate of proposals generated by a single PDP, quantitative comparisons of proposals generated by a variety of different PDPs are probably the least developed area of research. There are two notable exceptions that present interesting research designs. Pogrebinschi and Ryan (2018), investigating the impact of 31 cases of National Public Policy Conferences (NPPCs) in Brazil, use Qualitative Comparative Analysis (QCA) to explore the conditions under which these PDPs can significantly influence national policy. Font et al. (2018), leveraging a unique data set containing 571 policy proposals,[11] explored whether citizen-generated proposals were accepted, rejected, or transformed by public authorities. The authors concluded that "context variables have little effect and while some process variables are significant, it is proposal-level variables that are particularly important for understanding the fate of proposals." The effect of these variables provides evidence that authorities make a non-random selection of proposals to be

implemented, selecting those that are easier to develop or are closer to their own preferences. In other words, local authorities engage in "cherry-picking" proposals (Smith, 2009: 93) or "selective listening" (Sintomer et al., 2008). Such findings give pause to those who hope that citizens can not only contribute to public policy, but also shift it in a new direction.

Impacts on public opinion

When we look at the impact of PDPs on public opinion, most studies have focused on how small deliberative mini-publics can influence wider public opinion. Comparatively little research has been devoted to the impact of large-scale participatory processes such as referenda or PB on public opinion.

Looking at the first group of studies, scholars of mini-publics posit that a mini-public can generate new information that can influence public opinion in unique ways. Some scholars have hypothesized that mini-publics can act as "informational shortcuts" for the general public, giving citizens a notion of what "people like them" would conclude once they were fully informed on the topic (Warren and McKenzie, 2012). Other scholars instead criticize this blind-deference approach, and instead perceive the role of mini-publics as an inspiration and support for general deliberation in the wider public (Lafont, 2015, 2020; Bächtiger and Goldberg, 2020).

Existing empirical studies offer mixed evidence in support of these theories of transmission from mini-publics to the public at large. Survey experiments in which participants are asked their preferences on policies after being provided (or not) the results of a fictional mini-public on such positions found that the opinions of participants are changed only on some policy issues (Boulianne, 2018; Ingham and Levin, 2018). Scholars have also looked at the capacity of mini-publics to reinvigorate the sense of efficacy and trust in institutions of the general public of non-participants (Már and Gastil, 2021). A review of the literature on the topic analyzing all possible "spillover effects" using a variety of methods from mini-publics to the wider public found limited results (Van der Does and Jacquet, 2021).

Recent studies looking at the impact of the Citizens' Initiative Review in Oregon,[12] one of the few institutionalized mini-publics, found that reading the "Citizens' Statement" drafted by the panelists influenced Oregon voters' knowledge of the issues and voting preferences (Gastil et al., 2018). A similar experiment conducted in Ireland, leveraging the results of the Irish Constitutional Convention (ICC) of 2012–2014, found positive impacts on both knowledge and empathy (Suiter et al., 2020). Setälä et al. (2020) found similar results regarding the capacity of a Citizens' Jury to provide informational cues to the public before a local referendum. To summarize, it is possible that the limited results of this literature might be due to the fact that CAs and related methods are still in an early phase of development, and that when the practice is better understood by the public it may generate stronger effects.

When we look at the impact of "open-to-all" participatory processes on public opinion, we find very limited research to date. Smith and Tolbert (2010) explored how states in the US that adopt ballot measures might create a richer information environment for public opinion, shaping voters' positions on broad topics such as the economy. Some scholars have explored if the presence of "direct democracy" channels enhanced citizens' sense of political efficacy (Bowler and Donovan, 2002; Hero and Tolbert, 2004; Mendelsohn and Cutler, 2000; Smith and Tolbert, 2004). Lastly, scholars have investigated the impact of the Swiss cantonal direct democracy on perceived subjective well-being in Switzerland (Frey and Stutzer, 2000a and 2000b). The initial studies finding a positive impact are now being questioned

by more rigorous investigation that includes previously overlooked cultural factors (Dorn et al., 2007).

Overall, the study of the impact of PDPs on public opinion is still underdeveloped with respect to other lines of inquiry, in part because these studies are inherently more costly, and in part because PDPs are institutionalized and visible to public opinion in few countries to date.

Impacts on organizations, political parties, and companies

Does the introduction of a PDP in a country, region, or city affect the behavior of other groups? How does the presence of participatory channels affect the behavior of political parties? Does the multiplication of PDPs in a country affect the economy? Do companies become more participatory in response? These are among the research questions that can be explored when looking at organizations as a unit of analysis.

The literature on PB has argued since its inception that higher rates of civic participation can benefit other forms of community involvement, and studies in Brazil have shown a correlation between cities with PB and the density of civil society organizations (CSOs) (Touchton and Wampler, 2014). However, a study conducted in Poland found limited effects of PB on CSOs (Kempa and Kozlowski, 2020). Thus, while the idea that a participatory process designed to redirect funding to CSOs could stimulate their formation is intuitively plausible, the level of impact might be moderated by a variety of design and local factors. Moreover, PB scholars have also highlighted how density of CSOs is a possible precondition for the emergence of a successful PB process, casting doubts on the direction of causality between PBs and CSOs (Ryan, 2021).

A well-developed literature in political science has analyzed mechanisms to promote internal party democracy (IPD). PDPs can be used as an authentic approach to promote IPD or as a tool for political elites to reinforce their power (Scarrow, 1999; Ignazi, 2020). Paradoxically there is very limited cross-fertilization between the scholarship on internal party democracy and PDPs (Van Biezen and Saward, 2008). In recent years some interdisciplinary scholarship has emerged due to the renewed attention on the impact of digital technologies on party organization and performance (Deseeris and Vittori, 2019; Gerbaudo, 2018; Lioy et al., 2019; Garcia-Lupato and Meloni, 2021). Overall, and not surprisingly, this scholarship oscillates between "optimism (if not euphoria) to pessimism (if not despair)" (Diamond, 2019). This literature is primarily based on case studies and qualitative research and thus there is a clear untapped opportunity to adapt quantitative methods of evaluation for this space. For example, the research designs used to study the diffusion of PDPs across cities could be used to explore the diffusion of PDPs across political parties.

In the management sphere, a vast literature spanning more than 30 years has investigated the impact of democratizing the workplace (Ward, 1958; Vanek, 1971, 1977; Svejnar, J., 1982; Bainbridge, 1995; Kim, Han, and Kim, 2017; Olatunji et al., 2017). Most of the early literature was theoretical, augmented by a few case studies from Yugoslavia; only later did a wider variety of case studies emerge (see Jones, 2018 for a genealogy). We can do no more than direct readers to this literature if they seek to discover more about this growing area of research, that has to date been overlooked by other social sciences, with the exception of the recent work by Ferreras, Battilana, and Méda (2022). We hope that the examples above will offer some good starting points for cross-fertilization among disciplines.

Impacts on elections

The literature on the electoral impact of PDPs is quite underdeveloped. Some scholars have focused on the relationship between direct democracy and turnout in general elections, finding mixed results. The literature on ballot initiatives in the US and voter turnout finds a positive relationship. Using the number of ballot initiatives to measure saliency, Tolbert and Smith (2005), for example, concluded that an additional initiative may boost a state's turnout in presidential elections by almost 1% and by almost 2% in midterm elections, all other factors held constant. Garretson (2014) showed how state-level ballot measures on same-sex marriage boosted voter turnout in national elections in the US. In contrast to this enhancing effect of referendums and initiatives, studies of the Swiss context found a negative relationship between direct and representative democracy (Bühlmann et al., 2003; Linder, 2005; Freitag and Stadelmann-Steffen, 2010). Swiss scholars argue that the negative effect is generated by voter fatigue and the decreased significance of elections in comparison to frequent referenda-by-mail.

When we turn to PB, some previously mentioned studies link PB with increased voter turnout among participants and non-participants (Kukučková and Bakoš, 2019; Johnson, Carlson, and Reynolds, 2021). We could not find any study that empirically evaluated the impact of mini-publics on voter turnout; however, the studies mentioned in the section above regarding impacts on public opinion explore how mini-publics might affect political competition and election indirectly (Gastil et al., 2018).

Lastly, some studies have explored the impact of adopting PDPs on the probability of winning elections, again finding mixed results (Anduiza et al., 2008; Spada, 2022). Spada (2022) found a significant increase in the probability of reelection of the mayor's party when looking at Brazilian cities implementing PB between 1989 and 2012, while Anduiza et al. (2008) found no effect when investigating a mix of different PDPs in Spain.

Conclusion

Bringing citizens into the heart of public governance will seem to some like a risky bet. Despite sensational advances in the fields of collective intelligence and democratic innovation, public institutions are very hard to change. In much of the world, elitism and hierarchy are baked into the rules, processes, norms, and especially the mindsets of those who serve in government. To make a bet on collective intelligence in solving a public problem, these stakeholders will want to know: will this new process generate good ideas, and will populations I care about be better off as a result?

In this chapter, we have tried to arm readers with ways of answering these two central questions. Synthesizing this vast range of studies across cultures, processes, and topics, two value propositions come to the fore. The first is for the epistemic value of collective intelligence: the collaboration of many minds can produce better solutions to public problems. The second is for the eudaimonic value of collective intelligence: collaborating to solve public problems can make citizens smarter, happier, and more civically active as individuals, and more united as a community. This can be measured in the range of benefits that may accrue individually or collectively: greater empathy, more critical thinking, stronger personal efficacy, less group toxicity, and so on. Both value propositions are potentially important to the future legitimacy of our public institutions.

Any claim for the value of collective intelligence must be made with the humility that accompanies empirical research. Many studies mentioned here focus on a single example

of a participatory or deliberative process; what works in a certain political or cultural context may work less well in another. Furthermore, many studies from the field of democratic innovation concern pilot initiatives. Some have speculated that as any such process is scaled up and institutionalized, the influence of powerful media and interest groups will increase, potentially blunting both the level of intelligence produced in the process and the resulting gains for society (Shapiro, 2009).

Finally, many of the processes studied here are "invited" spaces, in which a public actor has solicited wider participation on a public matter. We do not yet know to what extent the impacts observed in these studies would also apply to "invented" or "claimed" spaces, such as social movements, that apply collective intelligence to public problems (see Miraftab, 2004).

New approaches to researching these questions have recently emerged, and new ones remain to be invented. Adopting the systems perspective will require researchers to look beyond the immediate outputs of a collective intelligence exercise and create "testable middle-level hypotheses" about possible impacts on individuals, groups, and communities (Fung, 2007; Spada, 2019). New indicators to measure cognitive gains – whether on critical thinking, perspective-taking, or considered judgment – could be developed. New interdisciplinary collaborations will need to be created, combining methods from pedagogy science, social psychology, and political science. Insights on team performance from management and organizational sciences may become increasingly relevant in designing new forms of citizen participation.

As difficult as it is to reproduce laboratory conditions in the messy and chaotic world of politics, randomized control trials and "thick" qualitative studies may provide critical insights for policymakers seeking to tap crowd wisdom. These methods and measures will not be easy to develop, but the urgency of our problems requires the clearest thinking that social science can provide.

Perhaps there was a time when elitist, hierarchical structures were indeed the most effective way of producing solutions for large communities whose members could not communicate easily with one another, and where relevant knowledge was only available to a few. But this is not our world. As the complexity of public problems grows, and trust in public institutions declines, the answer to both lies in the power of groups to observe, think and act together. Collective intelligence is not automatic, and we are at the beginning of learning how to organize and reinforce it. Improving our capacity to evaluate these processes and tools will play a critical role in making the case for change, and in enabling the collective learning that will make such change effective.

Notes

1 The research described in this chapter was conducted within the Phoenix project (https://phoenix-horizon.eu/) funded by a Horizon2020 grant (number 101037328).
2 See www.Participedia.net.
3 www.kettering.org/about/history.
4 We do not have the space to explore in detail participatory action research and constructivist approaches to the evaluation of PDP, but we refer the interested reader to the critical scholarship in public policy (Boswell and Corbett 2017), to the application of Actor Network theory and variants to PDP processes that is common in science and technology studies and ecology (Lockie 2007, Kimmich et al., 2022), the work on action research (McNife 2013), and the emerging scholarship on the application of complex system analysis to democratic design (Eliassi et al., 2020) as some of the possible entry points in a field that is almost as developed as the one we will review in the next sections.

5 See the forthcoming edited volume by Jacquet, Ryan, and Van Der Does (2022) for another approach in the tradition of policy analysis that sits logically in between ours and the one of Geissell, focusing on actors, policies, and institutions.

6 The citizens' trust in institutions' responsiveness is commonly referred to as external efficacy, while the citizens' perceptions of their individual or their group's competence and capacity to influence such institutions is described as internal efficacy and collective efficacy, respectively (Bandura 2000, Spada 2019).

7 See www.fixmystreet.com/.

8 Demonstrative problems have a solution that can be conclusively demonstrated using shared knowledge (Laughlin and Ellis, 1986).

9 Currently the main contribution from the PDP literature comes from "epistemic" deliberative democrats that have yet to develop a dedicated systematic empirical strategy, and mostly rely on a reinterpretation of existing case studies and experiments (Landemore 2020).

10 See www.nobelprize.org/prizes/economic-sciences/2019/press-release/ (accessed 27th June 2022).

11 The data is drawn from 809 participatory processes sponsored by municipalities that generate proposals within three Spanish regions during the period 2007– 2011. It contains a variety of typical PDPs including different models of participatory budgeting, citizens' juries, and public consultations.

12 CIR was institutionalized in 2010 becoming part of Oregon general elections to promote a more informed electorate. The CIR gathers a representative cross-section of 25 voters for 5 days of deliberation on a single ballot measure. The process culminates in the citizen panelists writing a Citizens' Statement that the Secretary of State inserts into the official *Voters' Pamphlet* sent to each registered voter.

References

Abers, R., 2000. *Inventing Local Democracy: Grassroots Politics in Brazil*. Lynne Rienner Publishers.

Abrami, P.C., Bernard, R.M., Borokhovski, E., Wade, A., Surkes, M.A., Tamim, R. and Zhang, D., 2008. Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research*, 78(4), pp. 1102–1134.

Anderson, C., Brion, S., Moore, D.A. and Kennedy, J.A., 2012. A status-enhancement account of overconfidence. *Journal of Personality and Social Psychology*, 103(4), p. 718.

Anduiza, E., Font, J., Mas, P. and De Maya, S., 2008. The electoral impact of direct-democratic practices. *International Journal of Urban and Regional Research*, 32(2), pp. 473–491.

Argyres, N. and Mui, V. L., 2007. Rules of engagement, credibility and the political economy of organizational dissent. *Strategic Organization*, 5(2), 107–154.

Arkedis, J., Creighton, J., Dixit, A., Fung, A., Kosack, S., Levy, D. and Tolmie, C., 2021. Can transparency and accountability programs improve health? Experimental evidence from Indonesia and Tanzania. *World Development*, 142.

Arkes, H.R., Christensen, C., Lai, C. and Blumer, C., 1987. Two methods of reducing overconfidence. *Organizational Behavior and Human Decision Processes*, 39(1), pp. 133–144.

Arrow, K.J., Forsythe, R., Gorham, M., Hahn, R., Hanson, R., Ledyard, J.O., Levmore, S., Litan, R., Milgrom, P., Nelson, F.D. and Neumann, G.R., 2008. The promise of prediction markets. *Science*, 320(5878), pp. 877–878.

Bächtiger, A. and Goldberg, S., 2020. Towards a more robust, but limited and contingent defence of the political uses of deliberative minipublics. *Journal of Deliberative Democracy*, 16(2).

Bainbridge, S.M., 1995. Participatory management within a theory of the firm. *J. Corp. l.*, 21, p. 657.

Balch, G.I., 1974. Multiple indicators in survey research: The concept 'sense of political efficacy'. *Political Methodology*, 1–43.

Bandura, A., 1997. *Self-Efficacy: The Exercise of Control*. Macmillan.

Bandura, A., 2000. Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*, 9(3), pp. 75–78.

Berndt, C., 2015. Behavioural economics, experimentalism and the marketization of development. *Economy and Society*, 44(3): 567–591.

Beste, S., 2013. Contemporary trends of deliberative research: Synthesizing a new study agenda. *Journal of Deliberative Democracy*, 9(2).

Beswick, D. and Elstub, S., 2019. Between diversity, representation and 'best evidence': Rethinking select committee evidence-gathering practices. *Parliamentary Affairs*, 72(4), pp. 945–964.

Beuermann, D.W. and Amelina, M., 2018. Does participatory budgeting improve decentralized public service delivery? Experimental evidence from rural Russia. *Economics of Governance, 19*(4), pp. 339–379.

Bherer, L., Dufour, P. and Montambeault, F., 2016. The participatory democracy turn: An introduction. *Journal of Civil Society*, 12(3), pp. 225–230.

Björkman, M. and Svensson, J., 2009. Power to the people: Evidence from a randomized field experiment on community-based monitoring in Uganda. *The Quarterly Journal of Economics*, 124(2), pp. 735–769.

Blomquist, W. and Ostrom, E., 2008. Deliberation, learning, and institutional change: The evolution of institutions in judicial settings. *Constitutional Political Economy*, 19(3), 180–202. doi: 10.1007/s10602-008-9045-5

Boswell, J. and Corbett, J., 2017. Why and how to compare deliberative systems. *European Journal of Political Research*, 56(4), pp. 801–819.

Boulianne, S., (2018). Minipublics and public opinion: Two survey-based experiments. *Political Studies*, 66(1): 119–136.

Bowler, S. and Donovan, T., 2002. Democracy, institutions and attitudes about citizen influence on government. *British Journal of Political Science*, 32(2), pp. 371–390.

Buehler, R., Messervey, D. and Griffin, D., 2005. Collaborative planning and prediction: Does group discussion affect optimistic biases in time estimation? *Organizational Behavior and Human Decision Processes*, 97(1), pp. 47–63.

Cairney, P., 2019. *Understanding Public Policy: Theories and Issues*. Bloomsbury Publishing.

Caluwaerts, D. and Reuchamps, M., 2016. Generating democratic legitimacy through deliberative innovations: The role of embeddedness and disruptiveness. *Representation*, 52(1), pp. 13–27.

Chambers, R., 1994. The origins and practice of participatory rural appraisal. *World Development*, 22(7), pp. 953–969.

Chambers, R., 1997. *Whose Reality Counts* (vol. 25). London: Intermediate Technology Publications.

Cohen, J. and Fung, A., 2004. Radical democracy. *Swiss Journal of Political Science*, 10(4), pp. 23–34.

Cohen, M., Schugurensky, D. and Wiek, A., 2015. Citizenship education through participatory budgeting: The case of Bioscience high school in Phoenix, Arizona. *Curriculum and Teaching*, 30(2), pp. 5–26.

Cooke, Bill and Uma Kothari, 2001. *The Case for Participation as Tyranny in Participation: The New Tyranny* (pp. 1–15), edited by Bill Cooke and U. Kothari. London: Zed Books.

Cornwall, A. and Scoones, I., 2022. *Revolutionizing Development: Reflections on the Work of Robert Chambers* (p. 336). Taylor & Francis.

Craig, S.C., 1979. Efficacy, trust, and political behavior: An attempt to resolve a lingering conceptual dilemma. *American Politics Quarterly*, 7(2), pp. 225–239.

Davidson, S. and Elstub, S., 2014. Deliberative and participatory democracy in the UK. *The British Journal of Politics and International Relations*, 16(3), pp. 367–385.

Davies, T. and Gangadharan, S.P., 2009. *Online Deliberation: Design, Research, and Practice*. CSLI Publications/University of Chicago.

Dedrick, J.R., Grattan, L. and Dienstfrey, H., 2008. *Deliberation and the Work of Higher Education: Innovations for the Classroom, the Campus, and the Community*. Dayton, OH: Kettering Foundation.

Deseriis, M. and Vittori, D., 2019. The impact of online participation platforms on the internal democracy of two Southern European parties: Podemos and the Five Star Movement. *International Journal of Communication* (19328036), 13.

Diaz, A. and Gilchrist, S.H., 2010. Dialogue on campus: An overview of promising practices. *Journal of Public Deliberation*, 6(1), p. 9.

Dobbins, G.H. and Zaccaro, S.J., 1986. The effects of group cohesion and leader behavior on subordinate satisfaction. *Group & Organization Studies*, 11(3), pp. 203–219.

Dorn, D., Fischer, J.A.V., Kirchgässner, G. and Sousa-Poza, A., 2007. Direct democracy and life satisfaction revisited: New evidence for Switzerland. *Journal of Happiness Studies*, 9, 227–255.

Dougill, A.J., Stringer, L.C., Leventon, J., Riddell, M., Rueff, H., Spracklen, D.V. and Butt, E., 2012. Lessons from community-based payment for ecosystem service schemes: From forests to rangelands. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1606), pp. 3178–3190.

Druckman, J.N. and Nelson, K.R., 2003. Framing and deliberation: How citizens' conversations limit elite influence. *American Journal of Political Science*, 47(4), pp. 729–745.

Dryzek, J.S., 2007. Theory, evidence, and the tasks of deliberation. In *Deliberation, Participation and Democracy* (pp. 237–250). London: Palgrave Macmillan.

Edmondson, A. and Moingeon, B., (1998). From organizational learning to the learning organization. *Management Learning*, 29(1), pp. 5–20.

Eliassi-Rad, T., Farrell, H., Garcia, D., Lewandowsky, S., Palacios, P., Ross, D., Sornette, D., Thébault, K. and Wiesner, K., 2020. What science can do for democracy: A complexity science approach. *Humanities and Social Sciences Communications*, 7(1), pp. 1–4.

Elstub, S. and Gagnon, J.P., 2015. A genealogy of deliberative democracy. *Democratic Theory*, 2 (1).

Esau, K., Fleuß, D. and Nienhaus, S.M., 2021. Different arenas, different deliberative quality? Using a systemic framework to evaluate online deliberation on immigration policy in Germany. *Policy & Internet*, 13(1), pp. 86–112.

Evans, D., Pilkington, P. and McEachran, M., 2010. Rhetoric or reality? A systematic review of the impact of participatory approaches by UK public health units on health and social outcomes. *Journal of Public Health*, 32(3), pp. 418–426.

Farrell, D.M., Suiter, J. and Harris, C., 2019. Systematizing'constitutional deliberation: The 2016–18 citizens' assembly in Ireland. *Irish Political Studies*, 34(1), pp. 113–123.

Ferreras, I., Battilana, J. and Méda, D., 2022. *Democratize Work: The Case for Reorganizing the Economy*. University of Chicago Press.

Finkel, S.E., 1985. Reciprocal effects of participation and political efficacy: A panel analysis. *American Journal of Political Science*, 29(4), pp. 891–913.

Fishkin, J., Siu, A., Diamond, L. and Bradburn, N., 2021. Is deliberation an antidote to extreme partisan polarization? Reflections on "America in one room". *American Political Science Review*, 115(4), pp. 1464–1481.

Fishkin, J.S., 2018. *Democracy When the People Are Thinking: Revitalizing Our Politics through Public Deliberation*. Oxford University Press.

Fishkin, J.S., Luskin, R.C. and Jowell, R., 2000. Deliberative polling and public consultation. *Parliamentary Affairs*, 53, pp. 657–666.

Floridia, A., 2017. *From Participation to Deliberation: A Critical Genealogy of Deliberative Democracy*. ECPR Press.

Font, J., Smith, G., Galais, C. and Alarcon, P.A.U., 2018. Cherry-picking participation: Explaining the fate of proposals from participatory processes. *European Journal of Political Research*, 57(3), pp. 615–636.

Fournier, P., Van der Kolk, H., Carty, R.K., Blais, A. and Rose, J., 2011. *When Citizens Decide: Lessons from Citizen Assemblies on Electoral Reform*. Oxford University Press.

Fournier-Tombs, E. and Di Marzo Serugendo, G., 2020. DelibAnalysis: Understanding the quality of online political discourse with machine learning. *Journal of Information Science*, 46(6), pp. 810–822.

Fox, J.A., 2015. Social accountability: What does the evidence really say? *World Development*, 72, pp. 346–361.

Fredheim, R., Moore, A. and Naughton, J., 2015, June. Anonymity and online commenting: The broken windows effect and the end of drive-by commenting. In Proceedings of the ACM web science conference (pp. 1–8).

Freire, P. and Ramos, M.B., 1970. *Pedagogy of the Oppressed*. New York: Continuum.

Freitag, M. and Stadelmann-Steffen, I., 2010. Stumbling block or stepping stone? The influence of direct democracy on individual participation in parliamentary elections. *Electoral Studies*, 29(3), pp. 472–483.

Frey, B.S. and Stutzer, A., 2000a. Happiness, economy, and institutions. *The Economic Journal*, 110, pp. 918–938.

Frey, B. S. and Stutzer, A., 2000b. Happiness prospers in democracy. *Journal of Happiness Studies,* 1, pp. 79–102.

Friberg-Fernros, H., Schaffer J. and Holst C., 2019. Deliberation after consensus: Introduction to the symposium. *Journal of Public Deliberation*, 15(1).

Fung, A., 2007. Minipublics: Deliberative designs and their consequences. In *Deliberation, Participation and Democracy* (pp. 159–183). Palgrave Macmillan, London.

Ganuza, E. and Baiocchi, G., 2012. The power of ambiguity: How participatory budgeting travels the globe. *Journal of Deliberative Democracy, 8*(2).

García Lupato, F. and Meloni, M., 2021. Digital intra-party democracy: An exploratory analysis of Podemos and the Labour Party. *Parliamentary Affairs*.

Garretson, J.J., 2014. Changing with the times: The spillover effects of same-sex marriage ballot measures on presidential elections. *Political Research Quarterly*, 67(2), pp. 280–292.

Gastil, J., Knobloch, K.R., Reedy, J., Henkels, M. and Cramer, K., 2018. Assessing the electoral impact of the 2010 Oregon Citizens' Initiative Review. *American Politics Research*, 46(3), pp. 534–563.

Geissel, B., (2012). Impacts of democratic innovations in Europe: Findings and desiderata. In *Evaluating Democratic Innovations* (pp. 173–193). Routledge.

Geissel, B. and Hess, P., 2020. Explaining political efficacy in deliberative procedures-A novel methodological approach. *Journal of Deliberative Democracy*, 13(2).

Gerbaudo, P., 2018. *The Digital Party: Political Organisation and Online Democracy*. Pluto Press.

Giddens, A., 1998. *The Third Way: The Renewal of Social Democracy*. Cambridge: Polity.

Gilardi, F. and Wasserfallen, F., 2019. The politics of policy diffusion. *European Journal of Political Research*, 58(4), pp. 1245–1256.

Gonçalves, S., 2014. The effects of participatory budgeting on municipal expenditures and infant mortality in Brazil. *World Development*, 53, pp. 94–110.

Goodin, H.J. and Stein, D., 2008. The use of deliberative discussion to enhance the critical thinking abilities of nursing students. *Journal of Deliberative Democracy*, 5(1).

Gret, M. and Sintomer, Y., 2005. *The Porto Alegre Experiment: Learning Lessons for Better Democracy*. Zed Books.

Grönlund, K., Herne, K. and Setälä, M., 2017. Empathy in a citizen deliberation experiment. *Scandinavian Political Studies*, 40(4), pp. 457–480.

Grönlund, K., Setälä, M. and Herne, K., 2010. Deliberation and civic virtue: Lessons from a citizen deliberation experiment. *European Political Science Review*, 2(1), pp. 95–117.

Hansen, K.M.A. and Normann, V., 2003. Deliberative democracy and the deliberative poll on the Euro. *Scandinavian Political Studies*, 3, pp. 261–286.

Heikkila, T. and Cairney, P., 2018. Comparison of theories of the policy process. In *Theories of the Policy Process*, edited by Christopher M. Weible and Paul A. Sabatier (pp. 301–327). Routledge.

Heinze, A.S. and Weisskircher, M., 2021. No strong leaders needed? AfD party organisation between collective leadership, internal democracy, and "movement-party" strategy. *Politics and Governance*, 9(4), pp. 263–274.

Henkel, H. and Stirrat, R., 2001. Participation as spiritual duty; empowerment as secular subjection. *Participation: The New Tyranny?* (pp.168–184).

Hero, R.E. and Tolbert, C.J., 2004. Minority voices and citizen attitudes about government responsiveness in the American states: Do social and institutional context matter? *British Journal of Political Science*, 34, pp. 109–121.

Hong, L. and Page, S.E., 2004. Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences*, 101(46), pp. 16385–16389.

Iandoli, L., Quinto, I., Spada, P., Klein, M. and Calabretta, R., 2018. Supporting argumentation in online political debate: Evidence from an experiment of collective deliberation. *New Media & Society*, 20(4), pp. 1320–1341.

Ignazi, P., 2020. The four knights of intra-party democracy: A rescue for party delegitimation. *Party Politics*, 26(1), pp.9–20.

Ingham, S. and Levin, I., 2018. Can deliberative minipublics influence public opinion? Theory and experimental evidence. *Political Research Quarterly*, 71(3), pp. 654–667.

Jakob, J., Dobbrick, T., Freudenthaler, R., Haffner, P. and Wessler, H., 2022. Is constructive engagement online a lost cause? Toxic outrage in online user comments across democratic political systems and discussion arenas. *Communication Research*. https://doi.org/10.1177/00936502211062773

Janis, I.L. and Mann, L., 1977. *Decision making: A Psychological Analysis of Conflict, Choice, and Commitment*. Free Press.

Jacquet, V., Ryan, M. and Van Der Does, R., 2022. *The Impact of Democratic Innovations*. Colchester: ECPR Press.

Jaramillo, M.C. and Steiner, J., 2020. Deliberative transformative moments: A new concept as amendment to the discourse quality index. *Journal of Deliberative Democracy*, 10(2).

Jennings, R., 2000 (October). Participatory development as new paradigm: The transition of development professionalism. In *Community Based Reintegration and Rehabilitation in Post-Conflict Settings Conference* (vol. 5, pp. 20–21). Washington DC.

Jonsson, M.E., 2020. Democratic innovations in deliberative systems–The case of the Estonian citizens' assembly process. *Journal of Deliberative Democracy*, 11(1).

Johnson, M., Partlo, M., Hullender, T., Akanwa, E., Burke, H., Todd, J. and Alwood, C., 2014. Public deliberation as a teaching andragogy: Implications for adult student learning from a doctoral higher education policy course. *Journal of the Scholarship of Teaching and Learning*, 14(1), pp. 95–108.

Johnson, C., Carlson, H.J. and Reynolds, S., 2021. Testing the participation hypothesis: Evidence from participatory budgeting. *Political Behavior*, pp. 1–30.

Jones, D.C., 2018. The economics of participation and employee ownership (PEO): An assessment. *Journal of Participation and Employee Ownership*.

Joshi, A. and Houtzager, P.P., 2012. Widgets or watchdogs? Conceptual explorations in social accountability. *Public Management Review*, 14(2), pp. 145–162.

Jung, N., Kim, Y. and de Zúñiga, H.G., 2011. The mediating role of knowledge and efficacy in the effects of communication on political participation. *Mass Communication and Society*, 14(4), pp. 407–430.

Jurlina Alibegović, D. and Slijepčević, S., 2018. Attitudes towards citizen participation in the local decision-making process: A comparative analysis. *Društvena istraživanja: časopis za opća društvena pitanja*, 27(1).

Kanra B., 2012. Binary deliberation: The role of social learning in divided societies. *Journal of Public Deliberation*, 8(1).

Kempa, J. and Kozłowski, R., 2020. Participatory budget as a tool supporting the development of civil society in Poland. *NISPAcee Journal of Public Administration and Policy*, 13(1).

Kindon, S., Pain, R. and Kesby, M., 2007. Participatory action research approaches and methods. *Connecting People, Participation and Place* (p. 260). Abingdon: Routledge.

Kim, J.Y., 2006. The impact of Internet use patterns on political engagement: A focus on online deliberation and virtual social capital. *Information Polity*, 11(1), pp. 35–49.

Kim, A., Han, K. and Kim, Y., 2017. The relationships among participatory management practices for improving firm profitability: Evidence from the South Korean manufacturing industry. *The International Journal of Human Resource Management*, 28(12), pp. 1712–1738.

Kimmich, C., Baldwin, E., Kellner, E., Oberlack, C. and Villamayor-Tomas, S., 2022. Networks of action situations: A systematic review of empirical research. *Sustainability Science*, pp. 1–16.

Klocke, U., 2007. How to improve decision making in small groups: Effects of dissent and training interventions. *Small Group Research*, 38(3), pp. 437–468.

Korten, D.C., 1980. Community organization and rural development: A learning process approach. Public administration review, pp.480–511.

Knobloch, K.R., Barthel, M.L. and Gastil, J., 2019. Emanating effects: The impact of the Oregon Citizens' Initiative Review on voters' political efficacy. *Political Studies*, 68(2), pp. 426–445.

Küçük Demir, B. and Isleyen, T., 2015. The effects of argumentation based science learning approach on creative thinking skills of students. *Educational Research Quarterly*, 39(1), pp. 49–82.

Kukučková, S. and Bakoš, E., 2019. Does participatory budgeting bolster voter turnout in elections? The case of the Czech Republic. Network of institutes and schools of public administration in Central and Eastern Europe. *The NISPAcee Journal of Public Administration and Policy*, 12(2), pp. 109–129.

Kunda, Ziva, 1990. The case for motivated reasoning. *Psychological Bulletin*, 108(3), pp. 480–498.

Lafont, C., 2015. Deliberation, participation, and democratic legitimacy: Should deliberative minipublics shape public policy? *Journal of Political Philosophy*, 23(1), pp. 40–63.

Lafont, C., 2020. *Democracy without Shortcuts: A Participatory Conception of Deliberative Democracy.* New York: Oxford University Press.

Landemore, H. and Page, S.E., 2015. Deliberation and disagreement: Problem solving, prediction, and positive dissensus. *Politics, Philosophy & Economics*, 14(3), pp. 229–254.

Landemore, H., 2020. *Open Democracy: Reinventing Popular Rule for the Twenty-First Century.* Princeton University Press.

Larrick, R.P., Mannes, A.E. and Soll, J.B., 2012. The social psychology of the wisdom of crowds.

Larsen, K.S., 1974. Conformity in the Asch experiment. *The Journal of Social Psychology*, 94(2), pp. 303–304.

Laughlin, P.R. and Ellis, A.L., 1986. Demonstrability and social combination processes on mathematical intellective tasks. *Journal of Experimental Social Psychology*, 22(3), pp. 177–189.

Lerner, J., 2010. Learning democracy through participatory budgeting: Who learns what and so what. Learning citizenship by practicing democracy: International initiatives and perspectives. pp. 242–251.

Lerner, J.S. and Tetlock, P.E., 1999. Accounting for the effects of accountability. *Psychological Bulletin*, 125(2), p. 255.

Lewin, K., 1948. Resolving social conflicts: Selected papers on group dynamics. Harper and Row, NY. ISBN 978-0285647190, pp. 82, 202–206.

Lioy, A., Del Valle, M.E. and Gottlieb, J., 2019. Platform politics: Party organisation in the digital age. *Information Polity*, 24(1), pp. 41–58.

List, C. and Goodin, R.E., 2001. Epistemic democracy: Generalizing the Condorcet jury theorem. *Journal of Political Philosophy*, 9(3).

Lockie, S., 2007. Deliberation and actor-networks: the "practical" implications of social theory for the assessment of large dams and other interventions. *Society and Natural Resources*, 20(9), pp. 785–799.

Luskin, R.C, Fishkin, J.S. and Jowell, R., 2002. Considered opinions: Deliberative polling in Britain. *British Journal of Political Science*, 32, pp. 455–487.

Luskin, R.C., Sood, G., Fishkin, J.S. and Hahn, K.S., 2017. Deliberative distortions? Homogenization, polarization, and domination in small group deliberations. Unpublished manuscript from the Center for Deliberative Democracy.

MacKenzie, M.K. and Warren, M.E., 2012. Two trust-based uses of minipublics in democratic systems. *Deliberative Systems: Deliberative Democracy at the Large Scale* (pp. 95–124).

Mansuri, G. and Rao, V., 2012. Localizing development: Does participation work? World Bank Policy Research Report.

Már, K. and Gastil, J., 2021. Do voters trust deliberative minipublics? Examining the origins and impact of legitimacy perceptions for the Citizens' Initiative Review. *Political Behavior*, pp. 1–20.

Marquetti, A., 2009. The redistributive effects of the participatory budgeting in Porto Alegre. In P. Silva and H. Cleuren (Eds.), *Widening Democracy: Citizens and Participatory Schemes in Brazil and Chile* (pp. 99–114). Leiden: Brill.

Martin, A. and Sherington, J., 1997. Participatory research methods—implementation, effectiveness and institutional context. *Agricultural Systems*, 55(2), pp. 195–216.

McMillan, J.J. and Harriger, K.J., 2007. *Speaking of Politics: Preparing College Students for Democratic Citizenship through Deliberative Dialogue*. Dayton, OH: Kettering Foundation Press.

McNiff, J., 2013. *Action Research: Principles and Practice*. Routledge.

Mansuri, Ghazala, and Rao, Vijayendra, 2013. *Localizing Development: Does Participation Work?* Policy Research Report. Washington, DC: World Bank.

Meléndez, J.W., 2021. Latino immigrants in civil society: Addressing the double-bind of participation for expansive learning in participatory budgeting. *Journal of the Learning Sciences*, 30(1), pp. 76–102.

Mendelberg, T., Karpowitz, C.F. and Goedert, N., 2014. Does descriptive representation facilitate women's distinctive voice? How gender composition and decision rules affect deliberation. *American Journal of Political Science*, 58(2), pp. 291–306.

Mendelsohn, M. and Cutler, F., 2000. The effect of referendums on democratic citizens: Information, politicization, efficacy and tolerance. *British Journal of Political Science,* 30, pp. 685–701.

Mendonça, R.F., 2015. Assessing some measures of online deliberation. *Brazilian Political Science Review*, 9, pp. 88–115.

Mercier, H. and Landemore, H., 2012. Reasoning is for arguing: Understanding the successes and failures of deliberation. *Political Psychology*, 33(2), pp. 243–258.

Mercier, H. and Claidière, N., 2022. Does discussion make crowds any wiser? *Cognition*, 222, p. 104912.

Mellers, B., Ungar, L., Baron, J., Ramos, J., Gurcay, B., Fincher, K., Scott, S.E., Moore, D., Atanasov, P., Swift, S.A. and Murray, T., 2014. Psychological strategies for winning a geopolitical forecasting tournament. *Psychological Science*, 25(5), pp. 1106–1115.

Michels, A., 2011. Innovations in democratic governance: How does citizen participation contribute to a better democracy? *International Review of Administrative Sciences*, 77(2), pp. 275–293.

Miraftab, F., 2004. Invited and invented spaces of participation: Neoliberal citizenship and feminists' expanded notion of politics. *Wagadu*, 1.

Moeller, J., de Vreese, C., Esser, F. and Kunz, R., 2014. Pathway to political participation: The influence of online and offline news media on internal efficacy and turnout of first-time voters. *American Behavioral Scientist*, 58(5), pp. 689–700.

Morrell, M.E., 2005. Deliberation, democratic decision-making and internal political efficacy. *Political Behavior*, 27(1), pp. 49–69.

Morrell, M.E., 2010. *Empathy and Democracy: Feeling, Thinking, and Deliberation*. Penn State Press.

Moore, D.A., Swift, S.A., Minster, A., Mellers, B., Ungar, L., Tetlock, P., Yang, H.H. and Tenney, E.R., 2017. Confidence calibration in a multiyear geopolitical forecasting competition. *Management Science*, 63(11), pp. 3552–3565.

Moscovici, S. and Zavalloni, M., 1969. The group as a polarizer of attitudes. *Journal of Personality and Social Psychology*, 12(2), p. 125.

Muiderman, K., Gupta, A., Vervoort, J. and Biermann, F., 2020. Four approaches to anticipatory climate governance: Different conceptions of the future and implications for the present. *Wiley Interdisciplinary Reviews: Climate Change*, 11(6), p. e673.

Mutz, D.C., 2008. Is deliberative democracy a falsifiable theory?. *Annual Review of Political Science*, 11, p. 521.

Nesra Y., Scott E.H., Koedinger, K.R., Hirsh-Pasek, K., Golinkoff, R.M., Munakata, Y., Doebel, S., Schwartz, D.L., Deslauriers, L., McCarty, L., Callaghan, K., Theobald, E.J., Freeman, S., Cooper, K.M. and Brownell, S.E., 2021. Active learning: "Hands-on" meets "minds-on". *Science*, 374(6563), p. 26.

Nabatchi, T., 2010. Deliberative democracy and citizenship: In search of the efficacy effect. *Journal of Deliberative Democracy*, 6(2).

Nabatchi, T. and Amsler, L.B., 2014. Direct public engagement in local government. *The American Review of Public Administration*, 44(4_suppl), pp. 63S–88S.

Neto, J.A., Yokoyama, K.M. and Becker, K., 2017, August. Studying toxic behavior influence and player chat in an online video game. In Proceedings of the international conference on web intelligence (pp. 26–33).

OECD (2020). *Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave*. Paris: OECD Publishing.

Olatunji, F., Nwachukwu, C., Worlu, R., Ogunnaike, O. and Abimbola, A., 2017. Empirical assessment of the link between participatory decision-making and firm performance in Nigeria. *International Journal of Contemporary Management*, 16(4).

Olken, B.A., 2019. Designing anti-poverty programs in emerging economies in the 21st century: Lessons from Indonesia for the world. *Bulletin of Indonesian Economic Studies*, 55(3), pp. 319–339.

Ostrom, E., 1990. Governing the commons: The evolution of institutions for collective action. Cambridge University Press.

Parayil, G. ed., 2000. *Kerala: The Development Experience: Reflections on Sustainability and Replicability*. Zed Books.

Pateman, C., 1970. *Participation and Democratic Theory*. Cambridge University Press.

Pogrebinschi, T. and Ryan, M., 2018. Moving beyond input legitimacy: When do democratic innovations affect policy making? *European Journal of Political Research*, 57(1), pp. 135–152.

Porto de Oliveira, O., 2020. Policy ambassadors: Human agency in the transnationalization of Brazilian social policies. *Policy and Society*, 39(1), pp. 53–69.

Prosser, B., Flinders, M., Jennings, W., Renwick, A., Spada, P., Stoker, G. and Ghose, K., 2018. Pedagogy and deliberative democracy: Insights from recent experiments in the United Kingdom. *Contemporary Politics*, 24(2), pp. 210–232.

Raffler, P., Posner, D.N. and Parkerson, D., 2019. The weakness of bottom-up accountability: Experimental evidence from the Ugandan health sector. *Innovations for Poverty Action Working Paper*.

Reed, M.S., 2008. Stakeholder participation for environmental management: A literature review. *Biological Conservation*, 141(10), pp. 2417–2431.

Reed, M.S., Evely, A.C., Cundill, G., Fazey, I., Glass, J., Laing, A., Newig, J., Parrish, B., Prell, C., Raymond, C. and Stringer, L.C., 2010. What is social learning? *Ecology and Society*, 15(4).

Rowden, R. and Irama, J.O., 2004. *Rethinking Participation: Questions for Civil Society about the Limits of Participation in PRSPs*. Washington, DC: ActionAid International.

Ryan, M. and Smith, G., 2014. Defining mini-publics. *Deliberative Mini-Publics: Involving Citizens in the Democratic Process,* pp. 9–26.

Ryan, M., 2021. *Why Citizen Participation Succeeds or Fails: A Comparative Analysis of Participatory Budgeting*. Policy Press.

Sanders, L.M., 1997. Against deliberation. *Political Theory*, 25(3), pp. 347–376.

Saward, M., 2003. Enacting democracy. *Political Studies*, 51(1), pp. 161–179.

Scarrow S. 1999. Parties and the expansion of direct democracy, who benefits?, *Party Politics*, 5, 341–362.

Scott, W.A., 1962. Cognitive complexity and cognitive flexibility. *Sociometry*, pp. 405–414.

Searle, J.R. and Searle, J.R., 1969. *Speech Acts: An Essay in the Philosophy of Language* (vol. 626). Cambridge University Press.

Seibold, D.R. and Meyers, R.A., 1996. Communication and influence in group decision making.

Setälä, M., Christensen, H.S., Leino, M., Strandberg, K., Bäck, M. and Jäske, M., 2020. Deliberative mini-publics facilitating voter knowledge and judgement: Experience from a Finnish local referendum. *Representation*, pp. 1–19.

Shahinpoor, N. and Matt, B.F., 2007. The power of one: Dissent and organizational life. *Journal of Business Ethics*, 74(1), 37–48.

Shapiro, I., 2009. The state of democratic theory. In *The State of Democratic Theory*. Princeton University Press.

Schulz-Hardt, S., Brodbeck, F. C., Mojzisch, A., Kerschreiter, R. and Frey, D. 2006. Group decision making in hidden profile situations: Dissent as a facilitator for decision quality. *Journal of Personality and Social Psychology*, 91(6), 1080–1093.

Shaffer, T.J., 2014. Deliberation in and through higher education. *Journal of Deliberative Democracy*, 10(1).

Shipan, C.R. and Volden, C., 2008. The mechanisms of policy diffusion. *American Journal of Political Science*, 52(4), pp. 840–857.

Sintomer, Y., Herzberg, C. and Röcke, A., 2008. Participatory budgeting in Europe: Potentials and challenges. *International Journal of Urban and Regional Research*, 32(1), pp. 164–178.

Sjoberg, F.M., Mellon, J. and Peixoto, T., 2015. The effect of government responsiveness on future political participation. Available at SSRN, 2570898.

Small, D.A., Loewenstein, G. and Slovic, P., 2007. Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational Behavior and Human Decision Processes*, 102(2), pp. 143–153.

Smith, G., 2009. *Democratic Innovations: Designing Institutions for Citizen Participation*. Cambridge University Press.

Smith, D.A. and Tolbert, C.J., 2004. *Educated by Initiative: The Effects of Direct Democracy on Citizens and Political Organizations in the American States*. Ann Arbor, MI: The University of Michigan Press.

Smith, D.A. and Tolbert, C.J., 2010. Direct democracy, public opinion, and candidate choice. *Public Opinion Quarterly*, 74(1), pp. 85–108.

Sniezek, J.A. and Henry, R.A., 1989. Accuracy and confidence in group judgment. *Organizational Behavior and Human Decision Processes*, 43(1), pp. 1–28.

Spada, P., 2019. The impact of democratic innovations on citizens' efficacy. In *Handbook of Democratic Innovation and Governance* (pp. 161–176), edited by Elstub, S. and Escobar, O. Edward Elgar Publishing.

Spada, P. 2022. The political and economic effects of Brazilian participatory budgeting: Intensification or degradation over time? In Jacquet, V., Ryan, M. & Van Der Does, R. (Eds.), *The Impact of Democratic Innovations*. Colchester: ECPR Press.

Spada, P. and Vreeland, J.R., 2013. Who moderates the moderators? The effect of non-neutral moderators in deliberative decision making. *Journal of Deliberative Democracy*, 9(2).

Stack, S. and Griessler, E., 2022. From a "half full or half empty glass" to "definitely a success": Explorative comparison of impacts of climate assemblies in Ireland, France, Germany and Scotland.

Stasser, G. and Davis, J.H., 1981. Group decision making and social influence: A social interaction sequence model. *Psychological Review*, 88(6), p. 523.

Stasser, G. and Titus, W., 1987. Effects of information load and percentage of shared information on the dissemination of unshared information during group discussion. *Journal of Personality and Social Psychology*, 53(1), p. 81.

Steenbergen, M.R., Bächtiger, A., Spörndli, M. and Steiner, J., 2003. Measuring political deliberation: A discourse quality index. *Comparative European Politics*, 1(1), pp. 21–48.

Suiter, J., Muradova, L., Gastil, J. and Farrell, D.M., 2020. Scaling up deliberation: Testing the potential of mini-publics to enhance the deliberative capacity of citizens. *Swiss Political Science Review*, 26(3), pp. 253–272.

Sunstein, Cass R., 2000. Deliberative Trouble? Why groups go to extremes. *The Yale Law Journal*, 110(1), pp. 71–119.

Sunstein, Cass R., 2002. The law of polarization. *The Journal of Political Philosophy*, 10(2), pp. 175–195.

Sunstein, Cass R., 2009. *Going to Extremes: How Like Minds Unite and Divide*. Oxford: Oxford University Press.

Sunstein, Cass R. and Hastie, Reid, 2015. *Wiser: Getting Beyond Groupthink to Make Groups Smarter*. Boston, MA: Harvard Business Review Press.

Svejnar, J., 1982. On the theory of a participatory firm.

Sweeting, D. and Copus, C., 2013. Councillors, participation, and local democracy. In *Local Councillors in Europe* (pp. 121–137), edited by Egner, B., Sweeting, D. and Klok, P.J. Wiesbaden: Springer VS.

Tolbert, C.J. and Smith, D.A., 2005. The educative effects of ballot initiatives on voter turnout. *American Politics Research*, 33(2), pp. 283–309.

Teele, D.L., 2014. Reflections on the ethics of field experiments. *Field Experiments and Their Critics: Essays on the Uses and Abuses of Experimentation in the Social Sciences* (pp. 115–140), edited by Teele, D.L. Yale University Press.

Touchton, M. and Wampler, B., 2014. Improving social well-being through new democratic institutions. *Comparative Political Studies*, 47, pp. 1442–1469.

Touchton, M.R., Wampler, B. and Peixoto, T.C., 2019. Of governance and revenue: Participatory institutions and tax compliance in Brazil. *World Bank Policy Research Working Paper*, (8797).

Van Biezen, I. and Saward, M., 2008. Democratic theorists and party scholars: Why they don't talk to each other, and why they should. *Perspectives on Politics*, 6(1), pp. 21–35.

Van der Does, R. and Jacquet, V., 2021. Small-scale deliberation and mass democracy: A systematic review of the spillover effects of deliberative minipublics. *Political Studies*, p. 00323217211007278.

Van der Veen, R., Wildemeersch, D., Youngblood, J. and Marsick, V., 2007. *Democratic Practices as Learning Opportunities*. BRILL.

Van Dinther, M., Dochy, F. and Segers, M., 2011. Factors affecting students' self-efficacy in higher education. *Educational Research Review*, 6(2), pp. 95–108.

Vanek, J., 1971. *The Participatory Economy: An Evolutionary Hypothesis and a Strategy for Development*. Ithaca, NY.

Vanek, J. (1977). *The Labor-Managed Economy: Essays*. Cornell University Press, Ithaca, NY.

Ward, B. (1958). "The firm in Illyria: market syndicalism", *The American Economic Review* 48(4), pp. 566–589.

Warren, M.E. and Pearse, H., 2008. Designing deliberative democracy: The British Columbia citizens' assembly.

Webber, S. and Prouse, C., 2018. The new gold standard: The rise of randomized control trials and experimental development. *Economic Geography*, *94*(2), pp. 166–187.

Weible, C.M. and Sabatier, P.A., 2018. *Theories of the Policy Process*. Routledge.

Wells, R., Howarth, C. and Brand-Correa, L.I., 2021. Are citizen juries and assemblies on climate change driving democratic climate policymaking? An exploration of two case studies in the UK. *Climatic Change*, 168(1), pp. 1–22.

Williams, G., 2004. Evaluating participatory development: Tyranny, power and (re) politicisation. *Third World Quarterly*, 25(3), pp. 557–578.

Willis, R., Curato, N. and Smith, G., 2022. Deliberative democracy and the climate crisis. *Wiley Interdisciplinary Reviews: Climate Change*, 13(2), p. e759.

Wong, S. and Guggenheim, S., 2018. Community-driven development: Myths and realities. *World Bank Policy Research Working Paper*, (8435).

Yang, K. and Callahan, K., 2007. Citizen involvement efforts and bureaucratic responsiveness: Participatory values, stakeholder pressures, and administrative practicality. *Public Administration Review*, 67(2), pp. 249–264.

Young, I.M., 2002. *Inclusion and Democracy*. Oxford University press on demand.

Zhong, C.B., 2011. The ethical dangers of deliberative decision making. *Administrative Science Quarterly*, 56(1), pp. 1–25.

6

KEY DEFINING CONCEPTS

Collective intelligence, democracy, and governance

Stephen Boucher, Carina Antonia Hallin, Lex Paulson,
Nino Javakhishvili-Larsen, and David Leal Garcia

This handbook aims to synthesize key ideas from the **emerging field of collective intelligence** and place them more clearly in the context of public problem-solving. Groups, under certain conditions, can solve problems and accomplish complex tasks in a way that surpasses the abilities of any individual within them. How can we understand this phenomenon, and what are the conditions necessary to bring it about?

The notion of collective intelligence is polysemic, informed by disciplines as diverse as conflict mediation and computer science. This poses challenges as well as opportunities: Though our notions of cognition, collaboration, and citizen engagement are enriched by studies from a diversity of fields, there is also a risk that these fields talk past one another or that crucial links go unexplored.

Our intent in this handbook of collective intelligence for democracy and governance is to add clarity and coherence to the field of collective intelligence as it matures into a scientific discipline in its own right. The increased salience of the field in recent decades may be correlated with some of the key trends of our time, notably the revolution in digital technology that has enabled new modes of large-scale collaboration (McNutt et al., 2016), the growing complexity and interdependence of public problems (Noveck, 2015), and a crisis of trust in public institutions that has inspired a "wave" of deliberative experiments worldwide (OECD, 2020).

The present moment has been described as a transition from **the fourth industrial revolution**, characterized by the increasing automation and interconnection of economic functions (Brynjolfsson and McAfee, 2014), to an upcoming **fifth industrial revolution** centered on the need to make organizations and societies more intelligent (Noble, Mende, Grewal et al., 2022). Authors have referred to this new technological paradigm as the "**deep minds era**," in which deep knowledge is harnessed, and **collective consciousness** created, from both humans and machines (cf. Friedman, 2019). See further Part 7 of the Handbook on Collective Intelligence, Technology and Collective Consciousness.

This fifth industrial revolution encompasses the notion of harmonious human–machine collaborations with a specific focus on the well-being of multiple stakeholders (i.e., society, companies, employees, and customers). For some, this "deep minds era" holds the promise of a revolution in how we learn and think through the leveraging of human–machine

collaborations – a period of collective thinking and learning, harnessing unconscious and tacit knowledge of humans facilitated by AI and deep learning, yielding better solutions to society's complex problems.

In policymaking, a shift is possible from the old paradigm of **centralized decision-making** and a narrow understanding of expertise, to more **decentralized forms of knowledge creation** where humans and machines think together in symbiosis. A key question for policymakers could become, "**How can the combination of human and machine intelligence help us go further than we've ever gone in serving the public**"? (Friedman, 2019) In this context, we offer an overview of definitions and typologies of the field of collective intelligence as it stands today. In doing so, we hope to clarify and explain some of the most important concepts at the foundation of this handbook, noting some of the emerging trends in politics and governance that could pave the way for a more inclusive and smarter paradigm.

This overview is structured into four sections. The first section presents definitions of collective intelligence offered by some of the field's pioneers. The second section takes a deeper look into the conceptual frameworks around human intelligence and how these have been applied to groups in different contexts, noting especially the key factors that have been identified as reinforcing or hindering group performance. The third section examines key concepts in democratic innovation that will be touchstones for many of the cases in this handbook. The final section looks at the frontier of human and machine intelligence, a burgeoning area of interest for researchers and practitioners alike.

We do not aim here to be encyclopedic in our presentation of these definitions, but rather to provide a structured overview of notions that may be of greatest interest to the reader.

Seminal definitions of collective intelligence

Pre-1970

The notion of collective intelligence has important antecedents prior to the popularization of the term itself in the 1980s. Many of these concepts are explored in greater detail in chapter 1 of this handbook.

Theoretical arguments for collective intelligence may originate with the ancient Greek philosopher Protagoras, who according to Plato argued that ***politikē technē***, or the expertise to govern a city, was found not in exceptional individuals but in the community as a whole (Kenney, 2008; Landemore, 2013). In the third book of his *Politics*, Aristotle makes more detailed arguments for the governing capacity of large groups, who "though not excellent as individuals, nevertheless can, when they have come together, be better than the few best people, not individually but collectively, just as feasts to which many contribute are better than feasts provided at one person's expense" (3.11). Waldron (1995) more recently revived interest in what he characterized as Aristotle's "doctrine from the wisdom of the multitude." An important non-Western antecedent is found in the doctrines of the Chinese philosopher Confucius, whose ethical ideal of *ren* has been translated as "**co-humanity**" (Puett and Gross-Loh, 2016).

In the common era, political and philosophical touchstones for CI include Machiavelli's arguments for the superior wisdom of the masses when compared with single rulers (Mansfield, 2001); Ibn Khaldun's notion of *'asabiyah* or "group spirit" as the key driver of political change (Irwin, 2018); Spinoza's argument that aggregated judgments are more likely to produce rational outcomes the larger the body of citizens (Tractatus Theologico-Politicus 16.16; see Landemore, 2013); J. S. Mill's arguments on the superior power of representative

government to create a framework for diverse ideas to compete, thereby advancing the knowledge available to all (Mill, 1865; Gray, 2013); and Dewey's (1927) argument that on any public issue, the cognitive capacities of the concerned population are essential to identifying and defining the problem before technical expertise can be applied.

Two antecedents to the field of CI deserve special mention. In the 18th century, the mathematician and statesman **Nicolas de Condorcet** was the first to offer a mathematical justification of the arguments for aggregative intelligence prefigured by Aristotle, Machiavelli, and Spinoza. His "**Jury Theorem**" (1785) proposes that under certain conditions, the majority opinion of a group whose individuals have only slightly better-than-average accuracy approaches a probability of 1 as the size of the group increases. Condorcet has the distinction of being a democratic theorist who attempted to put his ideas into practice, as co-author of the Girondin proposal for the French constitution in 1792, which emphasized the role of participatory local assemblies, a free press, and mass public education (Miller, 2018). The second is **Francis Galton**, an English polymath whose 1907 article on a crowd's accurate prediction of the weight of an ox is perhaps the most cited early reference in the field (see the discussion in chapter 1 of this handbook).[1]

It should be noted that despite their foundational importance to the concepts in this handbook, the term "collective intelligence" is not found in any abovementioned text. Mulgan (2018) notes that the phrase "appears to have first been used in the nineteenth century by a doctor, Robert Graves, referring to the advancing state of medical knowledge, and separately by a political philosopher, John Pumroy, to refer to popular sovereignty." If true, it is noteworthy that these two early references correspond to two principal forms of collective intelligence discussed herein: cumulative collective intelligence (the body of shared knowledge that accumulates within a given society), and the synchronous collective intelligence of a group engaged in a common task at a given time.

1970 to 2010

It was in the information age that "collective intelligence" as such became an object of study. Describing the goal of a digital conferencing system, Hiltz and Turoff (1978) defined collective intelligence as "a **collective decision capability** [that is] at least as good as or better than any single member of the group." Douglas Engelbart, whose team at Stanford Research Institute invented the mouse, hyperlink, video conferencing, and document co-drafting (among much else), coined the term "**collective IQ**" to refer to the potential of computers to enable large groups to solve increasingly complex tasks (Engelbart, 1995).

Kierstead (1974) may have been the first to use the term "collective intelligence" in the context of **democratic theory**. In his doctoral thesis, he used the term to characterize Dewey's theories on civic participation as a form of experiential education for citizens (often called "learning by doing"). Greater and higher-quality civic participation, in the Deweyan view, is not merely a form of consultation, but is rather a mechanism for society to develop its intelligence at the largest scale. Though theorists such as Habermas (1985), Mansbridge (1983), and Cohen (1986) would develop a range of arguments for more deliberative and inclusive forms of democracy from the 1970s, until Landemore and Elster (2012) these theorists largely did not refer to "collective intelligence" as such, nor engage closely with the field of human–computer interaction (for discussion, see Spada, chapter 5). Nevertheless, arguments developed in favor of participatory and deliberative democracy in this period – including the benefits to society from diversifying its store of ideas and combining them in new ways – remain important touchstones for the field of CI as it relates to democracy and governance.

Lévy's book *Collective Intelligence: Mankind's Emerging World in Cyberspace* (1997) theorized collective intelligence principally in the context of the internet and its possibilities. His definition of collective intelligence as "an intelligence distributed everywhere and constantly valorized," whose goal is "the recognition and mutual enrichment of people," carried Engelbart's optimism to near-utopian heights.

The text that introduced the idea of collective intelligence to a global audience was Surowiecki's *The Wisdom of Crowds: Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Businesses, Economies, Societies and Nations* (2004). He centers his book on "a simple but powerful truth…: under the right circumstances, groups are remarkably intelligent, and are often smarter than the smartest people in them." Opening his book with the Galton study, and using illustrations from business, prediction markets, and deliberative democracy, Surowiecki proposes a concise list of key drivers of group intelligence: independence of judgment, decentralized information, diversity of opinion, a fair and accurate aggregation mechanism, and shared trust. While digital platforms feature in Surowiecki's account, he does not qualify collective intelligence, like Lévy, as a novel phenomenon of the internet age. Collective intelligence, for Surowiecki, is deeply ingrained in human societies that various forms of organization can hinder or unlock.

Sunstein (2006) in *Infotopia: How Many Minds Produce Knowledge* explores the human potential to pool information and to use it for public good. He gives special attention to the emergence of wikis, open-source software, and prediction markets, highlighting the astonishing productivity and accuracy of these tools while also pointing to the risks of group polarization and "echo chambers" that often emerge online. Howe (2006) coined the term "crowdsourcing" in his article for *Wired* entitled "The rise of crowdsourcing". According to Howe, crowdsourcing is an act whereby an organization or institution takes a function which was once performed by employees and outsources them to a broader network, generally in the form of an open call.

2010 to present

Landemore and Elster's co-edited volume **Collective Wisdom**[2] (2012) was a watershed moment that brought democratic theorists, cognitive scientists, and technologists into a common conversation on the dynamics of group intelligence. Enriched by the pioneering work of Hong and Page (2004) on cognitive diversity, the authors argue that CI should be understood not merely as the intensification or amplification of individual intelligence, but as "an emergent phenomenon that cannot be traced simply to individual minds, but rather to the interaction between those minds and between them and their constructed environment." Landemore's *Democratic Reason: Politics, Collective Intelligence, and the Rule of the Many* (2013) develops these arguments in the context of democratic innovation and gives a genealogy linking Protagoras, Aristotle, Condorcet, Dewey, and others to contemporary developments in the field.

In their *Handbook of Collective Intelligence* (2015), Malone and Bernstein survey the research frontiers of the emerging field of CI, drawing principally from the disciplines of computer science, biology, economics, and psychology. They present a stripped-down definition of collective intelligence: "groups of individuals acting collectively in ways that seem intelligent." Though noting that this phenomenon has existed "for a very long time," they posit that with the rise of digital technologies, a "**new kind of collective intelligence has emerged**."

In her book *Smart Citizens, Smarter State: The Technologies of Expertise and the Future of Governing*, Noveck (2015) argues for a transformation in governance "that takes seriously the

capacity, intelligence, and expertise of all people and forges institutions that know how to marshal and use that capital." Drawing on her own expertise in the Obama Administration creating open innovation challenges, she proposes "crowdlaw" – organized citizen input at all stages of policymaking – as a way both to address society's most complex problems and to ease the "pandemic of distrust" in government.

The field of cultural evolution has added an important perspective on group intelligence: how knowledge can accumulate over many generations. In *The Secret of Our Success: How Culture Is Driving Human Evolution, Domesticating Our Species and Making Us Smarter* (2015), Henrich observes that

> the striking technologies that characterize our species, from the kayaks and compound bows used by hunter-gatherers to the antibiotics and airplanes of the modern world, emerge not from singular geniuses but from the flow and recombination of ideas, practices, lucky errors and chance insights among interconnected minds and across generations.

Just as the "**collective brain**" of a society can augment its intelligence through greater size, interconnection of group members, and sociality (the motivation of any member to share what she knows), Henrich argues, so too can it lose its intelligence if those conditions go unmet.

Mulgan's *Big Mind: How Collective Intelligence Can Change Our World* (2017) synthesizes work from several domains to propose new conceptual frameworks for the field. He defines collective intelligence as "the capacity of groups to make good decisions – to choose what to do, and who to do it with – through a combination of human and machine capabilities." The type of tasks taken on by that group – observing, prediction, generating ideas, and so on – are called in this handbook its "core functions" (see Mulgan, chapter 4), and "functional capabilities" in the earlier text. Those functions are supported in turn by collective intelligence "infrastructures" (tools, objects, common rules, and institutions) and organizational models that can favor or hinder group integration and learning. Mulgan concludes that solving 21st-century problems will require a new generation with skills in "intelligence design," creating "assemblies" of the above elements adapted to the needs of a given problem.

Andersen and Hallin's (2017) book on "Global strategic responsiveness: Exploiting frontline information in the adaptive multinational enterprise" presents tools to help design responsive and intelligent organizations. The book provides models to inform strategic decisions through the crowdsourcing of **frontline information**. The subsequent "A network of brains" (Andersen, Hallin and Fredens, 2018) presents ideas on how organizations can draw on distributed knowledge to make better decisions and more quickly adapt to a changing environment.

In his ***Superminds*** (2018), Malone – founder of the MIT Center for Collective Intelligence – suggests that human and artificial intelligence (AI) will be combined in increasingly complex ways, yielding exponentially more powerful forms of cognition.

As part of Britain's public innovation agency, the NESTA Centre for Collective Intelligence Design (co-founded by Mulgan) supports the use of collective intelligence on complex social problems. They currently define collective intelligence as something "created when people work together, often with the help of technology, to mobilize a wider range of information, ideas and insights to address a social challenge" (Peach et al., 2019). The range of disciplines seeking to understand the mechanisms of collective intelligence has thus

become vastly richer, with important insights from computer science, information science, political science, management, mathematics, social psychology and neuroscience.[3]

Foundational concepts of collective intelligence

The definition of human intelligence is continuously evolving. Definitions have ranged from a mental quality that consists of abilities to learn from experience, to the ability to adapt to new situations, understand and handle abstract concepts, and to the use of knowledge to create new knowledge and to be able to manipulate one's environment (Britannica, 2022). Broadly speaking, human intelligence can be understood as a toolkit of intellectual capabilities marked by complex problem-solving behaviors and high levels of self-awareness (Tirri and Nokelainen, 2011). Correlations have been posited between higher levels of intelligence and better life outcomes (Brown and Wai, 2021).

What is individual intelligence (and how do we measure it)?

Over the past century, psychologists have made progress in defining and systematically measuring general intelligence. Spearman (1904) found that intelligence can be measured using different kinds of IQ tests adapting a variety of test tasks in experiments. **The "g factor,"** also referred to as the general intelligence, general mental ability, or general intelligence factor, is a variable that summarizes positive correlations among different cognitive tasks, reflecting the fact that an individual's performance on one type of cognitive task tends to correlate with performance on others. Spearman labeled this correlative trend a "positive manifold" (Spearman, 1904).

Over the last century, scholars have emphasized different aspects of the intelligence construct. For example, in a 1921 symposium, the American psychologist Terman stressed the ability to **think abstractly, while his colleague Torndike emphasized learning and the ability to give good responses to questions**. Later in the century, a variety of other tests were introduced to probe intelligence from different angles, starting notably with the Torrance tests of creative thinking in the 1950s (Runco et al., 2010) to the more recent Cognitive Reflection Test (CRT), which seeks to measure people's ability to override instinctive responses in order to arrive at the correct answer (Frederick, 2005).

Psychologists have generally agreed that **human adaptation** to the environment is the key to understanding both what intelligence is and what it does (e.g. Greenspan, 1979). Such adaptation may occur in a variety of settings: a citizen learns to access an online public consultation and respond to questions of relevance to her community; a physician treating a patient with unfamiliar symptoms learns about the underlying disease; or a member of a creative crowd reworks an online painting to convey a more coherent impression. For the most part, adaptation involves changing one's own behaviors and strategies to cope more effectively with the environment, but it can also mean changing the environment or finding an entirely new one.

For the purposes of this handbook, we follow Mulgan (2018) in conceiving of intelligence "not just as a matter of extraordinary memory or processing speeds," but rather as "our ability to use our brains to know which path to take, who to trust, and what to do or not do." As Mulgan notes, the Latin roots of the word – *inter*, "between," and *legere*, "to choose or gather"– suggest the essence of the idea of intelligence as **a "gathering together" of information from our environment and experience**, combining diverse cognitive capacities in a manner that enables us to make choices favorable to our survival.

Types of individual knowledge

Individual intelligence can be aided by **explicit (codifiable)** and **tacit (unconscious) knowledge** (see the introduction to Part 3 for a review).

Explicit knowledge is defined as conscious knowledge that is independent of the individual and contains identifiable facts, information, procedures, and routines, which can be codified, processed, stored, and easily exchanged. Explicit knowledge (facts, procedures, and routines) can be articulated, codified, stored, and processed (Nonaka, 1991).

Tacit knowledge is defined as subconscious knowledge that is within the individual and contains habits, experience, skills, emotions, intuition, sensing, and intuition, which is difficult to codify and make explicit and communicate to others (e.g., how to drive a car). The term "tacit knowledge" was introduced in 1958 by Michael E. Polanyi. He later characterized tacit knowledge with the maxim "we can know more than we can tell," referring to the difficulty in systematically expressing much of what we know, such as how to ride a bicycle (Polanyi, 1966). Such tacit and unconscious processes generate intuitive thoughts that are "the end product of an implicit learning experience" (Reber, 1989). In other words, intuitive processing and judgments are the product of one's tacit knowledge stock, which is stored subconsciously, and intuition and tacit knowledge are thus interconnected in creating judgments (Shirley and Langan-Fox, 1996).

Embodied knowledge is defined as the constant flow of senses, actions, and experiences that encodes how the bodies should act without representation in a given situation. All together our bodies acquire the knowledge that resides within the body or is gained through the body (Nagatomo, 1992), when senses, emotions, experiences, and action flow within an individual, grasping and embodying in the individual cognition, knowing how to act without thinking, for example, using the motor skills necessary for the given circumstances, such as moving fingers while typing, or pedaling while riding the bike (Tanaka, 2011). As Tanaka (2011) describes, embodied knowledge is visible during the performance and has no "verbal explanation," as our bodies act, and act competently, prior to our conscious awareness.

Types of organizational knowledge

Distributed knowledge is knowledge dispersed within a group, organization, network, or community. Distributed knowledge may take the form of tacit, explicit, or embodied knowledge shared among and across the members. According to Ågotnes and Wang (2017), this is the segmented knowledge dispersed across a group. When combined, these segments comprise the full shared knowledge of the group, just as the pieces of a puzzle together create a full picture. Critically, individual segments may have only partial knowledge of the others, limiting the potential for knowledge to be combined in ways that benefit the whole. Distributed knowledge is typically "situated," meaning that it is dependent on the contextual understanding, culture, language, time, location, and other variables that make up our individual knowledge, subject to our own mental models (Haraway, 1988). Collective intelligence, therefore, may emerge from distributed knowledge when agents aggregate what they know to solve a common challenge. Knowledge can also be distributed not only among many minds, but different **cognitive artifacts** – such as language, books, tools, and maps – capture information and help tackle complex tasks.

Collective intelligence emerges not only when distributed knowledge is brought together to solve a problem, but also when a symbiotic relationship is created between distributed

and centralized knowledge. Andersen and Hallin (2017) argue that sustainable organizational performance is achieved when decision-makers coordinate processes anchored in emerging opportunities from the frontline (e.g., citizens) with forward-looking activities by decision-makers (e.g., policymakers). The fast and emergent processes performed by actors at the frontline observe and respond to environmental stimuli that form distributed knowledge and the slow processes initiated by decision-makers interpret events and reasons about updated actions. Current insights from the fast response processes can be aggregated systematically from the distributed knowledge and fed into the slow process of reasoning for policymaking. When the fast and slow processes interact, they form a dynamic system that adapts organizational activities to changing conditions and the problems that emerge from them.

Collective intelligence

For the purposes of this book, we define collective intelligence as **the capacity of groups to outperform individuals in problem-solving, innovation, prediction, creativity, and other cognitive tasks**. This capacity, in turn, can be derived from the various kinds of knowledge listed above: explicit, tacit, centralized, distributed, or embodied.

A recent empirical study of a collective intelligence "*c* factor" shows that a group's general ability to perform a wide range of tasks expands the areas of human intelligence research applying similar methods and concepts to groups (Woolley et al., 2010). The "*c* factor" they identify adopts a similar definition and methodology as the psychometric approach of general individual intelligence **"*g* factor."** These studies have shown that a **"**c factor" can explain between-group differences in performance as well as other potential causes such as task structure or group composition (Woolley, Aggarwal, and Malone, 2015). The original 2010 study demonstrates that the smartest groups, controlling for individual intelligence, were distinguished by three factors: by the average social sensitivity of group members, the equality in distribution of conversational turn-taking, and the proportion of females in the group (Woolley et al., 2010).

The **wisdom of crowds**, while often used synonymously with collective intelligence, most typically describes a specific instance of synchronous CI (further explained in the next section) in which the predictions or estimations of a crowd outperform its average (or, alternatively, its best) member. Such was the case in the famous Galton experiment with which Surowiecki (2005) opens his work. Condorcet's Jury Theorem (1785) is often cited as the first mathematical demonstration of crowd wisdom; the three conditions he gave for the effect are described in the section above. A more recent contribution to the understanding of this effect is Hong and Page's (2004) Diversity theorem, sometimes called "Diversity Beats Ability." It proposes that for any group, the squared error of a collective prediction equals the squared error of the average member minus the diversity of predictions. The theorem predicts the counterintuitive outcome that a crowd can be made collectively wiser by adding members who are individually *less* accurate than the average as long as their contributions increase the overall diversity of ideas in the pool. This perhaps unexpected benefit of cognitive diversity has since been demonstrated empirically (see Servan-Schreiber chapter 32 in this handbook).

Do other species demonstrate collective intelligence? Opinions are divided. Some have asserted that intelligence is a uniquely human quality, in that only our species can manipulate symbols and recombine ideas in a manner that is deliberate and self-aware (Pinker, 2010). Others point to a range of collective behaviors in terms of **swarm intelligence**

whose highly complex outcomes far surpass the ability of individual members. Such behaviors include the capacity of honeybee colonies to select among alternative hive sites (Seeley and Buhrman, 1999); army ants to construct bridges (Reid et al., 2015); and birds to synchronize migration choices over great distances (Sliwa, 2021). Regardless of whether these animal and swarm behaviors rise to the level of intelligence, they are impressive demonstrations of the powerful capacities that emerge from the efforts of seemingly power-less individuals. Humans are indisputably unique in their ability to create **cumulative culture**, that is, for each generation to make deliberate improvements in the tools and processes they inherit (Henrich, 2015). This special capacity, which Henrich links to physiological and social changes that followed the domestication of fire by early hominids, has turned culture into a "second track" of our evolution alongside the genetic selection that produced the behaviors described above.

The term "collective wisdom" has been used somewhat loosely in the literature to date. It can suggest a depth and durability of intelligence that goes beyond the capacities of a single group on a single problem (to which the phrase "wisdom of crowds" is commonly applied). In their co-edited volume on **collective wisdom**, Landemore and Elster explain that they privilege the term "wisdom" over "intelligence" because the former is "a more encompassing notion than the apparently more technical concept of intelligence." Wisdom also "evokes a larger temporal horizon," suggesting "the intelligence of a collective extending not just through space (including many people) but through time as well (including many generations)…" Finally, Landemore and Elster suggest that the term wisdom goes beyond matters of formal correctness or verifiable fact to include moral or political questions on which there may not be a universally satisfactory answer.

Taking a holistic approach to highly complex moral problems, based on a wealth of diverse experience, are elements that have characterized wisdom in many human cultures (Grossman, 2017; see the discussion in Baum case, chapter 27 in this handbook). Alternatively, Sternberg (2000) suggests that wisdom can be understood as a subset of intelligence related to solving practical problems, as opposed to theoretical ones. For the purposes of this handbook, then, we understand intelligence to refer to the ability to solve a given problem or accomplish a given task, drawing on the accumulated culture and diverse abilities mentioned above. In complementary fashion, wisdom can be understood as the sedimentation of learnings from many instances of intelligence over time, its successes and failures, our own and those of our community and ancestors. For our purposes, collective intelligence thus describes the capacity to solve a public problem currently facing us, and collective wisdom the treasury of past intelligence, especially of a moral or ethical kind, that we may draw upon.

How collective intelligence works

A potentially important distinction arises regarding the different time scales on which collective intelligence can operate.

Tomasello (2019) proposes that the knowledge-sharing functions of human culture can be seen along two dimensions: a **"coordinative dimension"** of culture, including the range of cooperative structures and conventions we use to collaborate synchronously (i.e., focusing on the same problem or task at the same time); and what he calls a **"transmittive dimension"** of culture, in which members of a group pass along skills and knowledge to its junior members, potentially creating a "ratchet effect" where each generation improves on the technologies and institutions of all previous ones. This "ratchet effect" is a main

feature of Muthukrishna and Henrich's (2016) arguments concerning the "collective brain" of a society that each member draws from and to which each may contribute (see also Vale et al., 2012).

Within this "coordinative dimension" an additional nuance can be applied: Members of a group can collaborate on the same problem or task asynchronously, that is, make a sequence of contributions that are combined toward a single main goal. Mapping the human genome, for example, was a highly complex task requiring the intelligence of a large community to operate, some performing actions synchronously (such as a laboratory team conducting a single study), and others asynchronously (several teams adding pieces of information regarding a certain gene). And each of these teams benefit from the transmission of a huge store of accumulated scientific knowledge from previous generations, transmitted via peer-reviewed journals, embodied in laboratory equipment, and so on.

We can see, therefore, how collective intelligence operates in three modes:

1. **Synchronous** collective intelligence, where members of a group interact to solve a problem or accomplish a task, or where members make individual contributions at the same time[4] and those contributions are aggregated (e.g., a prediction contest).
2. **Asynchronous** collective intelligence, where members of a group make a sequence of contributions for a given problem or task (e.g., 700 attendees making guesses about the weight of an ox over the course of a day).
3. **Cumulative** collective intelligence, where members of a group create and transmit knowledge across time (e.g., how to build a compound bow, treat an illness, or manage a project spreadsheet).

In the context of democracy and governance, as in all forms of human collaboration, these three modes of collective intelligence work in combination. In preparing their recommendations, for instance, the 99 members of the Irish Constitutional Assembly of 2012–2014 thought together synchronously (during meetings in which members proposed and recombined their ideas); they thought together asynchronously (the input for their work were eight agenda items established by the Oireachtas Éireann, Ireland's bicameral parliament), and benefitted in their work from the accumulated expertise of civil servants, advocates, and academics. Among the results was a national referendum legalizing same-sex marriage (a synchronous moment of decision), which many hailed as a breakthrough after decades of political stalemate (Elkink et al., 2017).

As described above, synchronous collective intelligence can be produced whether or not the members of a group know one another or interact in any way. Thus, another potentially useful distinction arises.

On the one hand are **aggregative methods** of collective intelligence, in which individuals contribute independently to a common task and the sum total of these contributions produces a level of accuracy or performance that surpasses the average (or even the best) individual. Such was the case in the Galton experiment, in which 787 attendees of the county fair produced a collective estimate of the ox's weight far more accurate than the average individual guess, without knowing or interacting with one another. Since the scale and diversity of the crowd are two principal factors in producing this "wisdom of crowds," digital technologies like prediction markets often draw upon aggregative methods to produce intelligent outcomes.[5]

On the other hand are **deliberative (or synergistic) methods** of collective intelligence whose effectiveness depends on the quality of interactions among the members of a group.

The Irish Constitutional Assembly of 2012–2014 presents an exemplary case: Of the 99 members, 66 were selected randomly from the general population, balanced by age, gender, and region, and 33 were members of parliament selected across various parties. As Farrell and Suiter (2019) explain, citizens' assemblies have been able to produce groundbreaking policy outcomes because citizens are welcomed into a framework within which they can share knowledge, explore differing perspectives, and bring tacit knowledge to the surface in a collaborative and non-judgmental way. On questions of deep moral complexity, from marriage to reproductive rights, it is the high quality of interactions among assembly members that enables new insights to emerge, relationships of trust to form, and proposals for public good to be defined. We may contrast this outcome with another national exercise on a similarly divisive issue, that of Britain's referendum on membership in the European Union in 2016. In this superficially "democratic" exercise, a lack of informed deliberation among citizens of differing views produced an outcome that has not only deepened the nation's divides but has produced at least as many policy challenges as it has resolved (Clarke et al., 2017).

Drivers of collective intelligence

The past two decades have seen a remarkable series of advances in our understanding of how group intelligence is produced. Several conditions have been identified that can make a group smarter than the sum of its parts, or conversely, that can hinder collective intelligence from taking shape.

Based on our analysis of the different contributing fields, we propose that the factors driving collective intelligence can be usefully divided into three categories, each of which answer one of the following questions: (1) "**Who** should be in the group?," (2) "**How** should the group be organized?," and (3) "**How many** should be in the group?"
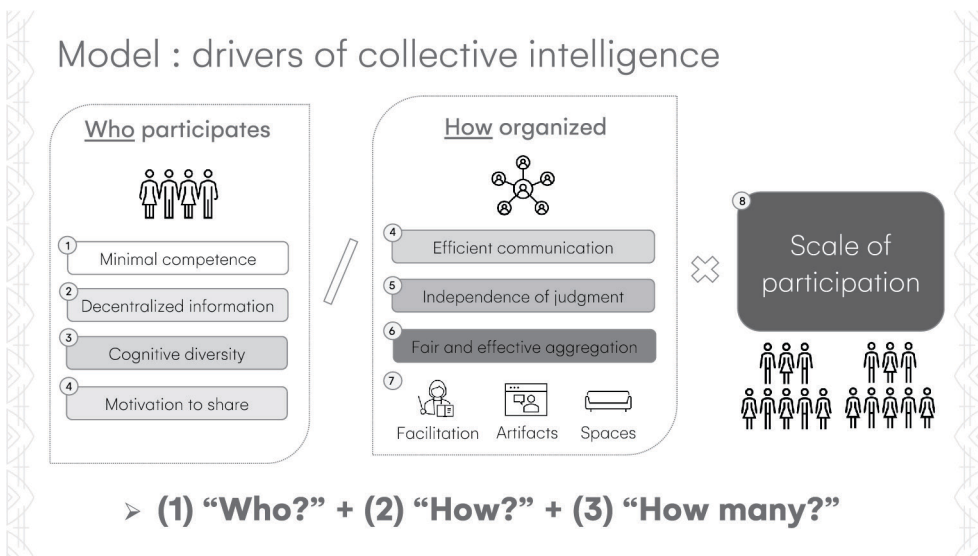
Figure 6.1 Principal drivers of collective intelligence.

Source: Authors' synthesis.

(1) The "who"

    (a) Members should be at least **minimally competent for the task at hand**. Condorcet (1785) theorizes that the judgment of the average member of his "wise jury"[6] will need to be at least slightly better than random. Similarly, Hong and Page (2004) affirm that collective performance will grow either as the crowd becomes more diverse or as the competence of its individual members improves. Following Dewey (1927), Noveck (2015) argues that "competence" in public affairs is often misconstrued as requiring special credentials or technical expertise, whereas even citizens who are not themselves "expert shoemakers," to borrow Dewey's metaphor, can nevertheless be good judges of "whether the shoe fits and how it fits."

    (b) Members should have access to **decentralized sources of information**. Hayek (1945) argued that markets are superior to centralized planners in producing desired social outcomes because they simply and rapidly synthesize a vast quantity of decentralized information held by local actors in a single form: the market price. As Surowiecki (2005) observes, high-performing organizations have tended to be good aggregators of the distributed knowledge and local information of their members (see also Argyris, 1995). Conversely, if members of a diverse and competent group are all using the same flawed information source, collective intelligence will suffer.

    (c) The group should be **cognitively diverse**. Implicit in Aristotle's metaphor of the "feast to which many contribute" (Politics, 3.11) is the argument that certain types of tasks are better accomplished by a group that combines diverse preferences and talents. If the previous category considers the variety of information sources available to a group, cognitive diversity refers to the variety of ways a group can interpret and use that information. Page (2017) proposes that each member of a group brings their "cognitive repertoire" to group tasks, a unique package of mental models, representations, and heuristics that can be applied to a given type of problem. A group becomes potentially more intelligent in proportion to the variety of the cognitive tools at its disposal. Importantly, this kind of diversity is linked to, but distinct from, other indicators of diversity such as age, gender, and ethnicity. Page argues that a group that is diverse according to these measures may indeed be cognitively diverse, given the range of life experiences and cognitive skills that can arise from those differences. So too, however, can a group that "looks" diverse actually think in similar ways – for example, if they share a similar educational or professional background.

    (d) Members should be **motivated to contribute what they know.** Even the most diverse, competent, and well-informed group will not be intelligent if individual members do not share what they know. Motivation for a given activity can be either **intrinsic**, that is, meaningful based on one's values or identity, or **extrinsic**, derived from external rewards or consequences (Ryan and Deci, 2000). A feeling of shared identity and responsibility can be a powerful motivator (Van Bavel and Packer, 2021). Alternatively, aggregative methods like prediction contests often rely on monetary or prestige-based incentives to motivate participants (see Servan-Schreiber case, chapter 27 in this handbook). Gamification methods are increasingly used by governments to stimulate citizen engagement based on the enjoyment linked to solving puzzles, amassing points, and/or engaging in friendly competition (Sgueo, 2018).

(2) The "how"

    (a) Members must be able to **communicate efficiently and at a reasonable cost.** As Raymond (1999) posits in his study of open-source communities, the rise of peer-to-peer platforms dramatically lowered the costs of collaboration, making it

possible for entire operating systems to be created by large groups of volunteers. Conversely, processes that are inaccessible to certain populations or require too much time from each member are unlikely to gain a critical mass (Noveck 2015). An effective CI method makes it easy to access the common task; critical factors may include choosing the right language, time, and physical spaces, as well as planning for different levels of digital literacy and connectivity.

(b) Members should be able to **form judgments independently** and share them without fear. One of Condorcet's (1785) three conditions for his "wise jury" was that the judgment of each member should be free from influence by the others. In aggregative methods such as the Galton example, or in prediction markets today, the existence of a prize can incentivize participants to bring their best thinking to bear, regardless of if their ideas diverge from others. Nevertheless, as Kahneman (2011) and others have shown, anchoring effects, information cascades and a range of unconscious biases can diminish our independence of judgment, putting collective intelligence at risk. In other contexts where the impulse to conform may be even stronger, a climate of psychological safety has been shown to be critical in bringing good ideas to the fore, especially when these challenge the conventional view (Edmonson, 1999).

(c) There should be **a fair and effective method to aggregate contributions.** Such aggregation methods can be low-tech, such as the basket and pieces of paper in the Galton case (Surowiecki, 2004), or high-tech, such as the software for evaluating team contributions to the Netflix prize (Page, 2017), or the Pol.is platform used to map policy preferences in Taiwan (see Taiwan case, chapter 7 in this handbook). Deliberative methods of CI typically require substantial facilitation to assure the quality of interaction within the group, such as in Deliberative Polls (Fishkin et al., chapter 13 in this handbook) or citizens' assemblies (Lironi, chapter 8 in this handbook; Farrell and Suiter 2019). Regardless of the degree of facilitation or technology required, participants' contributions should be reflected accurately, and similarly situated participants should be given equal opportunity to contribute.

(d) Collective thinking is often enhanced by specially designed **spaces and artifacts**. From neighborhood maps to whiteboards to circular amphitheaters, well-designed spaces can enhance group interaction and well-chosen objects can usefully focus group attention (see Bergman, chapter 35, in this handbook). Paul (2021) gathers a range of studies of "**embodied cognition**" and "**situated cognition**," that is, how thinking may be conditioned and potentially enhanced by the tools and spaces available to the thinker. Many of these recent studies have drawn on Clark and Chalmers' (1998) arguments for the "**extended mind**", that is, an understanding of our cognitive processes not strictly limited to the neurochemical activities of our brains; according to this view, human thinking can be understood as incorporating our bodies, tools, spaces, and other minds. This is an emerging and contested area of cognitive science (see Colombo et al., 2019), with much to offer to theorists and practitioners of CI.

(3) The "how many"

    (a) Larger groups can be more intelligent…but not always. In classical demonstrations of crowd wisdom, if all other variables are held constant, a larger group will outperform a smaller one. Servan-Schreiber (2018) notes the statistical outcome of higher group intelligence but with diminishing returns: for example, each new member of a Condorcetian jury improves collective performance, but in smaller and smaller increments. For ideation or problem-solving tasks, on the other

hand, scaling up could make it more likely that a specific problem is spotted (the "many eyes" effect, see Raymond 1999), or that a "needle-in-a-haystack" solution is identified. This capacity of larger groups (n=20 to n=200) was demonstrated by Mercier and Claidière (2022) regarding the quality of answers to factual problems, where members were able to discuss with one another. In many cases, digital technologies have radically lowered the costs of adding participants, especially for aggregative CI methods; this has enabled prediction markets such as Hypermind[7] or citizen-science platforms like Zooniverse[8] to aggregate large numbers of estimations or contributions at very low cost. Large-scale participation can itself be an important goal of a collective intelligence process, such as when the target population has been marginalized or excluded from such participation in the past (see Du Bois, 1920; Gret and Sintomer, 2005; Tawa-Lama, chapter 20 in this handbook); or when the goal is to raise awareness of a larger set of issues, as may be the case for citizen science initiatives (see Kragh, chapter 38 in this handbook). Deliberative methods, unlike aggregative ones, have proven notoriously difficult to scale (see Hartz-Karp and Sullivan, 2014). Maintaining a high-quality deliberative experience has proven challenging in online settings, since these settings do not easily capture the full range of gesture and tone that are critical to human communication (Tannen, 2005). Three of the cases in this handbook show promising approaches to maintaining a high-quality deliberative experience using scalable online tools (see Fishkin, chapter 13; Spada, chapter 5; Liu, chapter 7). Cognitive biases such as **groupthink, information cascades,** and **conformity bias** may also be harder to mitigate at larger scales, which can lead to disastrous results (Sunstein, 2007). Strategies to preserve independence of judgment can include facilitation techniques such as asking participants in a workshop to write down their opinions before group deliberation begins. Edmonson (2019) proposes a series of strategies to favor psychological safety in group settings where the predominance of a "majority view" risks stifling constructive dissent.

Finally, some processes, such as visioning processes in a small community (Baum, chapter 27 in this handbook) or citizens' assemblies, do not require large-scale participation for group intelligence to emerge. In such cases, resources are more appropriately invested in maximizing interaction quality among a smaller number of participants. Where appropriate, therefore, scaling up participation can be an important lever for augmenting collective intelligence; nevertheless, any scaling strategy should account for these potential risks and costs.

Core functions of collective intelligence

One way of understanding the capacities that underlie human intelligence is to answer the question: What did these capacities enable us to do? How did their development allow certain individuals and groups to outcompete their peers and transmit these capacities, genetically and culturally, to their descendants?

Feldman Barrett (2021) argues that from an evolutionary perspective, "brains are not made for thinking." Rather, the first animal brains evolved to coordinate allostasis, that is, managing the balance of energy needed to keep a body alive and functional. As the perceptive and motor abilities of early animals developed hundreds of millions of years ago, these coordinative tasks expanded to include analysis and decision-making – "Is that a threat?" "Is this food?"[9] – and to execute the proper motor response. More complex forms of thinking such as memory and prediction – "Is this likely to be food? Was it good to eat last

time?" – were selected for because these modes of thinking helped reduce the depth of analysis needed in everyday situations, conserving energy and thus better managing allostasis.

Tomasello (2019) picks up the evolutionary story to explain how and why humans developed unique capacities for cognition in a highly competitive environment. Based on a wealth of experimental data comparing responses of chimpanzees and human children on a range of collaborative tasks, he proposes that it was through the development of **shared intentionality** – the ability to conceptualize a common task and play complementary roles in achieving it – that our unique form of collective intelligence emerged. Unlike other social mammals, who live together but collaborate only when direct benefits are possible for each individual, humans developed "**ultrasociality**," including the ability to sacrifice individual interests for the sake of group success and transmit bodies of cultural knowledge to the next generation (Haidt, 2012). Along the same lines, the works of Haidt (2012), Boehm (2009), and Henrich (2015) trace how the core functions of intelligence of our early animal ancestors – observing the environment, predicting the probable outcomes of different courses of action, making and executing decisions, and learning from them – became functions that humans took on collectively, causing a re-arrangement of human societies that made us look very different from our primate cousins.

In this sense, our complex language, social institutions, abstract concepts, and moral values are all adaptations that have allowed this evolutionary "bet on collaboration" to pay off. Whether the rise of *Homo sapiens* has been a good thing for our planet is a separate matter; nevertheless, our spectacular success from an evolutionary perspective cannot be denied, and collective intelligence lies at its core.

Building off these advances in the cognitive and evolutionary sciences, Mulgan (2018) proposes the following "core functions" of collective intelligence[10]:

1. **Observing or gathering data** on a given problem or need.
2. **Modeling and predicting** the likelihood of risks and the probability of different scenarios coming to pass.
3. **Generating options** for action, based on past experience or creating new approaches that have not yet been tried.
4. **Filtering** better potential courses of action from worse ones, **deliberating** on the relative virtues and risks of the better options, and **deciding** which option to adopt.
5. **Implementing** the decision by mobilizing the necessary resources and taking action.
6. **Learning** from the results of the actions taken by **making sense** of the resulting data, **remembering** the lessons learned, and synthesizing past lessons into **wisdom** that can be transmitted to others.

To put this in the context of previous sections, if the drivers of collective intelligence are the answers to the question, "What makes a group smart?", these core functions can be understood as answering the question, "What task will that group accomplish?" The answers to the latter question will, in turn, guide the answers to the former one: *Who* should be in the group; *how* should it be organized; and *how many* individuals will be needed for the task at hand.

Impediments to collective intelligence

Not all crowds are wise. The seminal studies of Mackay (1841), Le Bon (1905), Janis (1982), and Sunstein (2006) have shed light on some of the factors that can hinder group intelligence or, at worst, transform otherwise intelligent people into an unthinking mob.

In this and the next sections we will analyze impediments to CI that are intrinsic to group behavior and groups' information processing. We should keep in mind that there are many other factors beyond the scope of this chapter that might hinder the implementation of a CI process. Examples include the role of political competition, corruption, and capture often discussed in the field of community-driven development (Mansuri and Rao, 2012). Other examples can be found in studies of public policy, economics, and political science analyzing the difficulty of implementing reforms in public administrations (Cairney, Akkila, and Wood, 2019; Acemoglou et al., 2008; Rodrik, 2018; Mayka, 2019). Lastly, within the field of organizational management lies an entire subfield on managing change, a body of research that gives important insights for those interested in reforming or reinventing government (see, for instance, Stouten, Rousseau, and De Cremer, 2018). Additional details on the barriers to effective implementation of collective intelligence processes can be found in the chapter on measuring impacts (see chapter 5) and in chapter 3 in relation to political obstacles to CI.

While genetic and cultural evolution has bestowed us with powerful cognitive tools, so too has it resulted in mental "shortcuts" which conserve precious energy but can also produce bad reasoning. Such **cognitive biases and heuristics** include the use of stereotypes, confirmation bias, and motivated reasoning, among many others (Kahneman, 2011). Enhancing collective intelligence often requires becoming aware of, and taking steps, to mitigate the effects of such biases on collective thinking.

Several case studies in this handbook illustrate the difficulties of bringing together all the principles above to foster collective intelligence.

Groupthink and **polarization** might become manifest in the cognitive mode of action. This is because humans are generally **homophiles**, which means that people prefer to link up with others who are similar to them (i.e., in terms of race, nationality, ideology, gender, age, etc.). This human trait can manifest itself most visibly when many people are involved. Groupthink and polarization are especially common in large groups. "The term [groupthink] refers to a deterioration in mental efficiency, reality testing and moral judgements as a result of group pressures" (Janis, 1971). Groupthink is the result "when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (Janis, 2008). Groupthink is especially prevalent when group cohesiveness is high, that is, when members share a "we-feeling" of solidarity and desire to maintain relationships and status within the group. In the course of collaborative work, therefore, it is key to create conditions where individuals of large groups maintain **independence of judgment** and are protected from these unhelpful forms of peer influence.

Sunstein (2006) presents, among others, the key notions of **echo chambers** (in which beliefs are reinforced or amplified inside an insulated circle of participants), **information cascades** (when people form judgments based solely on information provided by others without verifying or questioning it) and **groupthink**. As a remedy to such "jumping off a cliff in unison," Sunstein (2005) insists on the importance of nurturing a culture of **healthy dissent**.

Gammelgaard and Hallin (2018) show that barriers to effective crowdsourcing processes can include the following:

Ambiguity: Lack of common language and shared understanding leading to sparse common ground.
Multiplicity: A diverse set of practices and approaches producing a lack of coordination and consistency.

Complexity: Poor insight into one's own organization tied to a lack of innovation management and governance processes.

Inconsistency: Lack of combined efforts and priorities leading to imprecise objectives and poor implementation.

Uncertainty: When crowdsourcing is associated with conditions of risk.

Problem complexity

A core argument for the importance of collective intelligence in governance is that increasingly complex public problems require diverse sources of information and expertise to be combined and mobilized. In fact, the world is said to become increasingly volatile, uncertain, complex, and ambiguous (**VUCA**) (Mack et al., 2016). As the Covid-19 pandemic illustrates, globally disruptive events unfold ever faster, the outcomes of different types of events are unclear, the interdependence between actors is greater, and, even when we have information, it is difficult to interpret. A conventional riposte is that it is the very complexity of problems like public health or fiscal policy that disqualifies the average citizen from making a useful contribution. Rather, public decisions of greatest import should be left to technocrats or elected officials of outstanding abilities (presuming such to exist). Others identify precisely in this complexity the reasons why more inclusive forms of democracy may yield better decisions. Babbitt (2012) exemplifies this view, arguing that "properly understood, democracy can address many of the problems arising from governing a world increasing in complexity."

Different ways of characterizing the complexity of public problems include:

Dynamic complexity, meaning a systematic distance or delay between cause and effect in space or time. The dynamic complexities of climate change are a clear example, as there is a distance and delay between the decisions of climate solutions and the effect. According to Scharmer and Kaeufer (2010), dynamic complexity often goes along with social complexity.

Social complexity is the result of diverse interests, preferences, and mental models among the stakeholders concerned by a given problem. The greater the social complexity, the more important is the multi-stakeholder approach to real problem-solving. The cooperation of all the relevant stakeholders is vital to include the interests of all.

Emerging complexity "is characterized by disruptive change", according to Scharmer and Kaeufer (2010). It is characterized by the fact that it does not occur until a certain unpredicted event happens, and conditions for solving the problem are unknown, often the problem changes its form and makes it difficult to define both the problem statement and key stakeholders. "The greater the emerging complexity, the less we can rely on past experiences." Furthermore, as we unfold new solutions, the problem and the diagnosis keep evolving, therefore, such problems require more cognitive and coordinative CI actions.

Wicked problems, as coined by Rittel and Webber (1974), are those for which each attempt to create a solution changes the understanding of the problem. As is the case with many social and political issues, wicked problems may have several competing definitions; their sub-causes may be deeply interconnected, meaning that any intervention will ramify through the system in unexpected ways; their manifestations may change rapidly and continuously; and stakeholders may disagree on what a

good solution looks like. Because of these characteristics, wicked problems like poverty or climate change are unlikely to ever be solved "once and for all." Rather than applying a linear model of problem-solving, therefore, wicked problems demand methods of continuous learning and experimentation (see Noveck 2021). Organizational learning requires groups to be able to reflect not only on the new data arising from the field, but also on their own capacities to model and interpret this data, "learning how to learn." This approach of "**learning loops**" has been developed and refined to help organizations and communities address problems of this complexity.

(Argyris, 1995; Edmondson, 1998; Mulgan, 2018)

Surowiecki (2005) proposes that collective intelligence is especially effective in resolving three types of problems:

Cognitive – These are problems that concern matters of local knowledge and insights, where there is a right and a wrong answer, for instance how will infectious diseases evolve (as in Servan-Schreiber and Larmanou, Handbook). Large crowds can be surprisingly smarter at producing the right information than smaller groups of individuals.

Coordinative – This is when a group of people is better at coordinating behaviors than individuals. For example, what matters is not where people work in a hybrid work environment, but who performs the tasks and how the tasks are coordinated by the team in order to finish tasks (Riedl, Kim, Gupta, Malone, Woolley, 2021).

Cooperative / collaborative – This is when a group wishes to work together to find and assess solutions. Whereas coordination can happen organically – like pedestrians naturally self-regulating on the sidewalk – and the resolution of cognitive challenges will be served by actors sharing their knowledge independently, collaboration requires the active interaction of the group members.

Policymakers may be facing all types of problems, therefore requiring a diversity of CI skills and approaches throughout the policy cycle. However, the cooperative / collaborative type tends to be particularly frequent, imposing on policymakers to pay particular attention to the conditions for quality deliberation set out by Fishkin.

Design principles and frameworks

In 2010, Malone, Laubacher, and Dellarocos published a paper entitled "The Collective Intelligence Genome" in the *MIT Sloan Management Review*. The article gathered nearly 250 examples of web-enabled collective intelligence, such as Threadless, Wikipedia, and Innocentive. After examining the examples in depth, the authors presented the following framework for designers of collectively intelligent system:

1. **What is being done by the crowd?** That is a question about the purpose of the task. The many organizational tasks encountered in collective intelligence systems can be boiled into two basic genes. One gene is aiming at creating something new, such as a piece of software or a T-shirt design. The other gene is related to how the actors evaluate and select alternatives, such as deciding on whether a new module should be included

in the next release of Linux open-source software, which T-shirt to manufacture, or deciding which Wikipedia article to delete.

2. **Who is doing it?** This question relates to who undertakes the task on the platform. Here are two sub-questions to be addressed: Is it the **crowd who decides** or is it **a hierarchy**? If it is the crowd, the task is undertaken by a member of a large group who has chosen to do so. However, if the task is performed by the hierarchy, it is typically identical to a traditional hierarchical organization with few decision-makers (e.g., policymakers) on the top of the hierarchy and answered when they assign a crowd to perform a certain task for policymaking.

3. **Why are they doing it?** This question concerns what motivates the crowd to take part in the activity? And what incentives are at work for the crowd? Examples of high-level motivations are money and the promise of financial gains by fulfilling the task. It could also be the feeling of love by being motivated from their intrinsic enjoyment of an activity, love for the community and because they contribute to something social or to a good cause larger than themselves. A third motivator is glory in the sense that one becomes recognized for one's performance within a crowd or community.

4. **How is the task being done?** In traditional organizations, the *how* question is typically responded to by describing the organizational structures and processes. The question concerns insight into four components to be evaluated related to the *how* genes for crowds:

    (a) **Collection** occurs when the crowd performs tasks independently from each other, such as creating a video or suggesting an idea on a crowdsourcing platform happens independently among the crowd members. It could also be in the form of an idea contest among the crowd members.

    (b) **Collaboration** takes place when members of a crowd work together to create something, where the individuals are dependent on each other to reach an outcome, such as when participants create a new Wikipedia page together and build on each other's contributions.

    (c) **Group decision** occurs when inputs from members of the crowd are assembled to make a decision that concerns the group as a whole. It could be a deliberation of a political issue by a crowd on a platform. Other variations of group decisions are *voting, consensus, averaging, and prediction markets,* examples of which will be presented throughout this handbook.

Mulgan (2018) also suggests the following five key principles for those seeking to orchestrate collective intelligence:

1. **Autonomous commons** – Create shared resources open to all group members that capture past learnings and allow for information, ideas, and arguments to flow freely and be organized for later use.

2. **Balanced use of core functions** – Identify which core function or functions are most critical to the task at hand and choose tools and processes most likely to support those functions.

3. **Focus and right granularity** – Adopt tools and facilitation methods that help the group focus on the most important elements of the task, avoid potential distractions and ask no more from group members than what is needed.

4. **Reflexivity and learning** – Keep in mind that knowledge production is a dynamic flow ("knowledge needs knowledge about knowledge") and that refining a thought process may require learning and sense-making in iterative loops.

5. **Integrate for action** – Combine tools, methods, participants, and commons in the manner most suited for the task at hand, being ready to abandon past methods and adopt new ones as needed for the circumstances at hand.

These frameworks are not exhaustive, as their proponents admit. Rather, they are intended to serve as potential sources of inspiration for designers of collectively intelligent systems, to be augmented by new and emerging frameworks such as those represented in this handbook.

Innovations in democracy and governance

In a growing number of political systems, there is an emerging awareness of the benefits of large-scale participation in decision-making processes, the allocation of public resources, and the resolution of disputes. These activities can be organized such that they are performed by an individual, a designated subset of the community, or the whole community. In developing governance innovations, different democratic principles can also be applied to any scale of community and decision-making process for organizations, according to Malone (2004). He distinguishes between the following forms of power distribution in the decision-making process:

> **Democracy**: A system of government, organization, or any type of community, where all eligible members of the respective society contribute, typically through elected representatives with the majoritarian principle.

> **Loose hierarchies**: Delegation of the decision-making power to the subordinates with the bottom-up process, where the managers and leaders approve the final decisions.

> **Free market principle**: Internal trade of the ideas and decisions in the large-scale involvement.

Today, democracy is often equated in people's minds with the practice of elected officials making public decisions, executed by unelected bureaucracies, in which the mass of citizens has limited power beyond voting periodically – "uploading one bit of data every four years," as Taiwan's Digital Minister Audrey Tang puts it – and voicing their opinions, which have no binding force in the public debate, with the excuse that large-scale participation justifies a limited form of representation and delegation of power. CI designs can be applied to many forms of power distribution and use the frameworks laid out by political theorist Robert Dahl (2020) to strengthen democracy's five essential principles:

> **Effective participation**: In an ideal democracy, before a policy is adopted by the association of citizens, all its members must have equal and effective opportunities for making their views known to the other members as to what the policy should be.

> **Equality in voting**: When the moment arrives at which the decision about policy will finally be made, every member must have an equal and effective opportunity to vote, and all votes must be counted as equal.

Gaining enlightened understanding: Within reasonable limits as to time, each member must have equal and effective opportunities for learning about the relevant alternative policies and their likely consequences.

Exercising final control over the agenda: The members must have the exclusive opportunity to decide how, and if they choose, what matters are to be placed on the agenda.

Including all adults (a criterion largely unapplied in the case of women before the 20th century).

Many stories in this handbook demonstrate efforts to address each of these pillars of democracy, focusing primarily on effective participation and gaining enlightened understanding; examples range from the *jan sunwai* consultations and the Mobile Vaani phone voice response device in India to the crowdsourcing platform in the Danish town of Slagelse. Other dimensions in fact invite further developments. Fishkin (2018) notes in particular how efforts to involve citizens in policymaking have so far been limited when it comes to binding impact on the policy agenda.

With today's historic model of representative democracy being challenged, this handbook explores a variety of **democratic innovations**. Although they are attracting significant academic interest, there is considerable debate as to what can be qualified as a democratic innovation. Elstub and Escobar (2017) define democratic innovations as "processes or institutions developed to reimagine and deepen the role of citizens in governance processes by increasing opportunities for participation, deliberation and influence." We will understand them as new approaches to decision-making being explored around the world and designed to increase, diversify, and deepen opportunities for citizen participation in governance, policy, and public administration processes.

In understanding how different democratic innovations and CI approaches can help strengthen democracy, it is useful to consider how they might play out at different phases of the policy cycle. Mulgan (2018) usefully distinguishes between the following six stages of the democratic process:

- **Problem framing**, or, in Mulgan's words, "framing questions and determining what is worthy of scarce attention and through what lens it is to be seen." Gitte Kragh, chapter 38 in this handbook, tells us how participatory citizen science can help understand the magnitude and speed of climate change, which ultimately helps society decide what is the issue at hand and how much of a problem it is. The Hypermind platform similarly provides an example of collective prediction applied to disease outbreaks (see Servan-Schreiber chapter 32 in this handbook).
- **Agenda-setting**: "Identifying and nominating issues that might be amenable to action." In this handbook, the story of the International Panel on Climate Change illustrates how we try, collectively, to define what is the policy agenda on climate change based on current scientific knowledge, while the Fab Global City Initiative shows how we can purposefully elicit collective stories of our shared challenges to create the momentum for collective action to tackle them.
- **Ideation**: "Generating options to consider." The example of the Danish Alternative party, of the German Agora Energiewende stakeholder platform, of an early 20th century public challenge in Australia, of the Danish Sager der Samler collaborative, or of the UN's

UNLEASH innovation lab are all examples in this book of assemblies designed to foster new solutions, on climate change and other topics.

- **Deliberation**: "Scrutinizing options." Many CI formats presented here focus precisely on enabling careful examination of policy options from a variety of angles, from school participatory budgeting to online deliberative polls and civic tech platforms.
- **Decision**: "Deciding what to do" is complex and paramount to policymakers' job. Some will focus on creating the right context for open-minded dialogue, as in the examples here of the Open European Dialogue or of Helmut Kohl's "gastrosophy," while the Scottish administration sought to enable "collectively brave" decisions thanks to the Theory U approach.
- **Evaluation**: "Scrutinizing what's been done and judging whether it's working" may be less common, but reflecting on performance, accumulating and sharing knowledge of the experience gained is crucial to developing better solutions together, as exemplified here, for instance, by the case of the "zero long-term unemployment" experiment in France.

While common sense invites us to consider how to foster collective intelligence at each step of the policy cycle, complexity invites us to be recursive in our approach. In the complex, often confusing world we live in, the **OODAL loop** – which stands for Observe, Orient, Decide, Act & Learn (Boyd 2018) – proposes a five-step approach to help decision-makers filter available information, put it in context, and quickly make the most appropriate decision while also understanding that changes can be made as more data becomes available. Applying this recursive examination of CI devices at each step of the policy cycle should become central to public administration's mandate.[11]

These activities are organized via different participatory practices, such as:

> **Representative practices** include those where decisions are made, resources allocated, or disputes resolved by an individual or body selected by the community for this purpose.

> **Administrative practices** include those where decisions are made, resources allocated, or disputes resolved by an individual or team that is employed by the state.

> **Participatory practices** include those where the entire community (as construed by the rules of that community) are invited to contribute to making a decision, allocating a resource, or resolving a dispute. These can include actions taken by the community as a whole, or by a subset that chooses to participate. (Examples: town halls, participatory budgeting, the *jan sunwai*…).

> **Deliberative practices** include those where a subset of the community (or the entire community, in smaller-scale societies) gathers to consider an issue, weigh arguments, and make decisions or recommendations. In contemporary usage, as well as in ancient societies such as Athens, such groups can be chosen by sortition to create a resemblance with the community as a whole. (Examples: citizens' assemblies, consensus conferences, citizens' juries, deliberative polling).

Participatory democracy thus gives citizens an opportunity to take a direct role in political decisions and policies that affect their lives, rather than through elected representatives.

Deliberative democracy focuses instead on developing the conditions by which the considered judgment of a "mini-public" (a representative sample of the population) can

be brought to bear on a public issue (Landemore, 2013). As such, deliberative democrats insist on the quality of the deliberation leading up to those considered judgments, evaluating the pros and cons of different alternative views, and are often less concerned with maximizing the total number of people taking part in the process. **Direct democracy**, in the famous "ladder of citizen participation" sketched out by Sherry Arnstein (1969), can be understood as any mechanism which grants the electorate power to decide on policies without the intermediation of elected representatives. Referenda and plebiscites are often criticized, however, for the manipulation of facts and superficial debates which often characterize these exercises, and the fact that they are suspiciously popular among antidemocratic movements and regimes (Mounk, 2018). Some scholars evaluate democratic innovations not through the lens of whether a given process is deliberative or participatory but rather if it increases the system's **overall deliberativeness** (Mansbridge and Parkinson, eds., 2012). This could be the case, for instance, with a protest initiated by a trade union elite. Overall, adapting the adage that with greater power comes greater responsibility, we would say that with greater delegation of power comes greater responsibility for ethical and neutrally informed deliberation. Landemore (2017) argues that it is important to create the proper conditions for effective deliberation, including creating an alignment around common goals and constraints, and facilitation techniques that depersonalize ideas, allowing better arguments to naturally come to the fore. Fishkin (2018) identifies five key conditions for quality deliberation:

Quality information: The extent to which participants are given access to reasonably accurate information relevant to the issue at hand.
Substantive balance: The extent to which arguments offered by one side or perspective are answered by considerations offered by those who hold other views.
Diversity: The extent to which all major positions taken on the issue in the public sphere are represented by participants in the discussion.
Conscientiousness: The extent to which participants sincerely weigh the merits of the arguments.
Equal consideration: The extent to which arguments offered by all participants are considered on the merits regardless of which participants offer them.

The examples provided in this handbook suggest that some policymakers are exploring new ways of including external voices – citizens, experts, professionals… – in their decision-making and governance, predictions and innovation. Both participatory and deliberative processes are visible in the handbook, from participatory budgeting in schools to rich dialogue formats at community, national and even transnational level (see Ringler, in this handbook, chapter 31). As pointed out by Mulgan (2018), "If we see democracy not only as an expression of popular views but also as a collective thinking process, then (…) the quality of deliberation matters as much as the quantity of people involved." As this new paradigm takes shape, our understanding of democracy could increasingly be oriented toward methods and processes that harness collective intelligence, supported where appropriate by machine intelligence, to strengthen accurate and innovative policymaking.

Elstub and Escobar (2017), drawing upon a variety of authors, invite us to examine such democratic innovations with the following questions.

	Low			*High*
SELECTION How are the participants selected and how **inclusive** is the process?	Election	Purposive selection / sampling	Sortition	Self-selection
MODE OF PARTICIPATION How do the participants communicate with each other and how intense is the **participation**?	Observation	Listening	Voting	Asking questions, making comments, engaging in deliberation
INVOLVEMENT How are participants involved and how intense is their **contribution**?	No decision	Aggregation of preferences	Bargaining / negotiation	Deliberation
AUTHORITY & POWER How much **influence** do the participants have over what public authorities do?	Personal benefits: Citizens have no influence but may gain personal benefits	Advise and consult: Participants provide advice and consultation for public authorities who retain decision-making power	Co-governance: Citizens do not formally influence decisions but may informally influence them and public opinion can be transformed through the process	Direct authority and co-decision: Citizens join public officials to make decisions

Table 6.1 Collective intelligence methods for democracy and governance

Core Functions	Methods and Tools
Observing/ gathering data	• Crowd–mapping • Crowd deliberation and participation on platforms • Citizens' assemblies or juries • Open data • Citizen science • Participatory Action Research • Data mining • Prediction markets • e-petitions • Crowd surveys (off-/online)
Modeling and predicting	• Prediction and forecasting methods: prediction markets, contests, swarm intelligence, future studies, scenario building (e.g., Futurecasting, transformative scenario planning, delphi method, future workshop, causal layered analysis, etc.) • Collaborative mapping • Predictive modeling, predictive analytics • AI functions such as NLP • Lean and prescriptive analytics, behavioral insights, ethnography
Generating options / creativity	• Open calls for creative solutions • Open government • Participatory budgeting • Citizens' assemblies or juries • Collaborative platforms • Hackathons • Design thinking (e.g., living labs, etc.) • Public challenges and other challenge mechanisms • Ideation techniques (e.g., design sprints, hackathons, creative problem-solving, etc.) • Policy labs • Think tanks • Citizen juries
Filtering/ deliberating/ deciding	• Mini-public deliberations (Citizens' assemblies or juries, deliberative polls, planning cells, etc.) • Focus groups • Opinion surveys • Data collaboratives • Decision matrix, multi-criteria decision analysis • Transformative scenario planning • Door-to-door canvassing • Citizen hearings • Participatory Budgeting
Implementing/ pooling labor	• Nudging and monetary incentives • Mutual aid networks • Pol- /Legal-/Sup-tech • Regulatory sandboxes and innovation hubs • Randomized control trials

Table 6.1 Cont.

Core Functions	Methods and Tools
Learning/sense–making/ memory/wisdom	• Wikis • Communities of practice • Collective learning and sense–making • Community science • National archives • Research, training • Serious games • User committees

The democratic innovations encountered in this handbook usually demonstrate hybrid combinations of these different options. Generally speaking, democratic innovation is eminently, as evidenced in all the stories, characterized by hybridity and experimentation: We see mini–publics selected by lot combined with self–selected participants online and referenda in the case of Iceland's constitutional crowdsourcing initiative. We have examples of collaborative governance combined with crowdsourcing, deliberation, and digital participation, for instance, in the municipality of Slagelse.

The following table similarly categorizes some of the most commonly encountered collective intelligence methods according to the schema of "core functions" of group thinking as described by Mulgan (2018). Of course such categories are overly simplified, as some methods can contribute to more than one function, which is why you will find some methods listed in more than one line. A number of devices, such as participatory budgeting or citizens assemblies can have several functions depending on how they are implemented.

This evolving toolbox is being constantly enriched due to new abilities provided by machines working with humans.

Humans and machines thinking together

Hybrid intelligence

Hybrid intelligence (HI) is **the combination of human and machine intelligence, expanding human intellect instead of replacing it**. HI takes human intelligence and intentionality into account when making meaningful decisions and performing appropriate actions, together with ethical, legal, and societal values.[12]

Artificial intelligence can facilitate the surfacing of collective tacit knowledge for policymaking in numerous ways (cf. Peeters et al., 2021). Examples of such hybrid forms of intelligence include Amazon Mechanical Turk (AMT) for workflow, MIT's Superminds, and other crowdsourcing platforms such as CitizenLab that enhance citizen participation in democratic processes through natural language processing (NLP) features or AI algorithms.

Peeters et al. (2021) suggest the following ways in which artificial intelligence can function in a symbiotic relationship with human intelligence and thereby advance decision–making:

> **In a dyadic way**, a policymaker can ask a decision support system what the right decision would be under a given context and for a given problem.

At the team level, an example could be a swarm of public drones that perform sensing surveillance of floods and then transmit data to a platform on the ground used by rescue teams to help move people from potential flood areas.

At the organizational multi–team level, such as when policymakers carry out new policy reforms but tap into different groups' judgments using CI methods, such as swarm intelligence when each participant connects to the server and is allocated a controllable graphical magnet that allows the user to freely apply force vectors on the puck in real–time (Rosenberg, 2015). It could also be citizens' deliberation on participatory platforms, supported by natural language processing (NLP) to sort and categorize the open–text contributions of interested citizens.[13]

At the societal and cultural level, such as when multiple systems collaborate and interact with one another supported with AI. Collective intuitions of policy questions can be transformed into hypotheses that are testable using AI. For example, collective intuitions and predictions by citizens can point in the direction of a potentially remarkable discovery for humanity.

A rapidly expanding variety of technologies and algorithms can help to harness the vast amount of information contained in collective intelligence and to make sense of it to transform it into knowledge that carries meaning and which is actionable. For instance, readers may come across the following concepts in this and other handbooks:

- **Artificial intelligence** and **machine learning** (an AI technology that allows computers to learn beyond their initial programming), in particular due to **neural networks** (groups of algorithms inspired by the human brain), with specific developments such as **convo–lutional neural networks**, a type of artificial neural networks in which the pattern of connections between neurons is inspired by the visual cortex of animals.
- **Predictive analytics**, which is a branch of advanced analytics that makes predictions about future outcomes using historical and big data combined with statistical modeling, data mining techniques and machine learning. This discipline also includes methods such as **lagged causal relationships** from time series, which is a way to infer causal relationships between two time series.
- **Heuristic search**, which is a type of search performed by AI that looks to find a good solution, not necessarily a perfect one.
- **Logistic regression**, **decision trees,** and **logic trees** are all statistical models that help study the relationship between various groups of variables that are particularly common for machine learning.
- In data science, **Bayesian networks** are a type of probabilistic graphical model that uses Bayesian inference for probability computations, and **backpropagation** is a method to train neural networks.
- **Data mining** uses sophisticated mathematical algorithms to segment data and assess the likelihood of future events. Data mining is also known as **knowledge discovery** in data.
- **Sentiment analysis** (or **opinion mining**) is an NLP technique used to determine whether data is positive, negative, or neutral.
- **Natural language processing**, which we encounter in two stories in this handbook, refers to the ability of a computer program to understand, create patterns, and sort human language as it is spoken and written.

These technologies may be supported by human–computer interaction principles and methods that act as aggregators of collective intelligence:

Civic and gov-tech platforms: Citizen feedback, proposals, discussion forums, complex deliberation, voting. "Civic technology" is a nascent force in the relationship between governments and communities. Elements of the civic technology ecosystem include "open data, related information and communications technology (ICT) innovations and the organizational boundary-spanning practices of civic technology" (McNutt et al., 2016).

Crowdsourcing platforms: Crowdsourcing is a "blend of bottom-up open, creative process with top-down organizational goals" (Brabham, 2013). It is also described as "a process of accumulating the ideas, thoughts or information from many independent participants, with the aim to find the best solution for a given challenge" (Guazzini et al., 2015). Crowdsourcing is also defined as the act of submitting a task or problem to the public for completion or solution (e.g., Howe, 2006), such as knowledge commons in the form of wikis, Quora, user communities, StackOverflow, etc. Such platforms can be enhanced by gamification features. Crowdsourcing is a model for integration of the "creative energies of online communities into day-to-day operations" in order to "leverage the collective intelligence" of the online communities (Brabham, 2013).

In recent years, crowdsourcing has been noted as the preferred search tool for harnessing collective intelligence (Certomá, Dyer, and Pocatilu, 2017) and has been seen as a point of cost–effective value creation through collecting relevant knowledge for improving policy and citizens engagement in policymaking (Aitamurto and Chen, 2017).

Collective consciousness

Emile Durkheim was the first to introduce the theory of collective consciousness in his 1893 book *The Division of Labor in Society*. Later, he would also rely on the concept in other books, including *Rules of the Sociological Method*, *Suicide*, and *The Elementary Forms of Religious Life.* In these books, he explains that the phenomenon is "the totality of beliefs and sentiments common to the average members of a society." Durkheim based his theory on observations that in traditional or primitive societies, religious symbols, discourse, beliefs, and rituals fostered the collective consciousness. In such cases, where social groups were quite homogeneous, the collective consciousness resulted in what Durkheim termed a "mechanical solidarity" – in effect an automatic binding together of people into a collective through their shared values, beliefs, and practices.

Collective consciousness has its roots in shared awareness. The word "conscious" derives from the Latin *cum* ("with") and *scire* ("to know"). In the original sense, two people who know something together are said to be conscious of it "to one another." Combining the two terms "collective" and "consciousness" means shared ideas by individuals relating as interdependent elements within groups or larger structures (Smith and Thomasson, 2005).

In the Durkheimian perspective, collective consciousness can be created from intentional human interactions and learning. When such consciousness is absent, members of a community fail to see the context for their actions; as a result, behaviors become automatic and more

difficult to adapt to new conditions. Conversely, communities become collectively conscious through processes of self-reflectivity and meta-cognition (see Paulson in this handbook, ch. 1), and can use these learnings to alter negative patterns that stand in the way of collective goals (Pór, 2017).

According to Hallin, collective consciousness can be identified and congregated from the following levels and dependent on the common course of collective intelligence for each level, such as the individual level, in dyad relationships, in groups, in organizations, in the neighborhood, in the community, for the city, for the country/shire, for the state/province, network, and global brain (e.g., the whole internet). (See the introduction to Part 7 on collective intelligence, technology and collective consciousness)

As the cases of this handbook show, democratic innovation is as its core a redistribution of power outward, where participation, inclusiveness, and diversity are each core drivers of collective wisdom. Moreover, technological progress combining collective intelligence and AI provides opportunities to create learning processes that allow a community to become more self-aware, and therefore potentially more resilient and fulfilled.

This chapter on foundational definitions of collective intelligence has sought to provided a selection of the key definitions and concepts in the emerging field of CI as they relate to democracy, governance, and public problem-solving. Testing these concepts in real-world conditions, exploring the impacts achieved and lessons learned, is the aim of the case studies which follow.

Notes

1 It should be noted that from the perspective of democracy and governance, the body of Galton's career as a whole is abhorrent: the coiner of the term "eugenics," Galton was an unabashed racist who argued for the weeding out of "undesirable traits" from the English population.

2 The conceptual distinctions between "collective knowledge," "collective intelligence," and "collective wisdom" are interesting and still somewhat unsettled. We take up this point in Section 2.4 infra.

3 NESTA blog, "Using machine learning to map the field of collective intelligence research", Nov. 22, 2018. www.nesta.org.uk/blog/mapping-collective-intelligence-research/, accessed July 3, 2022.

4 The phrase "at the same time" is, of course, dependent on circumstances and context.

5 Again, depending on one's understanding of "at the same time," prediction markets could either be considered a synchronous or asynchronous mode; regardless, the drivers and overall outcome are the same.

6 Our phrase, not Condorcet's.

7 See www.hypermind.com/.

8 See www.galaxyzoo.org/.

9 Of course the "thoughts" of these early animals were not expressed in the form of human language; these are illustrations only.

10 As noted above, Mulgan in this handbook adopts the term "core function" in place of his earlier term "functional capabilities" (Mulgan, 2018).

11 It is interesting to note here how public administrations around the world are creating spaces to evaluate, learn, and improve on new governance approaches, from the UK What Works centers, to the EU's Competence Centre on Participatory and Deliberative Democracy, or the French "Direction interministérielle de la transformation publique," among many other examples.

12 For an overview on this matter, see the introductory chapter to Part 3 on the collective intelligence society and the use of collective tacit knowledge and artificial intelligence for policymaking.

13 Examples of this are the stories included in this handbook on the Danish municipality of Slagelse as well as on deliberative polling online.

References

Acemoglu, D., Johnson, S., Querubin, P. and Robinson, J.A., 2008. *When does policy reform work? The case of central bank independence* (No. w14033). National Bureau of Economic Research.

Ågotnes, T., and Wáng, Y.N. (2017). Resolving distributed knowledge. *Artificial Intelligence,* 252, 1–21. Doi: http://dx.doi.org/10.1016/j.artint.2017.07.002

Aitamurto, T. and Chen, K. (2017). The value of crowdsourcing in public policymaking: epistemic, democratic and economic value. *The Theory and Practice of Legislation*, 5(1), 55–72.

Andersen, T.J. and Hallin, C.A. (2017). The adaptive organization and fast-slow systems. *Oxford Research Encyclopedias: Business and Management*. Oxford University Press.

Andersen, Torben J., Hallin, C.A. and Fredens, K. (2018). Et netværk af hjerner. Copenhagen: Gyldendal.

Argyris, C. (1995). Action science and organizational learning. *Journal of Managerial Psychology*, 10(6), 20–26.

Arnstein, S. (1969). A ladder of citizen participation. *Journal of the American Planning Association*, 35(4), July 1969, 216–224.

Atlee, T., Benkler, Y., Homer-Dixon, T., Levy, P. Malone, T.W., et al. (2008). Collective intelligence: creating a prosperous world at peace. *Earth Intelligence Network*. 1st edition (March 19, 2008), Oakton, Virginia.

Babbitt, P. (2012). Complexity and democracy: pathologies of modern governance. Prepared for delivery at the 2012 Annual Meeting of the American Political Science Association, Aug. 30–Sept. 2, 2012.

Barrett, L.F. (2021). *Seven and a half lessons about the brain*. Picador.

Bennett R. (1998). The importance of tacit knowledge in strategic deliberations and decisions. *Management Decision*, 9(3), 589–597.

Bertomá, C., Dyer, M., and Pocatilu, L. (2017). *Citizen empowerment and innovation in the data-rich city*, London: Springer.

Boehm, C. (2009). *Hierarchy in the forest: The evolution of egalitarian behavior.* Harvard University Press.

Bound, K., and Mulgan, G. (2019). *A compendium of innovation methods*. NESTA.

Boyd, J. (2018). *A discourse on winning and losing.* Maxwell Air Force Base, AL: Air University Press.

Brabham, D.C. (2013). *Crowdsourcing.* MIT Press.

Brown, M.I., and Wai, J. (2021). Can you ever be too smart for your own good? Comparing linear and nonlinear effects of cognitive ability on life outcomes. *Perspectives on Psychological Science*, 16(6), 1337–1359. doi:10.1177/1745691620964122. PMID 33682520. S2CID 232142799

Brynjolfsson, E., and McAfee, A. (2014). *The second machine age: work, progress, and prosperity in a time of brilliant technologies.* First edition. New York: W.W. Norton & Company.

Cairney, P., Heikkila, T., and Wood, M. (2019). *Making policy in a complex world*. Cambridge University Press.

Certomà, C., Corsini, F., and Frey, M. (2020). Hyperconnected, receptive and do-it-yourself city. An investigation into the European imaginary of crowdsourcing for urban governance. *Technology in Society*, 61.

Clark, A., & Chalmers, D. (1998). The extended mind. *Analysis*, 58(1), 7–19.

Clarke, H.D., Goodwin, M., and Whiteley, P. (2017). *Brexit: Why Britain voted to leave the European Union.* Cambridge: Cambridge University Press.

Cohen, J. (1986). An epistemic conception of democracy. *Ethics*, 97(1), 26–38.

Colombo, M., Irvine, E., and Stapleton, M. (Eds.). (2019). *Andy Clark and his critics.* Oxford University Press.

Dahl, R. (2020). *On Democracy.* Yale University Press.

Dewey, J. (1927). *The public and its problems*. Athens, OH: Swallow Press.

Du Bois, W.E.B. (1920). On the ruling of men. From *Darkwater: voices from within the veil*. Harcourt Brace.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350–383.

Edmondson, A. (2019). The role of psychological safety. *Leader to Leader*, 2019: 13–19. https://doi.org/10.1002/ltl.20419

Edmondson, A., and Moingeon, B. (1998). From organizational learning to the learning organization. *Management Learning*, 29(1), 5–20.

Elkink, J.A., Farrell, D.M., Reidy, T., and Suiter, J. (2017). Understanding the 2015 marriage referendum in Ireland: context, campaign, and conservative Ireland. *Irish Political Studies*, 32(3), 361–381.

Elstub, S., and Escobar, O. (2017). A typology of democratic innovations. Paper for the Political Studies Association's Annual Conference, 10th–12th April 2017, Glasgow.

Encyclopaedia Brittanica, online, "Human Intelligence", https://www.britannica.com/science/human-intelligence-psychology, accessed January 10, 2022.

Engelbart, D. (1962). Augmenting the human intellect: a conceptual framework. Summary report AFOSR–3223, Stanford Research Institute, Menlo Park, CA.

Engelbart, D. (1995). Toward augmenting the human intellect and boosting our collective IQ. *Communications of the ACM*, 38(8), 31–33.

Farrell, D., and Suiter, J. (2019). *Reimagining democracy: lessons in deliberative democracy from the Irish front line*. Cornell University Press.

Fishkin, J.S. (2018). *Democracy when the people are thinking: Revitalizing our politics through public deliberation*. Oxford University Press.

Foss, K., and Foss, N.J. (2002). *Authority in the context of distributed knowledge*. DRUID - Danish Research Unit for Industrial Dynamics.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, 19(4), 25–42. doi:10.1257/089533005775196732

Friedman, T.L. (2019). Warning! Everything is going deep: the age of surveillance capitalism. *The New York Times*. January 2019. Retrieved from: www.nytimes.com/2019/01/29/opinion/artificial-intelligence-surveillance.html

Galton, F. (1907).Vox populi. *Nature*, 75, 450–451.

Gammelgaard, F.B., and Hallin, C.A. (2018). Changing the innovation game-crowdsourcing in incumbent firms. In *ACM Collective Intelligence Conference*.

Gray, J. (2013). *Mill on liberty: a defence*. Routledge.

Greenspan, S.I. (1979). Intelligence and adaptation: an integration of psychoanalytic and Piagetian developmental psychology. *Psychological Issues*, 12(3–4, Mono 47/48), p. 408.

Gret, M., and Sintomer, Y. (2005). *The Porto Alegre experiment: learning lessons for better democracy*. Zed Books.

Grossmann I. (2017). Wisdom in context. *Perspectives on Psychological Science*, 12(2), 233–257. doi:10.1177/1745691616672066

Guazzini, A., Vilone, D., Donati, C., Nardi, A., and Levnajić, Z. (2015). Modeling crowdsourcing as collective problem solving. *Scientific Reports*, 5(1), 1–11.

Habermas, J. (1985). *The theory of communicative action, volume 1*: reason and the rationalization of society. Boston, MA: Beacon Press.

Haidt, J. (2012). *The righteous mind: why good people are divided by politics and religion*. Vintage.

Haraway, Donna. (1988). Situated knowledges: the science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575–599.

Hartz-Karp, J., and Sullivan, B. (2014). The unfulfilled promise of online deliberation. *Journal of Public Deliberation*, *10*(1), 1–5.

Hayek, F.A. (1945). The use of knowledge in society. *The American Economic Review*, 35(4), 519–530.

Henrich, J. (2015). *The secret of our success*. Princeton University Press.

Hiltz, S.R. and Turoff, M. (1978). *The network nation: human communication via computer*. Addison-Wesley.

Hong, L., and Page, S. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences*, 101 (46), 16385–16389.

Howe, J. (2006). The rise of crowdsourcing. *Wired Magazine*, 14(6), 1–4.

Irwin, R. (2018). *Ibn Khaldun*. Princeton University Press.

Janis, I. L. (1982). *Groupthink: Psychological studies of policy decisions and fiascos*. Boston: Houghton Mifflin.

Janis, Irving L. (1971). Groupthink. *Psychology Today,* 5(6), 43–46.

Janis, Irving L. (2008). Groupthink. *IEEE Engineering Management Review*, 36(1).

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

Kenney, E.J., Denyer, N., Easterling, P.E., Hardie, P., and Hunter, R. (Eds.). (2008). *Plato: Protagoras*. Cambridge University Press.

Kierstead, F. (1974). *Education for a transitional democracy: a comparison of Jean Jacques Rousseau's concept of general will to John Dewey's concept of collective intelligence*. PhD thesis, University of Oklahoma.

Landemore, H. (2013). *Democratic reason: Politics, collective intelligence and the rule of the many*. New Jersey, Princeton: Princeton University Press.

Landemore, H. (2017). Beyond the fact of disagreement? The epistemic turn in deliberative democracy. *Social Epistemology*, 31(3), 277–295, DOI:10.1080/02691728.2017.1317868

Landemore, H., and Elster, J. (2012). *Collective wisdom: Principles and mechanisms*. Cambridge University Press.

Leal, D. (2022). *Speech acts and collective intelligence methods: impact on leadership and innovation in organizations and systems*. PhD thesis, Universitat de Barcelona.

Le Bon, G., (1905) Psychologie des foules. Paris : Édition Félix Alcan

Mack, O., Khare, A., Krämer, A., and Burgartz, T. (2016) *Managing in a VUCA World,* Springer.

Malone, T.W. (2004). *The future of work*: *How the new order of business will shape your organization, your management style and your life*. Harvard Business School Press.

Malone, T.W., and Bernstein, M.S. (Eds.). (2015). *Handbook of collective intelligence*. MIT Press.

Malone, T.W., Laubacher, R., and Dellarocas, C. (2010). The collective intelligence genome. *MIT Sloan Management Review*, 51(3).

Mansbridge, J.J. (1983). *Beyond adversary democracy*. University of Chicago Press.

Mansfield, H.C. (2001). *Machiavelli's new modes and orders: A study of the discourses on Livy*. University of Chicago Press.

Mansuri, G., and Rao, V. (2012). Localizing development: Does participation work? Development Economics Research Department Policy Research Project. Washington, DC: World Bank.

Mayka, L. (2019). *Building participatory institutions in Latin America: Reform coalitions and institutional change*. Cambridge University Press.

McNutt, J.G., Justice, J.B., Melitski, J.M., Ahn, M.J., Siddiqui, S.R., Carter, D.T., and Kline, A.D. (2016). The diffusion of civic technology and open government in the United States. *Information Polity*, 21(2), 153–170.

Mercier, H., and Claidière, N. (2022). Does discussion make crowds any wiser? *Cognition*, 222, 104912.

Metcalf, L., Askay, D.A., and Rosenberg, L.B. (2019). Keeping humans in the loop: Pooling knowledge through artificial swarm intelligence to improve business decision making. *California Management Review*, 61(4), 84–109.

Mill, J.S. (1865). *Considerations on representative government by John Stuart Mill*. Longman, Green, Longman, Roberts, and Green.

Miller, J. (2018). *Can democracy work?: A short history of a radical idea, from ancient Athens to our world*. Simon & Schuster.

Millotay, N., and Sgueo, G. (2020). Collective intelligence at EU level – Social and democratic dimensions. European Parliamentary Research Service.

Morel, C., and Oury, J.M. (2011). Absurd decisions and highly reliable processes.

Mounk, Y. (2018). *The people vs. democracy*. Harvard University Press.

Mulgan, G. (2018). *Big mind: How collective intelligence can change our world*. Princeton University Press.

Muthukrishna, M., Henrich, J. (2016). Innovation in the collective brain. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371. 10.1098/rstb.2015.0192

Nagatomo, S. (1992). An eastern concept of the body: Yuasa's body scheme. In M. Sheets-Johnstone (Ed.), *Giving the body its due* (pp. xi, 233). Albany: State University of New York Press.

Noble, S., Mendez, M., Grewal, D., and Parasuraman, A. (2022). The fifth industrial revolution: How harmonious human–machine collaborations are triggering a retail and service r(evolution). *Journal of Retailing*, 98(2), 199–208.

Nonaka, I. (1991). The knowledge creating company. *Harvard Business Review*, 72(6), 104–114.

Nonaka, I., and Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York, NY: Oxford University Press.

Noveck, B.S. (2015). *Smart citizens, smarter state: The technologies of expertise and the future of governing*. Harvard University Press.

Noveck, B.S. (2018). Crowdlaw: Collective intelligence and lawmaking. *Analyse & Kritik*, 40(2), 359–380.

Noveck, B.S. (2021). *Solving public problems: A practical guide to fix our government and change our world*. Yale University Press.

OECD (2020). *Innovative citizen participation and new democratic institutions*. Catching the Deliberative Wave, Paris.

Page, S. (2017). *The diversity bonus*. Princeton University Press.

Page, Scott (2007). *The difference: How the power of diversity creates better groups, firms, schools and societies*. Princeton, NJ: Princeton University Press.

Parkinson, J., and Mansbridge, J. (Eds.). (2012). *Deliberative systems: Deliberative democracy at the large scale*. Cambridge University Press.

Paul, A.M. (2021). *The extended mind: The power of thinking outside the brain*. Eamon Dolan Books.

Peach, K., Berditchevskaia, A., and Bass, T. (2019). *The collective intelligence design playbook*. Nesta Centre for Collective Intelligence Design. Available at www.nesta.org.uk/toolkit/collective-intelligence-design-playbook/

Peeters, M.M.M., van Diggelen, J., van Den Bosch, K., and Bronkhorst, A. (2021). Hybrid collective intelligence in a human–AI society. *AI & Society*, 36(1), 217–238.

Pinker, S. (2010). The cognitive niche: Coevolution of intelligence, sociality, and language. *Proceedings of the National Academy of Sciences*, 107(supplement_2), 8993–8999.

Polanyi, M. (1958). *Personal knowledge: Towards a post-critical philosophy*. Chicago, IL: University of Chicago Press.

Polanyi, M. (1966). *The tacit dimension*. Chicago, IL: University of Chicago Press.

Pollok, P., Lüttgens, D., and Piller, F.T. (2019). How firms develop capabilities for crowdsourcing to increase open innovation performance: The interplay between organizational roles and knowledge processes. *Journal of Product Innovation Management*, 36(4), 412–441.

Pór, G. (2017). On the verge of collective awakening. *Spanda Journal*, VII, 1/2017.

Puett, M., and Gross-Loh, C. (2016). *The path: What Chinese philosophers can teach us about the good life*. Simon & Schuster.

Raymond, E. (1999). The cathedral and the bazaar. *Knowledge, Technology & Policy*, 12(3), 23–49.

Reber, A.S. (1989). Implicit learning and tacit knowledge. *Journal of Experimental Psychology: General*, 118, 219–235.

Reid, C.R., Lutz, M.J., Powell, S., Kao, A.B., Couzin, I.D., and Garnier, S. (2015). Army ants dynamically adjust living bridges in response to a cost–benefit trade-off. *Proceedings of the National Academy of Sciences*, 112(49), 15113–15118.

Riedl, C., Kim, J.Y., Gupta, P., Malone, T.W., and Woolley, A.W. (2021). Quantifying collective intelligence in human groups. *Proceedings of the National Academy of Sciences*, 118 (21). https://doi.org/10.1073/pnas.200573711

Rittel, H.W., and Webber, M.M. (1974). *Wicked problems. Man-made futures*, 26(1), 272–280.

Rittel, H.W., and Webber, M.M. (1974). Wicked problems. *Man-made Futures*, 26(1), 272–280.

Rodrik, D., 2018. Understanding economic policy reform. In *Modern Political Economy and Latin America* (pp. 59–70). Routledge.

Rosenberg, L. (2015). *Human swarms, a real-time paradigm for collective Intelligence*. Collective Intelligence Conference, 2015.

Runco, M.A., Millar, G., Acar, S., and Cramond, B. (2010). Torrance tests of creative thinking as predictors of personal and public achievement: A fifty year follow-up. *Creativity Research Journal*, 22 (4). DOI: 10.1080/10400419.2010.523393

Ryan, R.M., and Deci, E.L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25, 54–67.

Ryan, M., Gambrell, D., and Noveck, B.S. (2020). *Using collective intelligence to solve public problems*. Nesta: London, UK. www.nesta.org.uk/report/using-collective-intelligence-solve-public-problems/

Scharmer, C. and Kaeufer, K. (2010). In front of the blank canvas: sensing emerging futures. *Journal of Business Strategy*, 31(4), 21–29. https://doi.org/10.1108/02756661011055159

Seeley, T.D., and Buhrman, S.C. (1999). Group decision making in swarms of honey bees. *Behavioral Ecology and Sociobiology*, 45(1), 19–31.

Servan-Schreiber, É. (2018). *Supercollectif. La nouvelle puissance de l'intelligence collective*. Fayard.

Shirley, D.A., and Langan-Fox, J. (1996). Intuition: A review of the literature. *Psychological Reports*, 79, 563–584.

Sgueo, G. (2018). *Games, power and democracies*. Bocconi University Press.

Sliwa, J. (2021). Toward collective animal neuroscience. *Science*, 374(6566), 397–398.

Smith, D.W. and Thomasson, A.L. (2005). *Phenomenology and philosophy of mind*. New York: Oxford University Press.

Spearman, C. (1904). General intelligence: Objectively determined and measured. *American Journal of Psychology*, 15, 201–293.

Sternberg, R. J., & O'Hara, L. A. (2000). Intelligence and creativity. In R. J. Sternberg (Ed.), Handbook of intelligence (pp. 611–630). Cambridge University Press. https://doi.org/10.1017/CBO9780511807947.028

Stouten, J., Rousseau, D.M., and De Cremer, D., 2018. Successful organizational change: Integrating the management practice and scholarly literatures. *Academy of Management Annals*, 12(2), 752–788.

Sunstein, C.R. (2005). *Why societies need dissent*. Harvard University Press.

Sunstein, C.R. (2006). *Infotopia: How many minds produce knowledge*. London: Oxford University Press.

Sunstein, C. R. (2007). Republic.com 2.0. Princeton University Press

Surowiecki, J. (2004). The Wisdom of Crowds: Why the Many Are Smarter Than the Few. London. Abacus. 295.

Surowiecki, J. (2005). *The wisdom of crowds*. Anchor.

Tanaka, S. (2011). The notion of embodied knowledge. In P. Stenner, J. Cromby, J. Motzkau, J. Yen, & Y. Haosheng (Eds.), *Theoretical psychology: Global transformations and challenges* (pp. 149–157).Concord, Canada: Captus Press.

Tannen, D. (2005). *Conversational style: Analyzing talk among friends*. Oxford University Press.

Tirri, K., and Nokelainen, P. (2011). Measuring multiple intelligences and moral sensitivities in education. Moral Development and Citizenship Education. Springer.

Tomasello, M. (2019). *Becoming human*. Harvard University Press.

Torras-Gómez, E., Guo, M., and Ramis, M. (2019). *Sociological theory from dialogic democracy. International and Multidisciplinary Journal of Social Sciences*, 8(3), 216–234. https://doi.org/10.17583/rimcis.2019.4919

Vale, G.L., Flynn, E.G., and Kendal, R.L. (2012). Cumulative culture and future thinking: Is mental time travel a prerequisite to cumulative cultural evolution? *Learning and Motivation*, 43(4), 220–230. https://doi.org/10.1016/j.lmot.2012.05.010

Van Bavel, J.J., and Packer, D.J. (2021). *The power of us: Harnessing our shared identities to improve performance, increase cooperation, and promote social harmony*. Little, Brown Spark.

Waldron, J. (1995). The wisdom of the multitude: Some reflections on book 3, chapter 11 of Aristotle's politics. *Political Theory*, 23(4), 563–584.

Woolley, A., Aggarwal, I., and Malone, T.W. (2015). Collective intelligence and group performance. *Current Directions in Psychological Science,* 24(6), 420–424. doi:10.1177/0963721415599543

Woolley, A., Chabris, C.F., Pentland, A., Hashmi, N., and Malone, T.W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science,* 330 (6004), 686–688.

PART 2

Reinventing democracy: New modes of representation

Introduction

Lex Paulson

> "People of France, we owe you the whole truth. In vain will a clear and well-constructed constitution assure your rights; you will know neither peace nor happiness, nor even freedom… if you the citizens do not exercise, with tranquility, zeal and dignity, the important functions the law has reserved for you."
>
> – Nicolas de Caritat (Marquis de Condorcet), presentation of the Girondin constitution, February 1793

Introduction

It is the 15th of February 1793, and a new constitution is being proposed to the representatives of revolutionary France. Four years into their uprising against absolutist monarchy, and mere months after condemning King Louis to death, the Convention Nationale entrusts the task of a new constitution to a committee led by a mathematician, scientist, and biographer, the Marquis de Condorcet. Before his election to the revolutionary parliament, Condorcet had been the first to provide a mathematical demonstration of the wisdom of crowds. His Jury Theorem of 1785 showed that a large group will be likely to arrive at the right answer to a given question (such as the guilt or innocence of a criminal defendant) if the average member's judgment is even slightly better than random, and if each gives their judgment independently and sincerely (Austen-Smith and Banks 1996).

"The size of our territory," Condorcet begins, "requires a representative constitution."[1] A unicameral parliament, chosen by universal suffrage, is the best means to frame laws in the general interest and in accordance with the general will. But these national figures will not have a monopoly on political power. "The meeting of citizens in local assemblies," Condorcet continues, "must be considered as a means of reconciling peace with liberty." In the new republic, any citizen who wishes may take part in a "primary assembly" composed of 400–900 members of his[2] community. These local assemblies will channel the revolutionary energies that overthrew a king into improving laws and holding public figures to account. In this new republic, citizens will deliberate and, if necessary, refashion the rules of power. Condorcet's constitution is opposed and ultimately blocked by the Montagnard

faction of Robespierre, who fear that the Parisian revolutionary elite would have too little control over this system. The reign of terror begins shortly thereafter, and in the republican model France finally adopts, it is indeed Parisian elites that rule.

In the autumn of 2018, the revolutionary energies of France are again on display, and against those very same elites. Clad in yellow vests, protestors take to the streets of Paris and throughout the country in protest of a new gas tax and government inaction in the face of rising living costs. This time the nation is led by President Emmanuel Macron, who having won office at the head of a grassroots movement that crowdsourced his election program, seemed to prefer governing in the voluntarist style of the *Ancien Régime*. The *gilet jaune* ("yellow vest") movement brings this simmering tension to a boil. Thrust into the greatest crisis of his new government, Macron arrives at the same conclusion as Condorcet: this popular energy cannot be suppressed; rather, it must be channeled into new avenues of civic participation. The Grand Débat, a multi–channel consultation launched by Macron's government, succeeds in mobilizing nearly 1.5 million citizen contributions on four public challenges, though its policy outcomes are unclear.[3] Taking his experiment further, Macron convenes a *Convention citoyenne pour le climat* (Citizens' Climate Convention) composed of 150 citizens chosen by lottery from all corners of the republic. Their mandate: develop new recommendations to reduce France's carbon emissions by 40% by 2030, recommendations that Macron promises to submit to a parliamentary vote "with no filters."

Two hundred years from Condorcet's dream of a self-governing citizenry, have France's citizens finally achieved real power? The results of these deliberative exercises give succour to optimists and pessimists alike. The 150 citizens of the Climate Convention rise to the challenge, working diligently and respectfully, and making full use of the technical experts and facilitators provided to them. Their 149 recommendations touch nearly every area of national life, from transportation and housing to advertising and new criminal sanctions. Public support for the Convention is high and includes many with unfavorable opinions of the man who convened it; at a moment where well under half of the French public supports Macron, three in five respondents agree that the 150 citizens are "legitimate representatives of the French people."[4] The 150 themselves report having undergone a transformative experience that "completely changed their way of seeing things"[5] and motivated them to take further action in their communities. The final result of their labor is a climate law enacted by the National Assembly in August 2021. It bans domestic flights of less than 250 km, scales up energy–efficiency programs, phases out certain high–emitting vehicles, and introduces new measures to reduce plastic waste. The law's defenders call it the most significant climate law in French history; its detractors call it diluted, symbolic, and unserious.[6]

Though the 150 citizens deliver on their mandate, the policy outcome is disappointing to many. According to an independent analysis,[7] just ten of the Convention's proposals make it into the law in truly "unfiltered" versions; 36 others are included in diluted form; and over half are abandoned. Having managed expectations poorly, Macron ultimately "filters" several of the Convention's propositions himself, including a tax on corporate dividends to fund green projects and a new national speed limit, both of which he unilaterally removes from the list. Some French MPs see the Convention as a usurpation of their role as elected representatives; some climate activists respond that circumventing a sclerotic parliament was precisely the point. When asked to give their feedback on how well the government had honored their proposals, the 150 citizens give a score of 2.5 out of 10. Conversely, the seriousness and quality of their recommendations may have inspired other governments to adopt similar citizens' assemblies for climate and other thorny issues where politicians have struggled to make progress.[8] Like many events in French political history, the Citizens'

Convention for Climate was, depending on one's point of view, an astonishing success or a frustrating failure.

Starting points

We seem to have arrived at the end of one governance paradigm, but its successor is not fully in view. The model of 18th-century republics, staffed by 19th-century bureaucracies to achieve 20th-century social welfare goals, has hit a wall in this new century. Frustrations are keenly felt in the very nations that pioneered this model of representative government. According to the Pew Research Center, 65% of Americans believe that their political system needs either "major changes" or "to be completely reformed." Sixty-eight percent of French adults feel similarly about their system, as do nearly half in the U.K.[9] The collapsing trust in institutions is felt across society, with the rise of new partisan media and the polarization of the political landscape. For many, electoral systems built on the promise of effective leadership and accountable government have failed to provide either. More and more citizens in the "democratic world" feel powerless to alter the course of public decisions, which seem to systematically favor the wealthy and connected. Many end up expressing their frustration through the only lever given to them: a vote to whichever candidate, or whatever ballot option, will detonate the status quo.

Taiwan Digital Minister Audrey Tang has compared the input given by citizens in electoral republics to "three bits of information every two years" – one vote each for a president, governor, or member of parliament. "How," she asks, "can such a system of three bits compete in a high-bandwidth century?"[10] Surely the complexity of public problems demands more frequent input from the citizens they affect? And yet, experiments in "direct" democracy – notably, national referenda in the UK, Italy, and elsewhere – have been tainted by misinformation, led to incoherent policy outcomes, and deepened the divisions they were meant to resolve.

In this clash of paradigms, new lines of argument have appeared. For a rising generation of advocates and scholars, citizen participation is not merely a "nice to have," a way for politicians to advertise that they care about average people. Nor are the means of citizen participation limited to the up-or-down referendum, with citizens still giving (to borrow Audrey Tang's metaphor) one "bit" of information each on a question framed by politicians on their behalf. Rather, for this rising generation, governments can only solve hard problems by opening high-bandwidth channels to gather information, preferences, and expertise into the public sphere.

As an example, take the problem of climate change. Citizen volunteers are gathering data to help define the problem, as in Greenland, where this data has proven critical to understanding the impacts of human activity on oceans and marine life (Kragh et al., Handbook). Platforms harness crowd predictions to anticipate the worst impacts of climate change before they occur. Open-innovation initiatives call on the ideas and expertise of large groups to pilot new approaches for lowering emissions and building resilience. Networks of scientists and journalists aggregate diffuse bodies of knowledge, helping to frame key policy decisions for elected officials and inform the public. Peer-to-peer campaigns draw on the power of networks to promote more environmentally responsible behaviors like reducing meat consumption or using mass transit (Noveck, 2015). All of these "functional capacities" of collective intelligence (Mulgan, 2018) – crowdsourced observation, prediction, ideation, and mobilization – complement the powers of deliberation and decision that have been the primary focus of democratic reform until now. The complexity of public problems demands

that citizen intelligence be expressed more often, and in more ways, than just by electing new leaders or voting a specific policy up or down. The power to set the agenda, track the problem, make proposals, evaluate trade-offs, mobilize neighbors, and engage in collective learning are all key moments in the life cycle of a public problem. Widespread sources of information must be aggregated to understand the problem, and diverse forms of expertise mobilized to solve it. Democracy could become collective thinking writ large.

The field of collective intelligence, then, is broadening the debate over the future of democracy and governance. One dividing line that has emerged in recent decades is the (contested) distinction between "participatory" and "deliberative" methods of democratic innovation. Proponents of participatory democracy have argued that the best way to redress the past exclusion of citizens from policy decisions is to include them as widely as possible, with priority given to marginalized communities (Gret and Sintomer 2005). These methods have flourished and multiplied, ranging from the participatory budgets that have been practiced in over 7,000 cities and regions worldwide,[11] to participatory city planning and policy design. Their critics point out that many processes suffer from the "park bench problem" – citizen input is only solicited on cosmetic issues – or the "usual suspect problem," where the citizens who choose to participate tend to be wealthier, better-educated and with more free time on their hands.

Conversely, proponents of deliberative democracy have argued that the fairest way to include citizens in public decision-making is through "mini-publics," groups of randomly selected citizens who are given a specific mandate and resources to carry it out. Because citizens are given ample time to think critically and deliberate, the quality of interaction within such mini-publics can be much higher than in many forms of consultation. This deliberative intensity, combined with the random nature of the selection process, gives these mini-public their democratic legitimacy. As Hélène Landemore argues in her book *Open Democracy* (2020), mini-publics should be understood as an alternative – and potentially superior – form of democratic representation, with citizens rotating in and out of temporary assemblies, representing others and being represented in turn. Indeed, the OECD's recent study of the "deliberative wave," an analysis of over 300 deliberative processes since the 1980s, shows a mounting interest in this new form of deliberation and offers a synthesis of best practices for leaders and advocates (OECD, 2020). Critics of mini-publics such as Cristina Lafont argue that the "transformative" power of citizens assemblies to change the opinions of their members is actually an argument against them: the conclusions of this small "mirror" of society may end up contradicting the preferences of an actual majority of their fellow citizens, who are then deprived of the ability to hold the assembly to account (Lafont, 2015). Other critics point out that mini-publics only involve a very small percentage of citizens, though Landemore points out that a proliferation of mini-publics would end up giving a much larger proportion of the population a share of governing power over time.

From the standpoint of collective intelligence, we construe "citizen participation" in the widest possible sense: offering one's intelligence in service to a public goal. Thus understood, the field of participation in the 21st century is vast and, for the most part, under-explored. In this section, we encounter a range of ways of thinking about collective intelligence in the public sphere that go far beyond casting a vote on Election Day. The methods of participatory and deliberative democracy described above have inspired a range of new ways of drawing on citizen intelligence. Some are aggregative, like the crowdsourced prediction and data-gathering examples; collective intelligence emerges from the aggregation of many individual acts of thought, often using digital tools to bring them together across space and time. Others are deliberative, like citizen oversight committees or visioning processes; here

collective intelligence emerges from the synergy of diverse ideas, brought together either with the help of digital tools or, more commonly, in face-to-face settings. In some processes, citizens participate in their individual capacities; in others, such as the Agora Energiewende [see Chapter 10], collective intelligence emerges from corporate or policy-making bodies brought together in a new form of dialogue. Ultimately, it is the careful orchestration of collective thinking – both the most natural human act and, in the digital age, an often perilous one – that underlies these innovations.

Lessons are already emerging. For example, experience has shown that improvised or *ad hoc* participatory processes can discredit well-intentioned leaders and worsen the problem of trust. As President Macron found, creating new citizen-driven structures alongside old representative ones is not as simple as a promise to accept proposals "with no filter." Politics do not work this way. Competing interests and agendas must inevitably be negotiated and new institutions designed through a strategic alliance of top-down leadership and bottom-up advocacy. As the backlash to the French climate law proved, one cannot improvise one's way out of a systemic crisis. The entire process of citizen participation – how their collective intelligence will be heard and integrated at each stage – must be orchestrated in advance. Their expectations must be scrupulously managed, the commitments of political leaders upheld, and the rules of the game made transparent to all. Furthermore, scholars and designers of participatory processes are putting greater emphasis on the importance of seeing participation in terms of a complex and dynamic system (Meadows, 2008). A linear approach to citizen engagement typically focuses on a single set of procedural outcomes: did the citizens' recommendations become law? did the referendum pass or fail? Taking a systems approach to citizen participation requires mapping the interdependence of the elements of a complex policy problem rather than treating each in isolation. On issues like climate or public education, an intervention at one point in the system may succeed or fail based on what is happening in a seemingly unrelated place. As such, curators of collective intelligence must study the range of "stocks" and "flows" within a public problem and identify intervention points that can shift the system toward a more positive state (Meadows, 2008).

One of the most sophisticated systems of collective intelligence to inspire us in this regard may also be one of the oldest. In the 5th and 4th centuries BCE, the main decision-making body of the Athenian *polis* was the *ekklēsia* or Assembly, open to all citizens,[12] with majorities able to propose, amend, and reject any policy of state (Cartledge, 2016). The Assembly space on the side of the Parthenon could accommodate four or five thousand out of a citizen body of 30,000–50,000, meaning that, as Landemore (2020) points out, citizens of the democracy accepted that some subset of the community would inevitably make decisions on behalf of the whole. Almost every other public office in Athens, however, was filled by lottery or sortition. The *boulē* or Council of 500 was chosen randomly each year from the entirety of the citizen body, organized into ten "civic tribes", each of which contained members from the three geographic regions of Attica. The *boulē* was the "nerve center" of the democracy, keeping the public administration running 24 hours a day, receiving information from abroad and preparing issues for the Assembly to consider. Hundreds of neighborhood-level assemblies and juries operated alongside these two principal bodies of state; some highly technical positions, such as the officials in charge of the water and money supply, were elected to renewable one-year terms. And as was the case for the France of 1793 and 2018, these Athenian institutions were the subject of never-ending criticism and debate, with competing forces constantly jockeying for control (Ober, 2011; Cartledge, 2016). But the geopolitical and cultural success of democratic Athens was no accident. The lesson of the first democracy is one which, 25 centuries later, we may be starting to grasp: when the

intelligence of citizens is well organized and effectively channeled, societies can solve hard problems and create networks of trust and responsibility.

New directions

In this section we encounter eight different attempts to reinvent representative models by bringing collective intelligence into public institutions. In **Iceland**, citizens came together to rewrite the island nation's constitution, failed, and are currently making a second attempt (Chapter 8). In **Taiwan**, citizens deliberated over new laws and regulations on a hacker-conceived, government-sponsored platform called vTaiwan (Chapter 7). In **Denmark**, a local mayor created a new body, the Political Task Committee (PTC), to institutionalize citizen participation in policymaking and encourage a culture of facilitation within city government (Chapter 11); and a former culture minister started a new political party whose program would be entirely written by the crowd (Chapter 9). In **Nigeria**, a new Startup Act was enacted for the country, co-drafted by the entrepreneurs themselves (Chapter 14). In **Germany**, a foundation created a new extra-legislative space for stakeholders to deliberate on the future of the nation's energy policy (Chapter 10). In **Italy**, members of a national party decided their position on electoral reform using a new model of online deliberation that structured their exchanges into "argument maps" (Chapter 11). And in **Japan**, a representative sample of Tokyo residents debated the future of solar power in their city using an online platform with an automated moderator (Chapter 13).

These eight stories offer some important new insights into how collective intelligence can be deployed within and alongside the electoral system.

First, we will see how CI methods can bring new voices into the public sphere. Equity for traditionally under-represented groups is a worthy goal in itself, and so too can a more diverse group improve the quality of public decisions. In the **Danish** town of Gentofte, bringing young people into city hall in the form of PTCs not only opened new perspectives on the pressures they faced and the policies that might relieve these pressures, but ended up creating a new network of young leaders who could shape a range of other policies for the city. In **Taiwan**, thousands of young people who had never participated in politics were attracted to the vTaiwan platform by the selection of issues that directly affected their lives (the regulation of Uber and Airbnb), and then, as in Gentofte, formed a network that could be mobilized on other national issues, such as the fight to limit the impact of Covid-19. The **Japanese** experiment, an online Deliberative Poll on solar energy, showed how automated moderation – including virtual "nudges" to encourage those who spoke less and the ability to give anonymous feedback on whether exchanges were getting bogged down – could promote a more gender-equal environment for deliberation. In **Nigeria,** thanks to a coalition of entrepreneurs, activists, and participatory designers, new national legislation on entrepreneurship was conceived and passed into law, establishing a formal "co-created space", the National Council for Digital Innovation and Entrepreneurship, that will bring government officials and citizens together to oversee implementation and monitoring.

These examples give credence to the arguments of Scott Page (2017) regarding the distinct but overlapping goals of cognitive and identity diversity. Adding new members of a group who think differently – and creating an environment where they are encouraged to challenge the status quo – is among the surest ways of boosting collective intelligence. But it is also possible that a group that "looks" diverse – by age, gender, or ethnic or religious background – may share the same cognitive blind spots, for example, if group members share a similar educational or professional background. Increasing identity diversity, Page

concludes, may be an effective way to boost cognitive diversity if the new members of a group bring different life experiences, and the mental models and heuristics that come with them. But so too may the goals of equity and of cognitive diversity require distinct and complementary strategies to achieve: for example, a recruitment strategy for a Deliberative Poll that ensures equity, and a "nudging" strategy that helps get diverse ideas on the table.

A second insight that emerges from these cases: in politics, timing matters. There is often an opportune moment, what ancient Athenians called a *kairos*, where the possibility of political change is ripe and, with the right leadership and resources, can take hold. A deep financial crisis in Ireland, by discrediting the political class, opened an opportunity for a coalition of scholars and activists to propose a Citizen's Assembly on the Irish constitution. Adopted by the parliament and adequately resourced, the assembly made recommendations endorsed by a majority of Irish voters in two national referenda, piloting a new channel of citizen-driven governance that now commands widespread support. Similarly, in France, it was the crisis of the *gilets jaunes* in 2018 that prompted President Macron to create the national consultation of the *Grand Débat* and the *Convention citoyenne pour le climat*, thrusting new participatory and deliberative channels to the center of French public life.

In **Iceland**, too, the financial crisis of 2008–2009, and the discrediting of the political class that followed in its wake, was the *sine qua non* factor in the creation of the movement to crowdsource a new constitution. The 2014 "Sunflower movement" protests in **Taiwan** led government leaders to extend a hand to the hacker community, leading to the creation of vTaiwan. The rise of the Five Star Movement in **Italy**, similarly, put pressure on more mainstream parties to make their deliberations more inclusive and transparent – without this pressure, Mark Klein and Paolo Spada may never have gotten the chance to reveal the benefits of argument-mapping for real-world politics. Finally, the onset of the COVID-19 epidemic led to an unanticipated boom in the use of videoconferences, adding fuel to the development of the automated Deliberative Polling platform tested in **Japan**. "Never allow a crisis to go to waste," President Obama's chief of staff, Rahm Emanuel, famously quipped. A good sense of political timing may be a critical skill for those wishing to change the democratic paradigm.

Staying in the realm of hard-knuckle politics, a third lesson that emerges from these cases is the need to navigate personalities and personal agendas in effecting change. Politics, as these stories attest, cannot be conducted in a controlled laboratory environment. But these cases also attest to the range of strategies that can help encourage those with power and resources to think differently about governance and open their doors to bona fide citizen input. In the **Danish** case of Gentofte, to bring the council and public administration on board for his new method of citizen engagement, the mayor was able to draw on a "proof of concept" – an almost-failed design for a youth skate park – and further de-risked his proposal by incorporating a proposal that had been made to the council by political scientists the year before. In **Iceland**, advocates for the crowdsourced constitution were initially thwarted by a newly elected parliament who blocked the citizens' proposals, but by 2016, had convinced a cross-party coalition to commit to a new iteration of the process. The development of the vTaiwan platform, and the resulting changes in the **Taiwanese** public administration, serve as a masterclass in political change management. The coalition of hackers and democracy activists patiently created alliances at all levels of government, opening the door for Audrey Tang, civic hacker turned minister, to facilitate this new paradigm from "inside the system."

Even where the personalities get in the way of the process – as in the disagreements that caused the **Danish** "Alternative" to founder after its initial electoral breakthrough – a useful example is given for other potential "political entrepreneurs." Finally, the two controlled

experiments each suggest new methods of unleashing collective intelligence by lowering the temperature of an overheated debate. In the **Japanese** experiment, we will see how the automated moderation system for online deliberation – and the opportunities it opens for anonymized, real-time feedback – may serve as a useful corrective in situations where a few voices dominate. And in the **Italian** experiment, we will see how the argument-mapping approach produced significantly lower levels of toxicity in the group exchanges, offering still more possibilities for large-scale deliberation online.

A fourth key theme of these stories is that collective intelligence depends on finding complementarities. We will see how the architects of the crowdsourced constitution process in **Iceland** created three phases whose methods had complementary advantages: an opinion poll on fundamental values, an ideation phase open to all, and a deliberative phase with time and resources for a smaller group to examine these ideas in depth. Similarly, "The Alternative" party in **Denmark** created a "values manifesto" with a method that engaged a core group of founders, before crowdsourcing ideas for the party program from a larger group of supporters and politically curious citizens. In the **German** story, the complementarity achieved with the "Agora Energiewende" was one of roles, not of phases: the "Council of Agora" played the role of convener and "honest broker," while the internal think-tank played the role of issue advocate. This complementarity was critical in keeping a diverse group of energy-policy stakeholders on board while maintaining the capacity to inject new ideas into the national debate. As Grotewold notes, "The honest broker thus empowers decision-makers by providing greater clarity on choice, or even the invention of choices previously unseen." And in **Taiwan**, the vTaiwan platform has made use of complementarities between digital tools for citizen engagement, including Pol.is, Discourse, and Typeform. Rather than committing all their energies to a single digital platform, with all the risks of path dependency too often noted in the public sphere, the vTaiwan and g0v ("gov-zero") communities take an experimental approach based on stitching multiple tools together and learning quickly from user feedback. Their eye for complementarity has created one of the most innovative models of collective intelligence in governance anywhere in the world.

But can a nation of millions really be governed by the collective intelligence of citizens? For all of the challenges it faces, both within and without, Taiwan may be coming as close as any human society in history to putting this ideal into practice. The direct collaboration of citizens and government in solving problems has gone well beyond one-off experiments to become the "new way of governing" in this nation of 23.5 million. At moments of crisis, such as the onset of the COVID-19 pandemic, these collaborations at the level of policy, technology, and community behavior resulted in one of the lowest mortality rates in the world.[13] At a smaller scale, both Ireland (5 million citizens) and Iceland (360,000) are using a combination of methods that create deliberative spaces to give small mini-publics a chance to think together, as well as larger agenda-setting or ideation spaces that can accommodate all citizens who wish to contribute.

Because they do not require any interaction among users, aggregative tools like prediction markets have no theoretical limits to the number of participants who can contribute. Nevertheless, the main conundrum for large-scale deliberation – how to achieve high-quality interaction at scale without multiplying costs – remains. In our controlled experiments we see a fifth insight coming into focus. The Italian experiment shows the promise of representation-centric deliberation design – using argument maps instead of comment threads – for which users themselves build the structure as the deliberation scales up. And the Japanese experiment shows the promise of automated moderation to scale up a

high-quality deliberative exercise, and perhaps even enhance it, without multiplying facilitation costs. Each of these approaches will need to be tested in a range of new contexts to achieve its potential, but the optimists for large-scale deliberation have reason to cheer.

A sixth and final insight relates to the relationship between these collective intelligence methods and the representative model itself. Institutions, after all, are just processes that everyone expects to recur without fail. But fail they sometimes do, and new processes take their place in the institutional landscape. Should proponents of democratic innovation adopt the attitude that failing representative institutions should be replaced entirely? Here, once again, we find a variety of strategies. In **Iceland**, an initially antagonistic process between parliamentarians and citizen activists has given way to a wary truce, embodied in a multi-sequence constitutional process extended over two election cycles. The coalition behind **vTaiwan** found a set of issues that citizens (especially the youngest and least politically active) would care about – the regulation of corporate platforms Uber and Airbnb – and for which the public administration was likely to be genuinely interested in their input. The success of these early experiments in policy-making by collective intelligence has seemingly led to a virtuous cycle, in which calling on citizens is perceived as less risky, and larger numbers of citizens are ready to contribute. Even at the local level, the mayor's team in **Gentofte, Denmark**, found a path of complementarity between the new, citizen-driven PTCs and the elected Council. How the balance of power shifts once citizens have proven their competence remains to be seen. The leaders in these stories are operating in the face of different challenges at very different scales; what they share is a commitment to building a culture of facilitation. Young people in Gentofte took leadership as facilitators of an "innovation camp" on youth policy, and now civil servants across the city administration are asking for trainings to lead similar exercises. In Taiwan, Audrey Tang is showing a new model of leadership as facilitation; rather than asserting decision-making power as a minister, she has deployed volunteer facilitators and trainers across all levels of Taiwan's government, helping open new spaces for high-quality discussion and feedback from citizens.

The leaders in these stories, for the most part, have not chosen to wage a fight for the representative model or against it. Rather, in remaining open to new ideas and building coalitions around them, they are finding new connections between political models often presented as antithetical. Near the end of his address to the National Convention, Condorcet made a final appeal to the responsibility of his fellow citizens to shape their fate: "The same [law of] nature that wished that a people be arbiter of its own laws, made it equally the arbiter of its own prosperity and happiness." Closer to our time, John F. Kennedy Jr. gave a similar explanation for why he had founded a magazine to get more people interested in public issues. "Politics is too important," he said, "to be left to the politicians."

Notes

1 The text of the speech is found in Condorcet (2012). Translations are my own.
2 Condorcet had also argued in print for women to be admitted as full citizens of the new Republic; see Condorcet 2012, "Sur l'admission des femmes au droit de cité" (On the admission of women to civic rights).
3 www.lemonde.fr/politique/article/2019/04/08/le-bilan-du-grand-debat-en-six-questions_5447417_823448.html.
4 A reported 70% of French citizens had heard of the convention by the time it had finished its work in June 2020, according to a poll commissioned by the Climate Action Network. See https://reseauactionclimat.org/sondage-des-gaulois-pas-si-refractaires-a-laction-climatique/.
5 https://twitter.com/LCP/status/1468662915943346185?s=20&t=nA0vO1z1Zn8cueipmQu28A.

6 See www.vie-publique.fr/eclairage/281953-loi-climat-et-resilience-des-avancees-et-des-limi tes#:~:text=La%20loi%20du%2022%20ao%C3%BBt,et%20de%20l'%C3%A9conomie%20f ran%C3%A7aises.

7 www.francetvinfo.fr/monde/environnement/convention-citoyenne-sur-le-climat/infograp hie-le-projet-de-loi-climat-et-resilience-ne-reprend-que-10propositions-de-la-convention-citoyenne-sans-filtre_4309153.html.

8 For a list of these initiatives, see https://knoca.eu/.

9 www.pewresearch.org/global/2021/03/31/many-in-us-western-europe-say-their-political-sys tem-needs-major-reform/.

10 See www.governance.ai/post/audrey-tang-and-helene-landemore-on-taiwans-digital-democr acy-collaborative-civic-technologies-and-beneficial-information-flows.

11 www.peoplepowered.org/about-pb.

12 Citizenship rights were a hotly contested feature of Athenian democracy. As in the greater part of the ancient urban world, these rights were not granted to women, slaves, or foreign residents of the city. Athens' radical departure from its contemporaries was not on these points but rather on the equal powers enjoyed by poorer and wealthier citizens (Aristotle characterized democracy as "rule by the poor"; Politics 1279b).

13 As of May 2021, Taiwan (23.5 million inhabitants) has suffered approximately 1300 COVID-19 fatalities. As a point of comparison, the slightly smaller nations of Chile (19.2 million) and Romania (19.3 million) have seen 58,000 and 66,000 deaths, respectively. See www.bbc.com/news/business-60461732; https://coronavirus.jhu.edu/map.html.

References

Austen-Smith, D., & Banks, J. S. (1996). Information aggregation, rationality, and the Condorcet jury theorem. *American Political Science Review*, *90*(1), 34–45.

Cartledge, P. (2016). *Democracy: A life*. Oxford University Press.

de Condorcet, M. J. A. N. (2012). *Oeuvres de Condorcet* (eds. Génin and Isambert). Hachette.

Gret, M., & Sintomer, Y. (2005). *The Porto Alegre experiment: Learning Lessons for Better Democracy*. Zed Books.

Lafont, C. (2015). Deliberation, participation, and democratic legitimacy: Should deliberative mini-publics shape public policy? *Journal of Political Philosophy*, *23*(1), 40–63.

Landemore, H. (2020). *Open Democracy*. Princeton University Press.

Meadows, D. H. (2008). *Thinking in Systems: A Primer*. Chelsea Green Publishing.

Noveck, B. S. (2015). *Smart Citizens, Smarter State*. Harvard University Press.

Ober, J. (2011). *Political Dissent in Democratic Athens*. Princeton University Press.

OECD (2020). "Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave." OECD Publishing, Paris. https://doi.org/10.1787/339306da-en.

7

DELIBERATIVE POLICYMAKING DURING COVID-19

The case of Taiwan

Helen K. Liu and Tze-Luen Lin

The story

Learning from the international open-government movements, several passionate and technologically savvy individuals founded the g0v.tw ("gov-zero") movement in 2012 in order to increase the transparency and data access in the public sector in Taiwan. g0v.tw is a bottom-up community that organises itself through hackathon and crowdsourcing activities without any sponsorship from a government entity. The hackathon activities often involve computer programmers or related talents to develop software or applications while the crowdsourcing activities involve individuals gathering information online relevant to solving a public problem. For instance, in one of the projects, g0v.tw called for "netizens" (citizens active online) to photocopy and upload information from the Control Yuan, an auditory and investigatory branch of the government, and provided better visualisation of public data to make it more useable and accessible for average citizens. Within one day, this project attracted nearly 10,000 people to contribute 2,637 documents and 309,666 pieces of data.

In the past decade, g0v.tw has made a noteworthy impact on the open-government and crowdsourcing movement in Taiwan and served as a predecessor of a government-founded platform vTaiwan. In April 2014, activists, students and citizens protested the passage of the Cross–Strait Service Trade Agreement. These protests forced the government to further introspect on its process around policymaking. That year, the former Minister Jaclyn Tsai asked volunteers from g0v.tw to create a platform for a transparent deliberation of public policy that would be open to all citizens (Cheng and Lin, 2018). This gave rise to vTaiwan, an open consultation platform that engaged the public in deliberative policymaking. The "V" in vTaiwan stands for "voice", "vote", "virtual", and "vision". Given the impact of g0v.tw and vTaiwan, a founding member of both initiatives, Audrey Tang, subsequently was appointed as a government minister without portfolio, named by the president to the administrative council for technology development, and holding authority equal to that of a minister.

Understanding the challenges of online deliberation processes, the team designed vTaiwan based on the "Regulation Room" operated by Cornell University's E–Rulemaking Initiative, which enables the public to deliberate on proposed federal rules (Hsiao et al., 2018). As per this approach, vTaiwan allows the public to (1) define a topic for discussion, (2) set an agenda for the discussion of this topic, and (3) adopt tools for deliberation (Hsiao et al., 2018). vTaiwan also adopts the Coherent Blended Volition method (Hsiao et al., 2018) and conceptual blend (Goertzel and Pitt, 2014), which identifies opinion groups of divisive or complicated topics, such as whether to legalise the Uber platform in Taiwan (Hsiao et al., 2018).

When COVID-19 struck, the government in Taiwan had to quickly modify policy guidelines to deal with the deadly virus. In the years just prior to the onset of COVID-19, several health policies and guidelines had been established through vTaiwan that proved very useful to the government's pandemic response. These include the Long–Distance Health Care Policy, Long–Distance Education, Crowdfunding, and other regulatory processes for online commerce. Having these policies in place helped facilitate prompt decisions on hospital resources for COVID-19 patients, as well as on lockdowns, the onboarding of students into online education, and the prioritisation of emergency resources.

The vTaiwan process involves four stages: (1) brainstorm, (2) preference expression, (3) deliberation, and (4) institution. In the brainstorm stage, the public is encouraged to participate in online or offline meetings to propose ideas or issues of concern. Government representatives are invited to give suggestions about the procedures and about how to move forward on the issues raised, because they will be responsible to implement any new proposal that becomes formalised in law or regulation. In particular, vTaiwan focuses on regulation addressing various virtual activities or commerce. Therefore, if the issues are not related to regulation procedures, the officials will help the citizens to find other discussion platforms to bring this issue to the appropriate authorities.

In the preference expression stage, a proposal with an accountable government agency is disclosed for public opinion through technologies such as Discourse, Pol.is, and Typeform (Hsiao et al., 2018). These platforms adopt cluster analyses that enable participants to express their opinions and view how their opinions are different from others (Tseng, 2020). On average, it takes approximately one month for each round of opinion collection, while each proposal could entail multiple rounds of collections. At this phase, participants are asked for their "raw opinions" only, that is, their first reactions or preferences on this issue.

In the deliberation stage, a group of participants are led by a facilitator to deliberate on the proposal through live streaming platforms such as LIVEhouse.in and YouTube. In this phase, participants are asked to actively reflect on their views and hear the views of others in order to identify trade–offs and points of common ground. The output of this stage is a proposal that reflects the consensus of the participants.

In the legislation stage, the proposed issues are given legitimacy for the accountable agency to implement in the form of a draft bill, policy, guideline, or statement. In other words, the outcomes of vTaiwan have substantial policy impacts. Since its formal adoption by the government, the outcomes of vTaiwan have impacts on issues ranging from national regulations on Uber, Long–Distance Health Care Policy, Long–Distance Education, and Crowdfunding, among others. As we have seen, the forward-looking nature of these policies, co-constructed and enriched with citizen input, increased the resilience of Taiwanese society in the face of the pandemic. Meanwhile, some issues have not yet reached consensus for formalising into policies, such as a review of rental policies for Airbnb. The issues discussed on the vTaiwan platform eventually become a statement, guideline, or regulation.

vTaiwan, like other online policy engagement platforms, has its challenges. For instance, government officials are often hesitant to be held accountable due to several reasons. First, there is no formal incentive system or regulation that requires government officials to respond to such a call. Second, there is resistance to open and transparent deliberation in the existing bureaucratic system. Third, the most successful projects – such as Long-Distance Health Care Policy and Long-Distance Education – have been initiated by government officials and co-constructed with citizens, not initiated by the citizens themselves (Hsiao et al., 2018).

The adoption of new technologies in the public sector often faced resistance for budget or cultural reasons, or because of the fear of losing jobs (Mergel, 2018). In the case of vTaiwan, Audrey Tang, the minister without portfolio, does relationship-building and advocacy to government colleagues behind the scenes to motivate them to participate; intensive annual training of public servants; and recruitment and training of "participation officials" within each central governmental department. For vTaiwan's success, it is essential for the government to adopt an institutional design that includes an incentive system, guidelines to governments and capacity building.

vTaiwan is interesting because of its potential for public value creation. This initiative to include citizens in the lawmaking process was first the result of a political crisis in 2014, then deepened by a public health crisis in 2020–21. Its establishment helped to create new values and trust in the democratic system in Taiwan. The adoption of vTaiwan, originating from g0v.tw, constituted the movement for open and participatory government. Ultimately, these processes are useful both for building more durable policies and an environment of mutual responsibility and trust, both individually and collectively.

What science tells us

Crowdsourcing allows policymakers to build on the values and desires of citizens. The vTaiwan platform and process builds on an emerging approach known as public value governance, which Bryson et al. (2014) have developed to respond to challenges resulting from New Public Management. In particular, Bryson et al. (2014) distinguish three types of literature that address public values by Bozeman (2007), Moore (1995), and Meynhardt and Metelmann (2009).

Public values are defined as

> consensus about: (1) the rights, benefits, and prerogatives to which citizens should (and should not) be entitled; (2) the obligations of citizens to society, the state, and one another; and (3) the principles on which governments and policies should be based.
>
> *(Bozeman, 2007: 17)*

Bozeman (2007) discusses how public value failure occurs when insufficient level of communication for citizens to make informed judgements. In the case of vTaiwan, the platform makes not only the public data, but also the process of the brainstorming, preference expression, deliberation, and institution more transparent to the public.

Additionally, Moore (1995) advocates that public sector managers should shift from providing services to creating public values desired by citizens, including (1) service performance, (2) desired social outcomes, and (3) justice and fairness in distribution. In particular, civil servants produce public values when accounting for public opinions. In the case of vTaiwan, the establishment of "participation officials" in each department emphasises the

critical role of the public administration in the engagement process. For instance, by taking the leading role in technological transformation in government, Audrey Tang, a founding member of g0v.tw, continues to mobilise its network to create better public services and establish policies that promote the values of transparency, openness, and collaboration across sectors (Cheung and Lin, 2018).

Furthermore, Meynhardt and Metelmann (2009) focus on values driven by the relationship between an individual and society. Values are the needs of individuals, groups, and society, where individuals experience the services provided or distributed by the public sector. Public values should be based on citizens' views and needs to enhance public governance. The findings also suggest that vTaiwan participants set policy and discussion agendas jointly. Bryson et al. (2014) show that valued outcomes may be considered in societal goals, arguing that the public policy context includes both substantive and procedural aspects. For example, the substantive context could be increasing employment opportunities for young people, while the procedural context is about engaging citizens in policy choices and reflecting the citizens' experiences (Meynhardt and Metelmann, 2009). Often, procedural outcomes are related to democratic values of society and are produced through governance arrangements. For instance, participants in a vTaiwan brainstorm ideas and prioritise proposals through collective voting in the creation of community projects or initiatives. In this way, issues and problems can surface from the bottom up.

Do's and don'ts

The following are key lessons derived from the g0v.tw and vTaiwan initiatives for citizen participation and open governance:

Build trust between the hacker community and government officials

When vTaiwan was first founded, government officials were not sure about the initiatives. The engagement processes of government officials, hacker community, and other relevant stakeholders create experiences of mutual trust through resolving complex issues or problems jointly. For instance, members from the g0v.tw enjoyed increased mutual trust because they can solve problems with common issues even though they do not know each other. The same members from the g0v.tw continue to play key roles in vTaiwan because the platform enables them to institutionalise issues of their interests. Working through vTaiwan allows participants to also understand the legal aspects of the issues. Furthermore, through regular hackathon activities and workshops, participants were observed to have been more willing to share and accept different ideas, and thus come to a consensus (Cheng and Lin, 2018). vTaiwan not only increased deliberation on proposed ideas by citizens, but also enhanced relationships among the participants (Hsiao et al., 2018).

Adopt technology to facilitate engagement with diverse communities

The technologies adopted by the vTaiwan have played important roles in facilitating meaningful discussions and made the policymaking processes more transplant in a cost-effective way. For instance, the adoption of Discourse, Pol.is, and Typeform has helped a large group of participants to express their opinions and preferences on a complex issue, such as the regulation for Uber. Additionally, live streaming platforms such as LIVEhouse.in and YouTube allow both offline and online participants to deliberate on issues of their interests.

Technology adoption not only increases participation but also engages those who did not traditionally participate, such as a young demographic of computer science experts who engaged in vTaiwan (Barry, 2016; Hsiao et al., 2018).

Let citizens co-define the agenda at an early stage

Bobrow and Dryzek (1987) highlight the importance of arriving at outcomes that people value. This is notably reflected in the process by allowing participants to set up the agenda of the policy discussions. For instance, vTaiwan has adopted four stages for public engagement, namely the brainstorming, preference expressions, deliberation, and implementation. Different from the previous public engagement model, where the government would announce all policies for public consultation and set a limited time-frame for their review, vTaiwan adopts a process where citizens can propose issues according to their interests and needs. For instance, participants in vTaiwan first brainstorm ideas and prioritise proposals through collective voting. In this way, issues and problems can be prioritised from the bottom up and the citizens can co-define the challenge together with government officials.

Get all levels of the public administration on board

In 2015, civil society experts and leaders of hacker communities were invited into the public administration to give talks and trainings to enable the public officials to utilise different engagement platforms to communicate with citizens. Audrey Tang, the minister without portfolio, convened the first meeting and requested the secretary generals from all central ministries to participate in order to move forward vTaiwan. Building on these encounters, most central governmental units have now recruited and trained "participation officials" who coordinate citizen engagement activities on behalf of the ministry. Furthermore, the hacker community has been mobilised to volunteer for empowering civil servants with technological knowledge and capacities. Most importantly, the government officials came to support and actively participate in vTaiwan because such participation can actually solve the most urgent and complex problems that they face.

Acknowledgements

References

Barry, E (2016) vTaiwan: Public participation methods on the cyberpunk frontier of democracy. *Public Governance Quarterly* 4(4): 84–98.

Bobrow, D.B., & Dryzek, J.S. (1987). *Policy analysis by design*. University of Pittsburgh Press.

Bozeman, B. (2007). *Public values and public interest: Counterbalancing economic individualism*. Washington, DC: Georgetown University Press.

Bryson, J.M., Crosby, B.C., and Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. *Public Administration Review* 74(4): 445–456.

Chen, Y.J. (2016). Taiwan's E-Participation in Public Policy – A Comparison Study between vTaiwan and Join Platform. EMPA. National Taiwan University. (in Chinese)

Cheng, T.Y. and Lin, T.L. (2018). Keyboard participation: A case study on the civic hacking community g0v.tw. *Communication & Society* 46: 15–51.

Goertzel, B., and Pitt, J. (2014). Nine ways to bias open-source artificial general intelligence toward friendliness. *Intelligence Unbound*, 61–89.

Hsiao, Y. T., Lin, S. Y., Tang, A., Narayanan, D., and Sarahe, C. (2018). vTaiwan: An empirical study of open consultation process in Taiwan. (Working Paper Serise)

Liu, H. K. (2021). Crowdsourcing: Citizens as coproducers of public services. *Policy & Internet* 13(1): 315–331. DOI: 10.1002/poi3.249

Mergel, I. (2018). Open innovation in the public sector: Drivers and barriers for the adoption of Challenge. gov. *Public Management Review* 20(5): 726–745.

Meynhardt, T. and Metelmann, J. (2009). Pushing the envelope: Creating public value in the labor market: An empirical study on the role of middle managers. *International Journal of Public Administration* 32(3–4): 274–312.

Moore, M.H. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard University Press.

Thomas, J.C. (2013). Citizen, customer, partner: Rethinking the place of the public in public management. *Public Administration Review* 73(6): 786–796.

Tseng, Y.S. (2020). A comparative analysis of Decide Madrid and vTaiwan, two Digital Platforms for Political Participation. PhD thesis. Durham University.

8

CROWDSOURCING A CONSTITUTION

The world's first crowdsourced constitution rises from the ashes in Iceland

Elisa Lironi

The story

Ten years ago, leading experts on democratic innovation had all eyes on Iceland, a volcanic island with a population of barely 350,000 people, as its government declared its ambition to produce the world's first crowdsourced constitution.[1]

Iceland was then going through a severe economic recession as a result of the global financial crisis, all of which challenged the legitimacy of its establishment. In an effort to regain trust from the public (Bruno, 2015), the Parliament and the Prime Minister agreed to ask citizens to co-create Iceland's new constitution (Landemore, 2014) so that it would reflect their values and beliefs in a better way (Bani, 2012).

The process was initiated in 2010 with randomly selected citizens constituting national assemblies to discuss the values they wanted to see in a new constitution. Twenty-five of these citizens were then elected by the Icelanders themselves from a roster of 522 candidates from all walks of life to form a special Constitutional Assembly to produce the draft that would be passed in Parliament. All the contributions were crowdsourced nationwide to increase the legitimacy of the process. A nonbinding referendum took place in October 2012. The proposal was approved by two-thirds of the voters, but the reform stalled in the Parliament due to internal Icelandic party politics.[2] This led to huge frustration among the citizens and to the subsequent election of nontraditional parties, such as the Pirates, who pledged to enhance direct democracy by enacting the crowdsourced constitution.[3]

Although the new constitution was not ratified, the crowdsourcing experiment was groundbreaking and inspiring. Most importantly, it challenged the preconception that creating or amending a constitution is the exclusive territory of elected decision-makers and legal specialists.[4]

A second chance

Six years later, in 2016, the Icelandic government decided to reinitiate the effort – once again a promise by the political class to its people that improvements would be made to the

Constitution. While the previous elections had given politicians a pretext to "cancel" the citizen proposal, it was stated in this new government's coalition agreement that the government intends to continue constitutional revision in a *consensus over party lines* with extensive public participation. The new government decided however to learn from its earlier attempt, with a thorough methodology, also not relying on crowdsourcing only, but integrating new mechanisms such as Deliberative Polling.[5]

While the first crowdsourcing of the Icelandic Constitution had many positive sides, such as bringing new perspectives to the constitutional discussion and empowering citizens to strengthen the legitimacy of the political system, the process was far from perfect.[6] For instance, the Supreme Court of Iceland ruled the election of the Constitutional Assembly null and void, the referendum was deemed to be only advisory, and only 49% of the Icelandic population turned out to vote in the referendum. There were problems with the ballot and other technical issues. Most strikingly, this initially nonpartisan initiative became swallowed up in the partisan gamesmanship of the Parliament, in which the citizens who had contributed to this new proposal had no standing or voice.

This time around, the government decided to first ensure there was sufficient support from all Icelandic political parties before launching a new crowdsourcing process.[7] It issued a coalition agreement that highlights the intention to implement the constitutional revision with support across party lines and extensive public participation.[8] This second attempt would also be organized over two legislatures, for a total of seven years (2018–2025), in compliance with Article 79 of the current constitution which states that amendments must be approved by two consecutive parliaments with a general election in between.

Party leaders and the Prime Minister have been holding regular meetings over this period to discuss the progress made. Also, the Icelandic authorities invited academics and civil society experts from Iceland and beyond to support the design and implementation of the process. This is key to ensure everything is run based on the assessment of the challenges encountered in 2011, as well as in other participatory processes worldwide. The Prime Minister's office has enlisted academic partners to ensure the integrity of a new public consultation process, notably the University of Iceland and Stanford University. The non-profit Citizens Foundation was also appointed as a key actor to conduct the crowdsourcing and ensure the online participation of citizens through social media and specific digital platforms.

The process of revision of the Icelandic Constitution combines three methods of in-person and online deliberation:

1. **Opinion polling**: The second Constitutional revision process was initiated by the University of Iceland with an opinion poll in 2019. The objective was threefold: to outline the core values of the Icelandic people, to explore their attitude towards recent propositions to change the constitution, and to map out the public's view on key topics. In total, 2,165 Icelanders answered it (48% of the sample). The results led to the design of both the Crowdsourcing and the Deliberative Poll in the subsequent phases of the process.

2. **Crowdsourcing**: In October 2019, the Citizens Foundation implemented its online deliberation tool to host the "Better Iceland" crowdsourcing forum (betraisland.is). Facebook and YouTube were used to promote the crowdsourcing process. Over 39,000 citizens visited the website and viewed on average three ideas, and 1,092 citizens contributed to its content. In order to encourage participation, the Citizens Foundation created a game, "Make Your Constitution."[9] The objective was to spark interest in the

Icelandic constitution, especially among young people, and to explain how collaborative revision is simple and feasible.

3. **Deliberative polling**:[10] A face-to-face Deliberative Poll (DP) took place on November 9–10, 2019.[11] The participants received information with arguments for and against each policy proposal up for discussion and were asked to answer a first survey before the start of the DP. They were then split into different groups to discuss the topics with a moderator. They asked experts and policy-makers questions on the proposals. The meetings ended with a second survey to verify how participants' views had changed after these discussions. The results were presented to the media.[12] In general, citizens were somewhat satisfied with the values enshrined in the constitution and there are areas concerning political environment and participation where no major changes were seen before and after the Deliberative Poll, for instance regarding the Icelandic presidency. However, more significant changes were detected on other topics, such as the status of international agreements, the Parliament's power to indict ministers, and the Court of Impeachment.

The University of Iceland and the Citizens Foundation analyzed the results from all three methods and helped the Prime Minister and the government develop the bills and articles to be adopted in Iceland's new constitution. In order to ensure full transparency and inclusiveness, every constitutional reform bill proposed by party leaders is published on the government's online public consultation forum to receive feedback from the public.

What science tells us

The Icelandic Constitutional revision process is exceptional – as it is a world-first case of crowdsourcing values nation-wide with the aim of enshrining them in constitutional form. However, it is by no means the first time crowdsourcing has been used as a method to gather ideas or otherwise harvest the "wisdom of the crowd" for matters of public law or policy-making. The resulting interest from both academics and practitioners in this method has led to an emerging body of knowledge around crowdsourcing, mainly in the form of case study research. Nevertheless, the literature on crowdsourcing remains fragmented, piecemeal, and difficult to synthesize due to a lack of cross-cultural comparative qualitative and quantitative research and (meta-)analysis.

In an attempt to provide a concise description of the state of knowledge about crowdsourcing to date, we will structure the following discussion according to what we think we know and what we really know.

Crowdsourcing: What we know we know

As an e-participation method, crowdsourcing is "an online, distributed, problem-solving and production model that leverages the collective intelligence of online communities to serve specific organizational goals" (Brabham, 2008). When crowdsourcing is used in policy-making, it is an example of "collaborative democracy" – in which the objective is to collect relevant knowledge for improving policies and to allow citizens to engage with decision-makers, without intermediaries, in order to solve complex issues while making government more transparent, inclusive and effective (Lironi, 2021).

The *potential* of crowdsourcing has been documented by e-democracy practitioners and researchers. Crowdsourcing can enhance participation by involving citizens beyond the

typical stakeholders, increase legitimacy of and/or trust in policy-making (Christensen Karjalainen, Nurminen, 2015), encourage fresh, innovative ideas for shaping policies based on the wisdom of the crowd, and contribute to civic education in that it often leads to a learning process for both citizens and decision-makers (Nurminen et al., 2009). Furthermore, there is potential for epistemic (Landemore, 2013), democratic, and economic value in implementing crowdsourcing practices in policy-making (Aitamurto and Chen, 2017).

However, crowdsourcing is mainly a complement to representative democracy, as it aims at channeling public input into the policy process but leaving the elected bodies of representative democracies to have the final say on the policy and decide to implement it (Aitamurto and Kaiping, 2017). In the first Icelandic case, the lack of a formal institutionalized process from the beginning led to an arbitrary outcome and widespread citizen frustration. Crowdsourcing relies on sustained political will to sequence and execute the consultative phases; hence, the second Icelandic initiative ensured the commitment of policy-makers prior to the launch of public consultations.

Crowdsourcing: What we know we don't know

Despite our knowledge about these generally accepted definitions, factors, drivers, implications, and potential of crowdsourcing, many questions about the subject remain unanswered. Notably, "does the use of crowdsourcing to harness the 'wisdom of the crowd' lead to objectively better policies?" and "can crowdsourcing provide an adequate answer to the question of how to increase citizen trust in government and to the dwindling appeal of democracies around the world?"[13] The scientific community has yet to explore the multitude of aspects crowdsourcing entails and agree on the benefits that online participation may bring to democracy.

Crowdsourcing: What we don't know we know

Much of the knowledge that exists about crowdsourcing remains untapped and undocumented by formal scientific methods and papers. This knowledge remains locked into the minds of hundreds of local politicians, coordinators of political movements, bureaucrats, citizen activists, consultants, and commercial businesses that have experimented with crowdsourcing to gather ideas among their own communities. While the knowledge gathered in some cases is relatively well documented, such as the Icelandic case or the Finnish Off-Road Traffic Law (Aitamurto and Landemore, 2016), many crowdsourcing initiatives (successful or not) have attracted little to no research attention.[14] People involved in these cases have built their own theories, questions, and knowledge about crowdsourcing on the basis of their personal empirical experience and observations – but their insights have yet to be "tapped" by formal scientific methods and integrated into the existing body of knowledge. Documenting these people's insights or involving them in communities of practice around crowdsourcing will give rise to new relevant questions and insights to pursue, and will enable us to confirm or reject the existing hypotheses that frame our current thinking about the subject with a greater amount of certainty.[15]

Crowdsourcing: What we don't know we don't know

The main question pertains to the extent to which crowdsourcing is a tool used not only for gathering and discussing practical ideas to solve practical problems (as it was traditionally),

but also for aggregating and determining a society's framework of *values*.[16] The Icelandic case sets an important precedent in this respect, as it is aimed at producing the ultimate and most important institutionalization of the values that define a people: their constitution. Science tells us that *cognitive diversity* can be an asset for a people, as bringing together people with different points of view can enrich the outcome with diverse aspects. The real question is, "can we say this for *value diversity* as well?" We traditionally consider value plurality a very important and valuable characteristic of our democratic liberal societies. One of the most interesting challenges of public engagement is to see if value diversity can also be an asset in addressing issues instead of one of the "dangers" that can get out of hand. Crowdsourcing could be used as a way for people to better understand the values of other people (vs. Facebook and its echo chambers) and provide a safe space to discuss those differences and find common ground.

Do's and don'ts

The Icelandic case shows that revising a national Constitution through co-creation is possible. Some key methodological insights can be gained from it.

Clear political will for impact

The first crowdsourced constitution in Iceland stalled in the Parliament. This led to frustration because of the lack of political will to adopt a constitution made by the people. This second process intended not to repeat the same mistake. There was a change of leadership with a new government, a commitment from public authorities and clear support from all political parties prior to the launch of the process to ensure the implementation of the constitutional revision in the end. Furthermore, the decision-makers recognized the need for experts, such as academics and CSOs, as intermediaries between politicians and citizens.

Ensuring accessibility and representativeness

As one of the challenges for most participatory democracy projects is to attract and allow wide and equal participation, the second constitutional revision process in Iceland was designed to ensure diversity and inclusion by combining online and in-person consultation methods, each with a different approach to the challenge of attaining a representative picture of Iceland's population. On the one hand, the Opinion Poll randomly selected respondents from the national registry and the online panel of the Social Science Research Institute and the participants in the face-to-face Deliberative Poll were a representative sample of these respondents. On the other hand, the crowdsourcing exercise was implemented through an open access platform with self-selected participants, allowing anyone to contribute to the policy proposals without guaranteeing that the pool of contributors would be representative of the population as a whole. These different engagement methods were also supported by a gamification approach to raise awareness and communicate about the process itself.

Experts and methods leading to healthy debates

The objective of this new constitutional process was also to get statistically significant results instead of just raw and superficial opinions, according to Professor Jon Olafsson of the University of Iceland. Compared to the first constitutional revision in 2011, the approach

was better thought through in terms of its methodology, for example, in the way surveys were conducted and citizens were supported with information throughout the whole process to help them understand trade-offs and receive experts' and policymakers' opinions on proposals.

Furthermore, Citizens Foundation designed this second round to also reduce the level of toxicity in online contributions and to foster greater quality in the discussions. This was done on the platform by asking participants to evaluate anonymized arguments for and against certain proposals, rather than engage in personal debates with other users. This format was structured so as to avoid conflict and trolling. While there was still some measure of toxicity in the online contributions, figures remained low.[17] The system of making stand-alone counterpoints may lead to less participation but the contributions have proven to be much higher quality in substance as a result.

Notes

1 www.worldometers.info/world-population/iceland-population/ Last consulted June 2020.

2 For more details, see Gylfason T. *Democracy on ice: A post-mortem of the Icelandic constitution,* www. opendemocracy.net/en/can-europe-make-it/democracy-on-ice-post-mortem-of-icelandic-constitution/.

3 For more on this, see www.nytimes.com/2016/10/31/world/europe/icelands-prime-minister-resigns-after-pirate-party-makes-strong-gains.html, consulted June 2020.

4 More on this first phase can be found in Landemore H., "We, All of the People. Five lessons from Iceland's failed experiment in creating a crowdsourced constitution", in *Slate*, July 31, 2014.

5 However, the draft constitution created by the Constitutional Council will not be a foundational text in this process although the Council's work will be taken into account and in some cases its proposals may be adopted.

6 Underlying the current process are also concerns that the public does not have sufficient knowledge of the Constitution to make decisions on it.

7 See http://constitution.hi.is/a-deliberative-poll-on-the-icelandic-constitution/ for further details.

8 Memorandum 12/12/2018 on procedures for revision. Legacy of the previously failed Constitutional revision due to insufficient support for the bill in the Parliament. http://fel.hi.is/sites/fel.hi.is/files/endurskodun_stjornarskrar_en.html

9 Built with the open-source Open Active Policy platform.

10 For an explanation of Deliberative Polling, see the case study "Achieving Parity with Human Moderators: A Self-Moderating Platform for Online Deliberation" and https://cdd.stanford.edu/what-is-deliberative-polling/.

11 It was led by the University of Iceland in cooperation with Professor James Fishkin, originator of the concept, and by Stanford's Center for Deliberative Democracy. A total of 240 participants were brought together; this was a subsample of the respondents of the Opinion Poll previously conducted, selected so as to be also representative of the wider population.

12 All the results of the Deliberative Poll can be found here: https://stjornarskra.hi.is/en/results-from-the-deliberative-poll-on-the-icelandic-constitution/

13 For more on measuring impacts, see the introductory chapter 5 in this handbook by Paolo Spada.

14 For instance, the digital democracy experiments of the Italian M5S, or the commercial crowdsourcing platform marketed specifically at local government by the Belgian start-up Citizenlab.

15 Readers interested in this topic will read with interest NYU GovLab's course on Solving Public Problems: https://solvingpublicproblems.org/.

16 Personal interview with Professor Jon Olafsson.

17 While 3.82% of Facebook comments are considered "toxic" or "very toxic," this was the case for only 0.58% on the online platform "Your Priorities" according to the Citizens Foundation.

References

Aitamurto, Tanja and Landemore, Hélène. (2016). Crowdsourced deliberation: The case of the law on off-road traffic in Finland: Crowdsourced deliberation. *Policy & Internet*, 8. 10.1002/poi3.115

Aitamurto and Chen (2017). The value of crowdsourcing in public policymaking: Epistemic, democratic and economic value. *Theory and Practice of Legislation*.

Bani, Marco. (2012). Crowdsourcing democracy: The case of Icelandic social constitutionalism. *SSRN Electronic Journal*. 10.2139/ssrn.2128531

Brabham (2008). Crowdsourcing as a model for problem solving: An introduction and cases. *Convergence*, 14(1):75–90.

Bruno, E. (2015). Co-deciding with citizens: Towards digital democracy at EU level, ECAS. p. 17.

Christensen, H. S., Karjalainen, M., and Nurminen, L. (2015). Does Crowdsourcing legislation increase political legitimacy? The Case of Avoin Ministeriö in Finland. Available at: http://ipp.oii.ox.ac.uk/sites/ipp/files/documents/IPP2014_Christensen.pdf

Landemore (2013). Deliberation, cognitive diversity, and democratic inclusiveness: An epistemic argument for the random selection of representatives. *Synthese*, 190(7). The Epistemology of Inclusiveness (May 2013), pp. 1209–1231 (23 pages) Published by Springer.

Landemore, H. (2014). Inclusive constitution-making: The Icelandic experiment. *Journal of Political Philosophy*, 23(2):166–191.

Lironi (2021). Crowdsourcing EU Legislation: Harnessing the power of digital democracy (pp. 73–92) in *Citizen Participation in Democratic Europe - What next for the EU?* Edited by Alberto Alemanno and James Organ, ECPR Press, 2021, London; New York.

Ministry, 2009. [online] Available at: http://ecpr.eu/filestore/paperproposal/106c7149-616a-4782-a892-64b111ed3f3a.pdf

Nurminen, L., Karjalainen, M., and Christensen, H. S., Combining citizens' initiatives and deliberation – The case of Open.

9

COLLECTIVE CREATIVITY AND POLITICAL ENTREPRENEURSHIP

The Alternative in Denmark (or why failure is an option)

Stephen Boucher and Jeff van Luijk, with Uffe Elbaek

The story

It was in 2013 that Uffe Elbæk, former Danish Culture Minister and until then member of the Social Liberal Party, realized that he needed to take a different approach to politics, having grown increasingly frustrated with old ways of working. Combining his experience in entrepreneurship, creativity, and politics, he decided to found a new, radically different political movement called "The Alternative," rooted in a manifesto of fundamental values, based on a horizontal power structure and a crowdsourced program.

It had all started with a casual conversation with two young activists. When they encouraged Elbæk to start his own political party, his first reaction was to turn down the idea, arguing that "there are already too many political parties." Reflecting on this, however, encouraged him to co-initiate with Rasmus Nordqvist and Niko Grünfeld, a political start-up focused on combating climate change and similar emergencies that called for a political response.[1] Having identified the need for an *alternative* when confronted with the traditional Danish political landscape of socialists versus conservatives, and witnessing the increasing appeal of the far-right Danish People's party, Elbæk decided to provide such an alternative by means of a political platform and activities that would extend beyond the scope of traditional political parties.

Having identified the need for such a movement, the founding team decided not to create a detailed manifesto of policy proposals, but rather a "manifesto of values." This initially raised considerable criticism among established parties. What, a political party launched without a concrete program? Surely, this is naive. The approach, however, was central to what Elbæk describes as his eight-step design model (explained below), which he had conceived at KaosPilot, the International School of New Business Design and Social Innovation that he had founded and led.[2] After reflecting on their core values, the founders' next step was to come up with a "concept" for this political start-up. Though superficially resembling a traditional party program, this concept would be drafted in a particularly collaborative way,

through "political laboratories" launched in the spring of 2014. These laboratories included face-to-face and online workshops, gathering input from over 1,000 people through a public crowdsourcing process. This resulted in what would become the first – to our knowledge – crowdsourced political party program.[3]

Some 12 months later, in the 2015 parliamentary elections, *The Alternative* succeeded in winning nine seats – roughly 5% of the vote – thus becoming the sixth largest party in the Danish national parliament. "How crazy is this?," as Elbæk put it in a now famous interview.[4] He predicted that the party would only achieve its full political potential after "two to three [more] elections."

Things ended up differently, however. The party would go on to lose half of its seats in 2019, with Elbæk resigning as the party's leader, announcing that he would pass on the leadership of the movement, which he did to Josephine Fock in early 2020. Elbæk and a number of fellow members eventually left *The Alternative*, with Elbæk stating that he "could no longer recognize the party that he founded" under Fock's leadership. This left the party with only one member in parliament. On 14 November 2020 Fock in turn resigned as the party's leader. *The Alternative* to this date still exists under new leadership.

Elbæk would later reveal the power struggles going on behind the scenes, and his (renewed) frustration with certain ways of doing politics. His solution: in the face of path dependency and resistance to change, Elbæk decided to try continuing to innovate by founding another political party. His latest political start-up, *The Independent Greens*, was founded together with two of his former fellow Alternative members of parliament. Meanwhile, *The Alternative* in Denmark has inspired people in other countries to start similar initiatives, notably Alternative Global in the UK (formerly Alternative UK), started by activists Indra Adnan and Pat Kane.[5]

What science tells us

The Alternative and Uffe Elbæk's methods are illustrative of key principles in the fields of political agenda-setting, entrepreneurship, creativity, and group dynamics.

Because traditional parties, and the vested interests that support them, tend to focus on elections, their ability to think in new ways becomes highly constrained (Mair et al., 2019).[6] When policy debates become polarized along party lines, political actors may fall victim to groupthink, which "refers to a deterioration in mental efficiency, reality testing and moral judgements as a result of group pressures" (Janis, 1971). This occurs especially when cohesiveness is high. In these moments of high political pressure, party members "share a strong 'we-feeling' of solidarity and desire to maintain relationships within the group at all costs." When colleagues operate in a groupthink mode, they tend to apply the "preserve group harmony" test to all major decisions (Janis, 2008). In politics, this type of dynamic will generate what is referred to as the bandwagon effect, which

> denotes a phenomenon of public opinion impinging upon itself: In their political preferences and positions people tend to join what they perceive to be existing or expected majorities or dominant positions in society. It has been most intensely discussed with regard to elections and issue attitudes.
>
> *(Schmitt-Beck 2015)*

According to this concept, the increasing popularity of a product or phenomenon encourages more people to "get on the bandwagon," too (Nadeau et al., 1993).

Such dynamics contribute to a small range of political options being considered as acceptable in a given political context, the so-called Overton window. As Joseph Lehman, a colleague of Joseph P. Overton, recently insisted in an interview,

> The most common misconception is that lawmakers themselves are in the business of shifting the Overton window. That is absolutely false. Lawmakers are actually in the business of detecting where the window is, and then moving to be in accordance with it.[7]

It is think tanks, advocacy groups, citizen organizations, the media, and other influencers whose goal is to shift the Overton window and convince politicians and voters that policies "outside" the window are in fact acceptable and desirable. While politicians' efforts concentrate on locating the window, some also contribute to shaping it. One effective strategy, exemplified by "anti-system" politicians, is to claim that seemingly extreme views are in fact endorsed by a "silent majority" of voters already. Other advocates work more incrementally, such as those proponents of gay marriage who first proposed civil unions as a less radical-seeming policy.

These dynamics also contribute to the polarization of the debate, which happens when people's attitudinal agreement is strengthened when further processing the available information. As they do so, people have a tendency to only view and consider information which endorses their already established opinions. This confirmation bias leads to people clustering into like-minded, homogeneous groups (Frey et al., 2001). The decrease of discussion across lines of perspective generates echo chambers, where people seek out only like-minded viewpoints (Sunstein, 2001).

So strong are these clustering dynamics that there are in fact few examples of genuinely successful transformations of traditional parties that manage to shift the Overton window. Given the pressures to conform and serve vested interests, only rarely do mainstream parties manage to break free of the framing of the political agenda that some – usually extremist – parties manage to impose onto others, or that successfully reinvent their positioning and messaging.

In this context, *The Alternative* was exceptional. Josef Lentsch, in *Political Entrepreneurship: How to Build Successful Centrist Political Start-ups* (2018), defines those whose main creative acts are to found and develop political start-ups as "political entrepreneurs." Where Schneider and Teske (1992) see "individuals who change the direction and flow of politics," Lentsch defines political entrepreneurs as those who do so by founding and developing political start-ups, with the aim of entering parliament and transforming political systems from within.

The Alternative presents a unique example of individuals trying to implement key principles of collective creativity into the organization of a political movement, to renew its governance principles and its set of ideas. Creativity is the ability to produce solutions that are considered both original and useful in a given context. Innovation is the output that creativity allows. "Creativity must represent something new, different, or innovative [...]. It isn't enough to just be different - creativity must also be appropriate to the task at hand" (Kaufman 2016). Despite the fact that creativity is about producing useful solutions, the idea of creativity is not common among political parties. Creativity is closely related to the notion of imagination, "the act or power of forming a mental image of something not present to the senses or never before wholly perceived in reality" (Merriam Webster). It is required to picture a different world; however, from our experience and research, it is considered with

skepticism by most parties (Boucher, 2017). The ambient political discourse favors what is presented as "realistic," possibly to avoid being branded by opponents as utopian or naive.

Historically, fantastical ideas have been used rhetorically to denounce a current situation, rather than as means to produce new policy proposals. In this spirit, Jonathan Swift, author of *Gullivers' Travels*, made a provocative "Modest Proposal for Preventing the Children of Poor People in Ireland from Being a Burden to Their Parents or Country, and for Making Them Beneficial to the Public" in 1729:

> I have been assured by a very knowing American of my acquaintance in London, that a young healthy child well nursed, is, at a year old, a most delicious nourishing and wholesome food, whether stewed, roasted, baked, or boiled; and I make no doubt that it will equally serve in a fricassee, or a ragout. I do therefore humbly offer it to publick consideration, that of the hundred and twenty thousand children, already computed, twenty thousand may be reserved for breed (…).

Such a surprising notion would have, suggests Swift, many benefits, not least financial.

> Whereas the maintenance of an hundred thousand children, from two years old, and upwards, cannot be computed at less than ten shillings a piece per annum, the nation's stock will be thereby increased fifty thousand pounds per annum, besides the profit of a new dish, introduced to the tables of all gentlemen of fortune in the kingdom, who have any refinement in taste. And the money will circulate among ourselves, the goods being entirely of our own growth and manufacture.

Was this a serious suggestion to tackle misery and overpopulation? Certainly not. Swift wrote this pamphlet as a satire to criticize the level of inequity in 18th-century British society. Is this on the other hand an example of creativity in politics? As a proposal, it was highly original but more useful as satire than as a practical contribution to public policy.

As the psychologist Mihaly Csikszentmihalyi (2013) pointed out, the appreciations of a reference group are central to qualify a proposal as "creative." Original, Swift's suggestion certainly was, as he points out himself ironically:

> As to my self, having been wearied out for many years with offering vain, idle, visionary thoughts, and at length utterly despairing of success, I fortunately fell upon this proposal, which, as it is wholly new, so it hath something solid and real, of no expense and little trouble, full in our own power.

Swift's readers were not disposed to accept his "proposal." It did serve a political purpose, however: Swift used the principle of the morally absurd proposition to denounce a shocking situation and reshape the political conversation on more humane terms.[8] Likewise, *The Alternative* and Uffe Elbæk in his ensuing efforts tried to innovate both in terms of content and form, of policies proposed and electors mobilized.

A lack of imagination and creativity in politics has many negative consequences. As suggested, a narrow political agenda, anxiety among citizens who are convinced that politicians are "primarily looking out for themselves, rather than their country" and not providing solutions at part with today's challenges (Quilter-Pinner et al., 2021), offers an open field for anxiety entrepreneurs to frame the agenda around negative topics, fur-ther fueling a lack of appetite for politics and polarization. Conversely, rallying people's

ability to imagine a different future, to create new solutions together, and to act on them can be powerful remedies.

Cultivating creativity within a political organization can generate positive dynamics that reshape possibilities for action. This can be better understood if one recalls that creativity is not just about that "brainstorming" or "ideation" moment when ideas for solutions are gathered. Organizational creativity consists of at least four parts: (1) the creative process (i.e., the operations that participants perform along the way), (2) the creative product (i.e., the resultant outcome of the process), (3) the creative person(s) (i.e., the personality and skills of the people involved), and (4) the creative "press" or place (i.e., the relationship of the creative person to the environment they are creating within) (Brown, 1989, p. 3). As is apparent from *The Alternative*'s story, it is as much the lab format, as well as the act of generating a manifesto, the people brought together and the appeal of contributing to the public discourse in the context of a movement full of enthusiastic people that generated momentum and a sense of meaning and value.

Also, creativity draws upon a number of ingredients that are closely related to people's pleasure in working together: "The seven I's of creativity—inspiration, imagery, imagination, intuition, insight, incubation and improvisation" (Piirto, 2011). This is what the movement tried to bet on, as is suggested by its Manifesto,[9] which states to this day that the Alternative is "a political idea about personal freedom, social dignity, and living, sustainable communities. A hope. A dream. A yearning; (…) a shout out against cynicism, lack of generosity and the ticking off which prevails in our society." It is also "curiosity (…) collaboration (…) openness." It seeks to "invent completely new links and ways of working together where we use the best from the private, public and the NGO sectors." The Alternative "is also humor. Without humor there can be no creativity. Without creativity there can be no good ideas. Without good ideas there can be no creative power. Without creative power there can be no results."

Zakia Elvang, co-founder of the Danish innovation agency Spark which then advised the movement, recalls how the program was designed without any preconception, through a consciously designed crowdsourcing process.

> They had a new way of developing their manifesto. At first, they didn't really want one, they wanted to be a movement more than a party, but they had to form one. So they looked into the methods of innovation to design a political laboratory.[10]

The method used was to "have a first phase of defining the questions, then a very open phase inviting everyone to participate, including workshops where half of the people present belonged to other parties, followed by a phase of conceptualization and testing." In total, there were five phases. Spark facilitators and other innovation specialists accompanied the process, with a total of 20 "policy laboratories" bringing together politicians, opinion leaders, and some 700 citizens.

The end result was a rather left-wing and environmentally conscious program, but with elements that did not traditionally fit with such an orientation, such as a very favorable bias towards private entrepreneurship, governance innovations such as public financing of grassroots-driven experiments, creating social investment funds or replacing social welfare programs by a guaranteed basic service without specific control measures. There were other innovation, including in the way they campaigned, for instance, not distributing leaflets on the street, but offering hugs and friendly chats to people they came across.

Creativity can also be contagious, because creative ideas "make connections with what people already believe, but that, in some sense, defy these beliefs" (Sternberg, 1998). While innovative ideas need to overcome people's resistance, because, by nature, they challenge the *status quo*, they "can be presented in a way that will make sense to the crowd, and perhaps encourage them to change the direction of their thinking" because "they are both familiar and unfamiliar, in a way that extends what we know, but that does not totally leave it behind" (Sternberg, 1998).

Both creativity, the avoidance of groupthink, and healthy public deliberation will be nurtured by dissent. Groups that tolerate dissent generate more and better ideas (Sunstein, 2003). "Dissent is epistemically valuable, not because of the discussion it can provoke… but because dissenting positions often are associated with particular data or insights that would be lost in consensus formation" (Solomon, 2006, p. 28). From an organizational perspective, dissent or at least a diversity of perspectives can be nurtured by the adequate combination of decentralized and centralized decision-making processes as well as processes to examine proposals critically. The phase of sorting ideas in the case of The Alternative consisted of measuring the proposals against three criteria: environmental, social, and environmental impact. "A good proposal has a positive effect on all three dimensions," insisted Uffe Elbaek, "we could not approve a proposal which would only increase the economic value." Empirical evidence suggests that allowing people to observe the beliefs of others leads to increased similarity of individual estimates, reducing independence and diversity without a corresponding increase in group accuracy (Becker et al., 2017). As a result, social influence is expected to undermine the wisdom of crowds. Joshua Becker, Devon Brackbill, and Damon Centola present theoretical predictions and experimental findings demonstrating that, in decentralized networks, social influence generates learning dynamics that reliably improve the wisdom of crowds.

Do's and don'ts

The Alternative and Josef Lentsch's study of political entrepreneurs suggest a number of practical lessons that can encourage others to experiment, stay agile, respond to the moment, and learn. We need serial political entrepreneurs because problems and contexts evolve. A citizen process or movement that works in 2021 may not work in 2025. While *The Alternative* has not – so far? – had the enduring success in the polls initially expected, it wasn't necessarily a failure in this sense. It contributed to a renewal of political ideas and forms of engagement.

A creative, experimental, and entrepreneurial approach to politics is crucial for its renewal. As Uffe Elbæk states, "My entrepreneurial experience, tools and mindset have been part of the way we designed the Alternative from day one. It was a big success until it was not a big success anymore."

- Contrary to the standard practice of developing lengthy political platforms and manifestos when going into elections, it is advised to identify the exact needs that need to be addressed as well as the core values that a project is supposed to stand for before conceptualizing solutions.
- Innovative policy or political ideas that work emerge from outside the proverbial box – or Overton window – by tapping into people's deeper aspirations and values (Boucher, 2017). This is what *The Alternative* and its successor sought by building on a core set of values. In another context, this is what Antanas Mockus did when acting as the mayor

of Bogotá (Boucher, 2017). Creativity thus benefits from building on people's intrinsic motivation to solve a given problem, as well as nurtures their motivation to get involved. Teresa Amabile, psychologist at Harvard University, refers to this phenomenon as the intrinsic theory of motivation: people are most creative when they are motivated primarily by the interest, enjoyment, satisfaction, and challenge inherent in the work itself (Amabile, 1998). One can surmise that the participants in *The Alternative*'s labs were there, not for themselves, as mentioned in relation to people's perception of politicians further up, but, in a way, "to have fun": contribute, learn, and meet others. Stated simply: "People will be most creative when they feel motivated primarily by interest, enjoyment, satisfaction, and the challenge of the work itself – not by external pressures." Many parties, movements, and public bodies by placing the emphasis on rewards and evaluation are inadvertently suppressing creativity (Weiner, 2016).[11]

- Lentsch argues that, very much like Uffe Elbæk, political entrepreneurs aim for a more direct role in system change by seeking to get elected and govern, instead of partial, indirect impact on certain aspects of public policy, unlike civic, social or policy entrepreneurs, who seek to influence decision-makers. His study of political entrepreneurs reveals that most centrist political start-ups between 1968 and 2011 were founded by insiders, such as members of parliament of an existing party who defect and establish a spin-off. He suggests that having a celebrity as frontrunner helps, but it is not enough to build a sustainable political movement, as many failed political enterprises can attest. In fact, too strong a focus on one person may ultimately lead to a less resilient organization – in business, this is called the "Founder's Trap." And although a celebrity center stage makes things easier, it is certainly possible to enter Parliament without one.

- Collectively intelligent political start-ups can be a more inclusive, transparent, and efficient alternative to traditional political parties. They too, however, are prone to path dependency and resistance to change. If one is afraid to fail (or to quit), true innovation is not possible, which is why we need serial political entrepreneurs who are not afraid to fail. Learning from failure is central to any entrepreneurial undertaking. This is the intention behind Uffe Elbaek's latest endeavors. The new party would once again be based on five core values (or "areas of focus"), this time however also opting to clearly position themselves on the existing political spectrum as a left-wing party.

As Samuel Beckett put it: "Ever tried. Ever failed. No matter. Try Again. Fail again. Fail better." Is this how political entrepreneurs will eventually succeed?

Notes

1 Readers interested in the notion of political start-ups will be interested to read Josef Lentsch's book, *Political Entrepreneurship: How to Build Successful Centrist Political Start-ups*.
2 Readers interested in more insights into Uffe Elbæk's organizational design principles should read his essay *Leadership on the Edge* (Elbæk 2010).
3 We know that the approach has since inspired other political parties, for instance, the center-right cdH party in Belgium, through the involvement of the authors of this case.
4 See Ekstra Bladet, "Uffe lover: Der kommer mere 'crazy' ". https://ekstrabladet.dk/nyheder/politik/valg19/uffe-lover-der-kommer-mere-crazy/7654804, accessed Jan. 5, 2022.
5 Read about their new platform "Planet A" here: www.thealternative.org.uk/, accessed March 10, 2022.

6 Although a clear and present danger to their existence may be the trigger for some serious rethinking, as suggests the recent example of the center-right Belgian cdH party that the authors helped in designing an online and offline process of consultation.

7 "How the Politically Unthinkable Can Become Mainstream", *New York Times*, Feb. 26, 2019. www.nytimes.com/2019/02/26/us/politics/overton-window-democrats.html, accessed March 11, 2022.

8 Incidentally, it is worth noting that the "devil's advocate" technique is often used by creativity professionals to free people's imagination.

9 https://alternativet.dk/en/politics/manifesto, accessed April 11, 2022.

10 Personal interview, August 12, 2016.

11 Note however that Jacob Eisenberg, professor of business at University College Dublin, and William Thompson, psychologist at Macquarie University, found that experienced musicians improvise more creatively when enticed with cash prizes and publicity. The difference might lie in the type of people involved. While Amabile's subjects tended to be novices, Eisenberg's were veteran musicians. This suggests that competition motivates experienced creators but inhibits inexperienced ones. An evolving theory suggests that some combination of intrinsic and extrinsic motivation is ideal.

References

Amabile, T.M. (1998). "How to kill creativity". *Harvard Business Review*, September–October 1998, 76–87.

Becker, J., Brackbill, D., and Centola, D. (2017). "Network dynamics of social influence in the wisdom of crowds". *PNAS* 114 (26), E5070–E5076; first published June 12, 2017. https://doi.org/10.1073/pnas.1615978114

Boucher, S. (2017). *Petit manuel de créativité politique: Comment libérer l'audace collective*. Editions Le Félin.

Brown, R.T. (1989). "Creativity". *Handbook of creativity* (pp. 3–32). Boston, MA: Springer Publishing .

Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York: Harper.

Csikszentmihalyi, M. (2013). *Creativity: The psychology of discovery and invention*. Harper Perennial Modern Classics.

Elbæk, U. (2010). *Leadership on the Edge*. Gyldendal Business.

Frey, D., and Schulz-Hardt, S. (2001). Confirmation bias in group information seeking and its implications for decision making in administration, business and politics. In F. Butera & G. Mugny (Eds.), *Social influence in social reality: Promoting individual and social change* (pp. 53–73). Hogrefe & Huber Publishers.

Janis, I. (1971). "Groupthink". *Psychology Today* 5(6), 43–46.

Janis, I. (2008). "Groupthink". *IEEE Engineering Management Review* 36(1).

Kaufman, J.C. (2016). *Creativity 101*. Springer Publishing.

Lentsch, J. (2018). *Political entrepreneurship: How to build successful centrist political start-ups*. Springer.

Mair, D., Smillie, L., La Placa, G., Schwendinger, F., Raykovska, M., Pasztor, Z., and Van Bavel, R. (2019). *Understanding our political nature: How to put knowledge and reason at the heart of political decision-making*, EUR 29783 EN, Publications Office of the European Union, Luxembourg.

Meloncelli, C. Wilson (accessed). "The autotelic personality – Finding happiness in flow". www.cwilsonmeloncelli.com/the-autotelic-personality-finding-happiness-in-flow/, accessed 2021-04-06.

Nadeau, Richard, Cloutier, Edouard and Guay, J.-H. (1993). "New evidence about the existence of a bandwagon effect in the opinion formation process". *International Political Science Review* 14(2), 203–213.

Piirto, Jane (2011). *Creativity for 21st century skills* (pp. 1–12). Sense Publishers.

Quilter-Pinner, H., Statham, R., Jennings, W., and Valgarðsson, V., (2021). "Trust issues: dealing with distrust in politics". IPPIR available at www.ippr.org/research/publications/trust-issues, accessed March 10, 2022.

Schmitt-Beck, Rüdiger. (2015). "Bandwagon effect". *The international encyclopedia of political communication* (pp. 1–5).

Schneider, M., and Teske, P. (1992). "Toward a theory of the political entrepreneur: Evidence from local government". *American Political Science Review*, 86(3), 737–747. doi:10.2307/1964135

Solomon, M. (2006). "Groupthink versus the wisdom of crowds: The social epistemology of deliberation and dissent". *The Southern Journal of Philosophy,* 44(S1), 28–42.

Sternberg, Robert J. (1998). "Cognitive mechanisms in human creativity: Is variation blind or sighted?". *The Journal of Creative Behavior*, 32(3), 159–176.

Sunstein, C.S. (2001). *Republic.com*, Princeton University Press.

Sunstein, C.S. (2003). *Why Societies Need Dissent*, Harvard University Press.

Weiner, E. (2016). *The geography of genius: A search for the world's most creative places from Ancient Athens to Silicon Valley*. Simon & Schuster.

10

HOW TO FACILITATE THE CONVERGENCE OF CONFLICTING CONSTELLATIONS OF INTERESTS

Germany's "Agora Energiewende"

Lars Grotewold

The story

Energy policy is a complex and conflict-ridden field – technologically, economically, and politically. The consistent availability and stable supply of energy is a major prerequisite for economies to flourish. Industrial production sites all over the world depend on this basic commodity as much as private households do in order to maintain the basic functions and amenities of modern life. Because of its fundamental significance for a nation's economy, this multi-billion-euro market is highly sensitive politically. It comes as no surprise, therefore, that energy is a policy field in which a vast array of interests and lobbyists defend their viewpoint, from utilities and grid operators to tech investors, consumer groups, and environmental nongovernmental organizations (NGOs), to name just a few. When such a system is called to change, massive political forces are unleashed, with each stakeholder trying to protect its own interests.

This is what started to unfold in Germany in the first decade of this century, when the grounds were laid for a complete transformation of its power system as a reaction to a global systemic stress factor: climate change. The Kyoto Protocol required Germany to massively reduce greenhouse gas emissions from fossil fuel use, and a long and emotional fight over nuclear energy compelled the Federal Government to react. It adopted a nuclear phase-out law and established a feed-in-tariff that facilitated an unprecedented growth of renewable energy sources (RES).[1]

No matter how much the various stakeholders liked or disliked this shift, it marked the beginning of nothing less than a complete shake-up of the power system paradigm that had existed for decades. Decentralized renewable energies were now supposed to form the backbone of the power system and the residual park of big central coal and (temporarily remaining)

nuclear units had to adapt to the fluctuating power production from wind and solar. New business and pricing models, operating principles, and system control mechanisms, among other complex matters, had to be invented. New players entered the highly regulated energy pitch and threatened the incumbents. Much of the newly installed RES capacity was in the hands of citizens' cooperatives, not just challenging utilities' business models but also triggering a democratization of the energy system. While there was strong societal consensus for the need of such an "energy transition" ("*Energiewende*" in German), energy professionals and policymakers faced huge uncertainties about the way forward.

This led to the type of political battle described above, with only a few scientists trying (largely unsuccessfully) to offer a systemic view and pose questions on how to optimize the system as a whole. A decade of fragmented discourse on energy policy was the logical consequence. Largely uncoordinated communities formed around special interests, notably on issues such as the future electricity grid, storage options, support for RES, and the future of coal. These groups largely ignored the interactions between the different parts of the power system – physically as well as economically. What was missing was a comprehensive view of the overall transition process, taking into account the interdependencies of different subsystems, all the different interests involved and a structured debate about possible options as well as their potential consequences. No single actor in the energy policy landscape had the capacity at that time to exert such a role.

In this situation, Stiftung Mercator, a German philanthropic foundation, created the "Agora Energiewende" in partnership with the European Climate Foundation (ECF).[2] Its aim was to provide a space for stakeholders to discuss in a candid and frank way how best to proceed with Germany's energy transition. This space needed to be trusted by each stakeholder in the debate and regarded as a worthwhile place to be for mutual peer-to-peer learning. It had to demonstrate political relevance to encourage the different stakeholders to engage meaningfully and sustain that engagement. Only then would it be possible to create an extra-parliamentary process that would integrate diverse stakeholders' views, expertise, and interests and help policymakers to find feasible pathways for the implementation of Germany's ambitious energy and climate goals.[3]

Back to the future: A modern-day Agora for a path forward

With the Agora Energiewende, Mercator hoped to create a space allowing different interests and views to converge. Even so, the founders were not so naïve as to believe it was possible to find a consensus on all the complex questions generated by such a massive transformation. Rather, the aim was to create a structure and process that would ensure the engagement and trust of as many stakeholders as possible for a meaningful conversation without creating the need for them to publicly agree to the options for solutions that emerge from their conversations. Also, the challenge was to make sure that the stakeholders involved did not view the process as one of finding the least common denominator amongst them. The objective was to constantly push their debate towards the best available analysis on potential options to reach the desired energy and climate goals. This would allow for the possibility of narrowing down the solution space for smart and feasible policymaking. These considerations resulted in the Mercator team choosing a two-part structure for the Agora process.

First, a "Council of Agora" acts as the principal room for stakeholders to meet and discuss. This council does not have any public function. It is not expected to release any position papers or recommendations. Its only function is to be a systematic peer-learning and capacity-building unit that identifies convergences and thereby reduces the confusion

surrounding any given challenge and makes way for feasible strategies with a high degree of stakeholder buy-in. Members of the council are selected by the director and the shareholders (Mercator and the ECF) according to their position and capacity to act as an opinion leader in their professional context as well as their willingness to engage in a trustworthy and candid manner with other experts. The council of Agora Energiewende comprises (deputy) ministers, chief executive officers, leaders from NGOs and associations.[4]

In parallel, a team of technical experts functions as an "internal think tank" and organizes all matters for the council meetings. The team has to provide top-quality analysis and leadership that serves as input for the council as well as for public debates. The team also organizes – and is solely responsible for – the public-facing part of the Agora. It is the author of all of Agora's publications which are made publicly available and it manages events and media initiatives to inform public debates on energy matters.[5]

The Agora Energiewende has made a tremendous impact on Germany's energy policy since its inception.[6] Many ideas formulated and discussed within its safe and informed space – see the Do's and Don'ts section on the methods used – have shaped the political discourse significantly. Some ideas have even made their way into new pieces of legislation.[7] As one expert stated in the external evaluation, "The Agora made people who used to talk *about* each other talk *with* each other."

Inspired by Agora's success, Stiftung Mercator and the ECF founded the "Agora Verkehrswende" a few years later to support a mobility transition.[8] Other funders created Agora-like institutions in Poland, Turkey, and other countries, while civil society actors as far as Madagascar have created Agora-like structures to tackle deforestation matters. This is confirmation that the basic approach can indeed be adapted to different contexts that face massive challenges with diverse – and often divergent – sets of interests.

What science tells us

There are two fundamental issues that should be properly addressed when embarking on an Agora-type approach: the mechanisms for stakeholder alignment and scientific policy advice.

Regarding stakeholder alignment, this case study shows how change is far more likely to succeed if it is co-created and co-owned. As in other fields, stakeholders that seek fast and sustainable change reinvent how they compete (Prahalad, 2004). For stakeholder alignment to happen, it is therefore of utmost importance to strictly implement the principle of co-creation at all stages of the process and to be absolutely transparent about the scope of the work you intend to do. Co-creation refers to a collaborative process that integrates diverse stakeholder groups from the beginning of a project to its end (Nabatchi, 2017). This principle is not only applied to the debates within the Council of the Agora, it is also the guiding principle for every single scientific study done by the think tank team.

Just as customer engagement in creating new products generates psychological ownership (Hair, 2016) and facilitates organizational change (Ramaswamy, 2010), collective policymaking similarly generates a high level of ownership among the different stakeholders involved. This serves to increase the credibility of the results as well as its reach, especially when different multipliers speak highly of the study in their respective contexts. Strictly following these principles makes it possible to work across policy fault lines and massively increase the quality of the debate.

The Agora Energiewende also illustrates how collaboration and collective learning generate a sense of community. Regarding policy advice, the Agora Energiewende was expected to strike a delicate balance. One the one hand, the founders wanted it to open up the solution

space to provide a comprehensive view of the existing challenges and potential solutions. On the other hand, finding convergences and balancing interests means that this solution space is narrowed down over time and certain solutions and strategies are given priority.[9]

Referring to Roger Pielke's modes of science engagement, we wanted Agora to be the "honest broker" in certain moments and the "issue advocate" in others (Pielke, 2007). According to Pielke's model, the honest broker function aspires to clarify and sometimes even expand the scope of solution options available for action. The honest broker thus empowers decision-makers by providing greater clarity on choice, or even the invention of choices previously unseen. This function was needed in situations where the systems view and the structuring of the debate were instrumental. This is a crucial role Agora fulfilled in many situations. This is because Agora always tries to stay ahead of the political debate and to take a strategic mid-term perspective. It tries to identify issues that will become important in the political debate in 6 to 12 months' time. This is to start preparation of relevant studies and discourses that develop the collective expertise needed to guide public debate when these new issues arise.

The defining characteristic of the issue advocate, in contrast, is a desire to reduce the scope of available choices, often to a single preferred outcome among many possible outcomes. This role is played by Agora usually when the degree of stakeholder alignment increases, so that many players converge in order to rule out certain options. This is often the case when the issue at hand has moved further down the policy funnel near a decision point, for instance, the adoption of a piece of regulation.

Do's and don'ts

Over time, Agora's team has learned a number of other key ingredients to make a successful "Agora special sauce":

- **Full transparency on goals, motives, assumptions, scope of work, and sources of funding** has to be at the heart of the institution. Any suspicion of hidden agendas will significantly undermine its prospects of success. One of the major stumbling blocks in political debates on energy policy is the use of contradictory studies which result in incompatible recommendations to policymakers. Too often studies aren't easily comparable and it is hard to judge which set of recommendations is more convincing, as authors aren't sufficiently explicit about their underlying assumptions. Some researchers implicitly optimize their studies for security of supply and speculate on the climate impacts of the energy system, while others do it the other way around. Such a lack of transparency makes it hard to challenge their analysis and to integrate new perspectives into study designs which finally leads to disconnected communities of analysts mistrusting authors from "the other camp." The silos thus created are used in a strategic way by different stakeholders: if you're interested in obtaining study results from only a particular part of the solution space, you know whom to commission. Serious dialogue is near impossible in such a situation. For Agora's analyses to make a real difference, it is thus crucial to **be completely transparent about all assumptions and methodologies** and to develop its assumptions with a variety of stakeholders from the very beginning. The assumptions thus become better and more robust as they integrate diverse perspectives and specialized knowledge. It also helps prevent cognitive biases which are more likely to occur if only a few people from the think tank team were defining the assumptions.

- **Strictly adhering to the principle of co-creation** markedly enhances quality, credibility, and impact of the work. Co-creation takes place at different levels in the generation of studies, their discussion within the council, back and forth examination with the public, so that everyone can feel that he/she has contributed. It may take a little longer to obtain results than doing it in a classical think-tank type of approach by just harnessing the team's expertise – but it's worth the investment of time and resources.
- A **highly trusted person who will lead** the Council is necessary. He or she can act as a facilitator for trust in discussions, build bridges between differences and provide credibility and relevance to the whole endeavor vis-à-vis all stakeholders as well as the public.[10]
- A **team leader** with an excellent reputation as a specialist in the relevant field, with good access to different stakeholders, is also essential. This person must have a great understanding of the political process and a good feeling for the right time to launch a particular debate. He or she should have a clear view for the roles that Agora should play at different points of time. The interplay between the team and the council has to be managed smartly by the leader.
- A team of **diverse and highly skilled experts** with the determination and capacity to make Agora's special approach happen is also fundamental to the process.
- A high degree of **financial and reputational independence** is required so as to set Agora's agenda strategically and to ensure that there is no special interest of any particular stakeholder that determines the work program and outputs.[11]
- Regarding the challenge of preserving one's credibility as an honest broker function, the key is **not to overemphasize the role of the issue advocate**. Being perceived as an actor mainly lobbying for his or her own preferred policy outcome would severely undermine Agora's principle function and impact. This is one of the greatest risks that has to be managed very carefully. Agora has not been set up to be just another think tank or another voice with special interests in the choir of lobbyists. The space it was meant to occupy has to be protected over its lifetime. This requires a lot of discipline by everyone involved.

Notes

1 See www.cleanenergywire.org/dossiers/history-energiewende for a short history of Germany's energy transition and further links.

2 www.agora-energiewende.de/en/.

3 The Agora was founded in 2012. Germany's energy objectives were ambitious. At that point in time, Germany had reduced its emissions by 25% since 1990. A big part of this reduction was caused by closing down dirty and inefficient industrial plants in the former GDR in the course of the reunification process. The federal energy concept in place in 2012 aimed at achieving another 15% reduction in the remaining 8 years until 2020. That corresponded roughly to a doubling of the yearly reductions achieved until then, however, this time it had to be achieved through climate policies, not by closing down industrial plants. Similarly, regarding the expansion of renewables, the share (of electricity consumption) was 23% in 2012, with the goal of reaching 35% in 2020 – again roughly a doubling of the yearly speed. In addition, Germany had committed to a nuclear exit in the remaining 8 years until 2020.

4 The full list of members can be found here: www.agora-energiewende.de/en/about-us/council-of-the-agora/.

5 There is co-ownership at all steps of the Agora's work between the Council and the Agora's core staff thanks. They decide together on which issues to tackle and bring together different types of experts for each major study, integrating different types of knowledge, creating the right framework, discussing the assumptions for particular studies, etc. The results are then discussed with the Council members, then in public formats.

6 The executive summary of the evaluation can be found here: www.stiftung-mercator.de/de/
publikationen/evaluation-of-agora-energiewende/.

7 A great example is the very first publication named "12 insights on Germany's Energiewende" that
helped enormously to structure the otherwise fragmented and uncoordinated debate back then,
www.agora-energiewende.de/en/publications/12-insights-on-germanys-energiewende/.

8 www.agora-verkehrswende.de/en/.

9 Members of the Council are not expected to embrace the proposals produced by the Agora,
although the aim is that few who reject them thanks to solid analysis and through a process of dia-
logue which may push some stakeholders out of their comfort zone. There is therefore neither a
need for consensus, nor for voting. Agora does not seek to resolve all disagreements. It aims rather
to offer policymakers different perspectives, showing them how they can navigate complex issues,
understanding what kind of support or backlash they can expect with a particular policy instru-
ment or mix.

10 In the case of Agora Energiewende and Verkehrswende, these were Prof. Klaus Töpfer and Achim
Steiner, respectively. Both used to run the UN Environment Programme (UNEP) before.

11 This is why the philanthropic nature of funds used to set up the Agora was instrumental for its
success.

References

Hair, J. et al. (2016) 'Examining the Role of Psychological Ownership and Feedback in Customer
Empowerment Strategies', *Journal of Creating Value*, 2: 194–210.

Nabatchi, T., Sancino, A. and Sicilia, M. (2017) 'Varieties of Participation in Public Services: The
Who, When, and What of Coproduction', *Public Administration Review*, 77: 766–776. https://doi.
org/10.1111/puar.12765

Pielke, J.R. (2007) *The Honest Broker: Making Sense of Science in Policy and Politics*. Cambridge: Cambridge
University Press.

Prahalad, C.K. and Ramaswamy, V. (2004) *The Future of Competition: Co-Creating Unique Value with
Customers*. Brighton: Harvard Business Press.

Ramaswamy V. and Gouillart, F. (2010) *The Power of Co-Creation: Build It with Them to Boost Growth,
Productivity, and Profits*. New York: Free Press.

11

HOW COLLECTIVE POLITICAL INTELLIGENCE PRODUCED BETTER POLICY

Political Task Committees in Gentofte, Denmark

Eva Sørensen and Jacob Torfing

The story

In 2015, the City Council in Gentofte, Denmark, decided to change the way it made decisions. In this town of 75,000 people just north of Copenhagen, elected officials were increasingly discontent with the conventional way of developing policies. Most public decisions were negotiated behind closed doors in City Hall based on input from public administrators, rather than from the people they represent or the populations those policies would affect the most. This lack of dialogue with citizens not only hampered the Council's ability to make policies that worked for the intended purpose or to come up with innovative ideas, but also to secure public support for the decisions made.

The idea was to introduce Political Task Committees (PTCs) as the new format for municipal policy-making. A PTC is a political *ad hoc* committee commissioned by the Council to prepare a policy proposal, composed of politicians from different parties and citizens of diverse backgrounds. We rarely see the concept of collective intelligence used in analyses of political life, but the events in Gentofte provide a welcome opportunity to investigate how a systematic staging of dialogue between politicians and citizens and other stakeholders can make them build something intelligent together.

This chapter aims to show that Gentofte's PTC model not only holds the potential to advance what we denote as collective *political* intelligence, but also that the model's ability to fulfill this potential hinges on skillful facilitation.

First, we specify what we mean by collective political intelligence. Then, we describe the new format for policy-making in Gentofte and present insights from a longitudinal case study of the policy impact of the PTCs. Finally, we conclude by considering how a collective political intelligence perspective can inform efforts to reshape representative democracies.

A concept of collective political intelligence

At a general level, the concept of collective intelligence under scrutiny in this handbook insists that intelligence is not only a property of individuals, but that sometimes a group

of individuals collaborate in ways that seem intelligent (Malone and Bernstein, 2015). As such, collective intelligence can emerge from collaborations between a variety of actors that involve different degrees of aggregation and integration of perspectives and ideas.

Many research disciplines, from psychology and sociology to business studies, economics, computer science, and organizational studies, have analyzed the phenomenon of collective intelligence and how it can be promoted and put to work for different purposes (Bonabeau, 2009; Woolley et al., 2015; Chmait et al., 2016; Mao and Woolley, 2016; Gloor, 2017; Beckre et al., 2017; Peters, 2021).

In recent decades, the interest in collective intelligence has also found its way into political science and public administration under various labels. In governance theory, a new strand of research is interested in how co-creation and co-production between public and private actors can enhance the quality of public policies and effectiveness of public services (Peters and Heraud, 2015; Ansell and Torfing, 2021). A wave of public sector innovation theory is scrutinizing how collaboration between actors with different mindsets, experiences and expertise can spur public innovation (Torfing, 2016; Sørensen, 2017). In democratic theory, there is a growing interest in how collective intelligence can advance the legitimacy of representative democracy. Helene Landemore (2012) looks at how deliberation among randomly selected citizens can contribute to developing a particular kind of democratic reason or "collective wisdom." Geoff Mulgan (2018) has pointed to enhanced dialogue between politicians and citizens as a promising way to promote learning and reduce the impact of fake news and partisan misinformation.

A common feature uniting the growing interest in new models of collaboration in political science and public administration is that they tend to emphasize cognitive aspects of collective intelligence, such as knowledge, reasoning, information, and learning, but largely fail to address the specifically political aspects of such collaborations. We define politics as *the making of collective decisions in the face of diverse and more or less competing perceptions of what is valuable for society and its members* (Mouffe, 2005; Runciman, 2014; Dahl and Lindblom, 2017; Lasswell, 2018). Moreover, theories aiming to capture what collective political decision-making entails coin it as a process of negotiation that takes place between actors who accept pluralism and the undecidable character of views and opinions as a constitutive condition for making joint political decisions (Jenkins-Smith and Sabatier, 1994; Crick, 2005; Mansbridge and Martin, 2015; Hajer, 2013; Gutmann and Thompson, 2014; Knight and Schwartzberg, 2020).

Political negotiation can involve consensus, but so too does it often require bargaining, compromising, and patient coalition-building. As such, developing a concept of *political* collective intelligence means asking what kind of knowledge, reasoning, information, and learning is produced by the aggregation of ideas, viewpoints, and perspectives in such negotiations. We propose that collective political intelligence comes in the shape of *a realistic and deep understanding of what the disagreements are, what it would require to make decisions that satisfy several views, and what the costs would be of making decisions that produce losers*.

Moreover, we propose that the production of a collective political intelligence does not only rely on horizontal political negotiations between different citizens or different political elites, but also *between political elites and citizens*. Hence, the advancement of collective political intelligence relies on politicians that can exercise a particular kind of interactive leadership that thrives on extensive and close dialogue with citizens on the substance of policy, and aims to integrate this activity in the institutional architecture of the policy-making process (Sørensen, 2020).

The Political Task Committee model

In deciding to establish PTCs, the City Council in Gentofte has stepped into the role as interactive political leaders. Since 2015, these committees have brought together politicians and citizens in a joint effort to develop policy proposals that build on a foundation of collective political intelligence. The PTCs engage politicians from different parties and citizens with very different backgrounds in framing and negotiating a policy proposal. These negotiations last several months, during which the committees have access to institutional support and rich opportunities to seek input from various sources of expertise at different stages. Before discussing the impact of the PTCs and the turn to interactive political leadership of policy-making processes in Gentofte, let us briefly describe the background for this reform and how it was designed.

Gentofte is one of the most affluent, well-managed, and innovative municipalities in Denmark. For decades, it has been under the leadership of a powerful mayor with an absolute majority in the City Council and a history of forming broad coalitions that include several small parties.

As such, there is a well-established practice of cross-party collaboration within the Council. Nevertheless, by the spring of 2014, many councilors were ready for a departure from the status quo. These elected officials felt that they spent too much time on casework, had very little opportunity to develop policies, and rarely were in any kind of conversation with the citizens except for when affluent and well-educated citizens protested against City Council decisions. For the most part, administrative staff framed the policy questions and prepared the substantive proposals. To the extent that elected politicians were involved in policy formulation, these discussions took place in standing political committees that did not involve relevant and affected citizens and stakeholders. Weary of their limited impact on policy, on the one hand, and their limited contact with citizens, on the other hand, Gentofte's councilors wanted a new way to hear directly from their constituents and to get an opportunity to explain and revise their own ideas.

Why would a powerful mayor, in office 20 years, agree to such an experiment in collective intelligence? First, the need for innovation was aligned with his own political situation. Though secure in the mayor's chair, his party was not a national force, meaning that it was unlikely that he would ascend to higher office. Whatever impact he would have at a greater level in Danish politics would be through the innovations he was able to bring to fruition in Gentofte.

Furthermore, he had recently seen up close the weaknesses of the traditional top-down approach. A year prior to the decision to institute PTCs, his administration had announced the creation of a new park with a "skate center" for the city's young people. In traditional fashion, the mayor had hired a respected architectural firm to conceive the design. But, shortly before the design was to be made public, when he went into the street and showed it to a group of young skaters, their response was immediate: "the person who made this is not a skater. It will not work." The mayor immediately decided to abandon the firm-produced design and start over with proposals from the kids themselves. As he explained to us later, "What I realized is that we make so many mistakes because we don't talk to the people who actually use the service."

He realized, too, that this way of doing business – top-down proposals with no input – had become endemic.

> I called the city manager and said that I wanted a measurement from the adminis-
> tration of the number of policy proposals from my office that were passed without
> changing a comma. He worked on it a few days and called me back – it was 97%.

So the mayor had seen both the need and the model for how to conceive policy differently. What he needed was a way to de-risk any innovative proposal. This is when he called us. As researchers, we had presented a blueprint for a PTC-type idea to the city council in 2011 and 2014, including how decision-making would work in the committees, oversight mechanisms, and the like. Out of the blue one day the mayor called us: "We just did it, the city manager and I. We totally reorganized how the council works. Would you two like to evaluate it?" By bringing in technical experts at the right phase, with the right combination of political actors behind him, the mayor was taking a bold – but much less risky – step into the unknown.

Based on discussions in the Council, the mayor proposed a new political model that was debated, amended, and finally approved by the Council and enacted on August 1, 2015. From that day forward, all new municipal policies were to be formulated by PTCs composed of five politicians from different parties and ten citizens of diverse backgrounds. The guiding principle for appointing participants is to maximize the diversity of the group as a whole. A small group of public administrators – some trained in facilitating collaborative processes and others with relevant policy expertise – was established to assist each committee throughout its six to eight months of operation. Within each PTC, an elected official serves the role of Chair and another as Deputy Chair. Each committee is free to organize its work process as it sees fit within the overall mandate given by the City Council, and members can decide to invite guests to testify, make excursions, form working groups, and host events to gather further input from communities with an interest in the issue.

Tasks for the PTCs are identified through a multi-stage process within the Council. First, the Council holds an "inspiration seminar," featuring open discussion among the politicians on which political problems are most suitable for dialogue between politicians and citizens. The city councilors then agree on establishing a certain number of PTCs. After lengthy political discussion, the City Council issues a written remit or mandate for each of the new committees. The mandate describes the background and nature of the topic at hand, the overall political objectives that should guide each PTC, and the timeframe and expected deliverables from the PTC to the Council. The final deliverable can take the form of a vision statement or policy proposal, strategy, or action plan.

The mandate issued by the City Council also defines the "competence profiles" of citizens that will be invited to participate in the PTC. People from relevant stakeholder organizations may participate as single individuals with particular competences, but not as representatives of their organization and its specific interests. The guiding idea for drawing up the competence profiles is to make sure that a broad variety of actors are included. The municipality advertises the mandate for each of the committees and issues a call for interested citizens who match the competence profiles in local newspapers, on different websites and via posters in local public institutions. This call for participants urges citizens to register at the municipal website if they are interested in becoming a member of a particular PTC and think that they match one or more of the competence profiles. The politicians and municipal staff also use their local contacts and networks to encourage citizens to sign up for relevant PTCs.

At a subsequent City Council meeting, the politicians compare the self-registered citizens with the competence profiles in the different mandate and formally select and appoint the ten citizen participants based on the criteria they had defined. To avoid discouraging those

who were not selected, the Council invites them to take part in other activities that could benefit the city, including participating in a subcommittee, workshop, "innovation camp" or public hearing.

The "innovation camps" were a particularly interesting element of the new governance model. The seed of the idea was to find some way of involving a greater number of young people, including those who had not been selected for the PTC, into the discussions over city policies for youth. Supported by four members of the city administration, the PTC for youth organized a weekend-long "innovation camp" at the city hall, where the committee would show a preliminary version of their goals and ideas to the larger group and challenge them, "How can we make these ideas happen in practice?"

As the weekend of the first camp unfolded, however, the organizers of the event came to a realization. "We knew that we wanted the kids from the PTC themselves to be the facilitators," said one of the organizers.

> The adults would be guests, playing a supporting role with tools and information as needed. But watching the kids at work, we saw how complex this kind of facilitation really is! To communicate clearly and organize people into brainstorming groups, then compare the ideas as a group of 50 – this was really tough, and the kids who facilitated did an amazing job. It made us realize we needed a new kind of public administrator.

Following the first innovation camps, the municipality made a commitment to hire and train facilitators from the community, as well as offer new training opportunities in facilitation methods to city staff. "Before, the staff used to just defend themselves when there was a problem," she continued.

> Now they say, 'Come in and help us fix it so it will work better next time' – they realize they need facilitators too, not just technical experts. This way of working has spread to all corners of the municipality.

As this culture of facilitation grows, the challenge for Gentofte is to keep building this new network of high-quality facilitators while ensuring that they truly facilitate, as opposed to step in and influence the process themselves.

The Council retains the role of guarantor of the values of the PTC process, and decides which of the local councilors will participate in what PTC. It appoints those politicians based on a mathematical model that ensures proportional representation of the political party alliances across all committees. When each PTC concludes its work, two citizens from the PTC present the policy proposal to the City Council for endorsement. This format ensures integration of the PTCs in the formal political process in the municipality. Moreover, the detailed regulation of the PTCs aims to align politics in the PTCs and politics with the power balance in the City Council and to secure broad inclusion of different types of citizens.

The results of this experiment in collective political intelligence are striking: following adoption of the PTC model, the mayor was re-elected in a landslide. The PTCs are now an established city institution. Unlike participatory initiatives in other cities, no party is against them, meaning that if the Council, administration, and citizens are able to maintain the spirit of continual learning and improvement, the prospects for this new way of governing are bright.

What science tells us

PTCs as drivers of collective political intelligence

In a longitudinal case study from 2015 to 2021, our research team investigated how the PTCs have accommodated and shaped the dialogue between politicians and citizens, the degree to which they have advanced the collective political intelligence of the policymakers and the effectiveness, innovativeness, and perceived legitimacy of its policies (Sørensen and Torfing, 2016, 2019a, 2019b, 2022).

These studies draw on different data types including observations, interviews, mini-surveys, and document studies – and there is plenty to study. The Council started out by establishing eight PTCs and after six years, more than 42 PTCs have produced policy proposals that the City Council has subsequently enacted. Topics addressed by the PTCs cover the whole spectrum of municipal policy areas. Among them are youth policy, professional insertion for refugees, health and well-being, ways to make the city green and sustainable, and a plan for turning libraries into cultural hubs. The general practice has been that each PTC meets monthly, and supplements these regular meetings with (i) smaller working-group sessions where not all participants are present, and (ii) a variety of thematic events where other citizens or politicians contribute to the discussions. Our research team has observed meetings, working groups and events in selected PTCs, and interviewed a large number of citizens, politicians, and public administrators, just as we have conducted a number of surveys (Sørensen and Torfing, 2022).

The study shows that the PTCs have indeed contributed to strengthening the political conversation between politicians and citizens as well as between different citizens and politicians across party lines. As documented in a large survey conducted in 2016, politicians and citizens, as well as the public administrators who facilitate the PTCs, find that the committees support the development of a more nuanced understanding of the problems at hand and provide input and stimulate discussions that lead to innovative policy ideas and strategies for carrying them out. Mini-surveys and interviews conducted in 2021 support this finding (Sørensen and Torfing, 2016, 2022).

An illustrative example is a PTC that the City Council in 2016 assigned to formulate a proposal to support young people in the city. At the first meetings, it gradually dawned on the participants that despite other differences, a joint challenge and source of stress for young people in Gentofte is an intense pressure to perform in school as well as in their social lives. This revelation triggered a conversation about how young people experience life on social media, in school, and in family life, and the Citizen Council subsequently decided to establish a new PTC to investigate how to reduce these pressures on young people.

As another observation from the PTC on youth policy and from some of the other early PTCs, the politicians tended to be rather quiet and mainly listened to what the citizens had to say in the first PTCs. For various reasons, they were reluctant to state their opinions openly. However, when citizens demanded to hear what they had to say, the politicians changed their behavior and began to engage more in the discussions. This had the effect of invigorating the conversations, even as it risked bringing thornier and more sensitive issues to light. Our research showed that participating in such discussions gave the citizens a better understanding of the difficult priorities and complex issues that politicians deal with, while also giving the politicians valuable input for inter-party political discussions in Standing Committees and plenary sessions of the Council. Hence, the politicians began to function as "boundary spanners" between the PTCs and traditional city institutions, with the result

that policy proposals developed in the former stood a better chance of gaining recognition within the political system as a whole.

The study of different PTCs revealed that their policy proposals are products of neither broad consensus nor hard-nosed bargaining. They result, rather, from subtle negotiations between citizens and politicians that involve integration as well as aggregation of diverse positions. Although facilitation methods of the PTCs stimulated an alignment of perspectives, views, and opinions – including exchanges that change minds and generate ideas and intentions that no one had at the outset – disagreement among the participants continues. However, rather than resulting in open conflict, most PTCs manage to produce a policy proposal that most of the involved actors can support even when they do not get things exactly their way. Sometimes the policy takes the form of a balanced mosaic of different viewpoints and ideas that are voiced by the participating politicians and citizens. At other times, it is an aggregated list of proposals. However these diverse views are managed, they serve as an important source of inspiration for the City Council and the municipal staff, while also giving participating citizens a sense of real inclusion in the political process.

This outcome was not universal: in some PTCs, participants reported the sentiment that they did not get a chance to fully speak their mind or did not end up influencing the final proposal as they had hoped. From the range of evidence available to us, the most important factor affecting the way PTC members evaluated the policy-making process and its outcomes was the quality of the facilitation and the role of the policy experts. When there were limited scope for open-ended debate between citizens and politicians, when the facilitators did not do enough to involve those participants who were less prone to speak up, and when there was overly lengthy input from experts, these factors limited the degree to which the PTCs ended up producing proposals that all participants accepted.

Do's and don'ts

The study of the Gentofte PTCs indicates that lengthy conversations between politicians and citizens can produce a specific kind of collective political intelligence, and that such an intelligence can stimulate the development of effective, innovative, and legitimate policies.

We may ask, then, what are the implications of these findings for the current challenges facing representative democracy (see, e.g., Levitsky and Ziblatt, 2018; Runciman, 2018)?

We propose that a concept of collective political intelligence is helpful in understanding that political negotiations, for all their messiness, can be an essential force in coping with the disagreements that are natural to a pluralist way of life. The PTC model shows how subtle forms of political aggregation and integration can harness these political practices for productive and inclusive ends.

How to make such a model work? Here are our suggestions:

1. **Start by identifying a problem that people care about**. Too many city administrations seek to innovate by "making the hammer first, then go around looking for nails." Whether it's sanitation, education, or public safety, focus on the community problems that are relevant and urgent for the greatest number, then build processes adapted to those specific problems.
2. The problem-centered approach will require **a change in mindset from city administration**. Collaborating with citizens on complex problems cannot work if the city team is stuck in a "business as usual" mentality where citizens are treated as cases to be resolved instead of as partners. Inspiring political leadership and lots of one-on-one

communication are needed to bring about this mentality shift. Once a first wave of administrators starts acting in a new way, it may become easier for others to follow.

3. **Citizens also will need to change the way they think**. Rather than a posture of "just solve my problem," they will also need to feel ownership and responsibility to act. The best way to do this is to build interactions among politicians, administrators, and citizens that "feel different" from the traditional complaint-and-response. New meeting locations, workshop formats, and even seating arrangements can help change the dynamic and get people interacting as people, not as bureaucrats or politicians.

4. Constructing new ways of governing means deconstructing as well. Conventional accounts of politics tend to pit representative democracy and direct or people-driven democracy as fundamentally opposed. Our experience in Gentofte points to a middle ground. **It is the connection between the two, not the victory of one over the other,** which is going to make democracy better. Technical expertise and citizen expertise are both fundamentally important in solving hard public problems. This is true particularly in the context of national problems, but this truth is manifest at the local level as well. Democratic practices such as PTCs are helpful for public decision-makers in a context where the public has become very demanding, with high expectations which are hard to respond to from public office. Gentofte is a radical example which other cities are beginning to adopt.

The case study from Gentofte illuminates how promoting collective political intelligence is not only relevant for saving pluralism from harmful polarization within society, but also for mitigating the antagonism between citizens and political elites that has opened the door to populist and authoritarian alternatives. We note that it is not only in well-off cities that this model has worked. In fact, the PTC model has been implemented in a poor municipality in Norway which was prone to political conflict and it has drawn excellent results, comparable to the ones obtained in Denmark.

The message is clear to scholars and policymakers who seek new strategies for meeting this crisis: If collaboration between citizens and politicians is carefully designed, it can not only function but also thrive within the larger framework of representative democracy. Collective intelligence can make for good politics as well.

References

Ansell, C., & Torfing, J. (2021), 'Co-creation: The new kid on the block in public governance', *Policy & Politics*, *49*(2), 211–230.

Becker, J., Brackbill, D., & Centola, D. (2017), 'Network dynamics of social influence in the wisdom of crowds', *Proceedings of the National Academy of Sciences*, *114*(26), E5070–E5076.

Bonabeau, E. (2009), 'Decisions 2.0: The power of collective intelligence', *MIT Sloan Management Review*, *50*(2), 45.

Chmait, N., Dowe, D. L., Li, Y. F., Green, D. G., & Insa-Cabrera, J. (2016), 'Factors of collective intelligence: How smart are agent collectives?', In *ECAI 2016* (pp. 542–550). IOS Press.

Crick, B. (2005), *In Defense of Politics*. London: A&C Black.

Dahl, R. A., & Lindblom, C. E. (2017), *Politics, Economics, and Welfare*. London: Routledge.

Gloor, P. A. (2017), *Swarm Leadership and the Collective Mind: Using Collaborative Innovation Networks to Build a Better Business*. Bingley: Emerald Group Publishing.

Gutmann, A., & Thompson, D. F. (2014), *The Spirit of Compromise*. Princeton: Princeton University Press.

Hajer, M. A. (2013), Discourse coalitions and the institutionalization of practice: The case of acid rain in Great Britain. In F. Fischer & J. Forester (Eds.), *The Argumentative Turn in Policy Analysis and Planning* (pp. 43–76). Durham, NY: Duke University Press.

Jenkins-Smith, H. C., & Sabatier, P. A. (1994), Evaluating the advocacy coalition framework. *Journal of Public Policy*, *14*(2), 175–203.

Knight, J., & Schwartzberg, M. (2020), Institutional bargaining for democratic theorists (or how we learned to stop worrying and love haggling). *Annual Review of Political Science*, *23*, 259–276.

Landemore, H. (2012), The Mechanisms of collective intelligence in politics', In J. Elster and H. Landemore (Eds.), *Collective Wisdom. Principles and Mechanisms* (251–289). Cambridge: Cambridge University Press.

Lasswell, H. D. (2018), *Politics: Who Gets What, When, How*. Pickle Partners Publishing.

Levitsky, S., & Ziblatt, D. (2018), *How Democracies Die*. Broadway Books.

Malone, T. W., & Bernstein, M. S. (Eds.). (2015), *Handbook of Collective Intelligence*. Boston: MIT Press.

Mansbridge, J., & Martin, C. J. (Eds.). (2015), *Political Negotiation: A Handbook*. Brookings Institution Press.

Mao, A. T., & Woolley, A. W. (2016), Teamwork in health care: Maximizing collective intelligence via inclusive collaboration and open communication. *AMA Journal of Ethics*, *18*(9), 933–940.

Mouffe, C. (2005), *The Return of the Political* (vol. 8). Verso.

Mulgan, G. (2018), *Big Mind: How Collective Intelligence Can Change Our World*. Princeton: Princeton University Press.

Peters, M. A., & Heraud, R. (2015), Toward a political theory of social innovation: Collective intelligence and the co-creation of social goods. *Journal of Self-Governance & Management Economics*, *3*(3).

Peters, M. A. (2021), Knowledge socialism: The rise of peer production-collegiality, collaboration, and collective intelligence. *Educational Philosophy and Theory*, 53(1), 1–9, DOI: 10.1080/00131857.2019.1654375

Runciman, D. (2014), *Politics*. London: Ideas in Profile.

Runciman, D. (2018). *How Democracy Ends*. Profile Books.

Sørensen, E. (2017), 'Political innovations: Innovations in political institutions, processes and outputs'. *Public Management Review*, *19*(1), 1–19.

Sørensen, E., & Torfing, J. (2019a), Towards robust hybrid democracy in Scandinavian municipalities?. *Scandinavian Political Studies*, *42*(1), 25–49.

Sørensen, E., & Torfing, J. (2019b), Designing institutional platforms and arenas for interactive political leadership. *Public Management Review*, *21*(10), 1443–1463.

Sørensen, E., & Torfing, J. (2022), The three orders of public innovation: Implications for research and practice. *Nordic Journal of Innovation in the Public Sector*, *1*(1), 35–52. https://doi.org/10.18261/njips.1.1.3

Sørensen, E. (2020), *Interactive Political Leadership. The Role of Politicians in the Age of Governance*. Oxford: Oxford University Press.

Torfing, J. (2016), *Collaborative Innovation in the Public Sector*. Washington D.C: Georgetown University Press.

Woolley, A. W., Aggarwal, I., & Malone, T. W. (2015). Collective intelligence and group performance. *Current Directions in Psychological Science*, *24*(6), 420–424.

12

FROM SHOUTING MATCHES TO ARGUMENT MAPS

An online deliberation experiment in Italy

Mark Klein, Paolo Spada, and Lex Paulson

The story

Post-war Italian politics were exceptionally stable, until they weren't. From 1946 to 1994 without interruption, the centrist Christian Democratic Party presided over Italy's government either solely or in coalition with smaller parties. Though the rules of party-list proportional representation meant that a diverse group of parties won seats in the 630-member Chamber of Deputies, center or center-right coalitions were the norm for decades. In the early 1990s, however, a massive corruption scandal implicated all of Italy's major parties and discredited the political establishment. Italy's voters angrily withdrew their support, and all major parties promptly collapsed.

In the first two decades of the 21st century, a succession of electoral laws and new actors have remade Italy's political landscape. A series of legislative reforms – the "Matterellum" (1993), "Porcellum" (2005), and "Rosatellum" (2017) – have tweaked the election system to provide for a mix of majoritarian ("first-past-the-post") and proportional or party-list methods. The populist-conservative Forza Italia, created by media tycoon Silvio Berlusconi, ruled from 1994 to 1996 and again from 2001 to 2006 and 2008 to 2011. The Five Star Movement (M5S), initially led by charismatic comedian Beppe Grillo, came to prominence as an anti-elite protest movement and ultimately entered into government as part of a euroskeptic, anti-immigrant coalition after the elections of 2018. Key to the M5S brand was an unusually bold promise of internal party democracy: its members were to be the "collective architects" of its program and would propose and select candidates through consultations hosted on the party's platform, dubbed "Rousseau" after the famous theorist of popular sovereignty (Deseriis and Vittori, 2019).

It was at this experimental moment in Italian politics that an online community within the center-left, pro-EU Democratic Party (PD), adopted a deliberative method called the Intra-Party Deliberative Referendum or *Doparie*.[1] Conceived in the early 2000s by Raffaele Calabretta, a political scientist with deep ties in Italy's leftist movements, the *Doparie* method was designed to make internal party communication less hierarchical, improve transparency, and consult party members on policies that divided its elected leaders, such as end-of-life laws. The Democratic Party represented an alliance of secular leftists and Catholic progressives, who vied for precedence in various ways within the party structure. The *Insieme*

per il PD ("Together for PD") community was a registered faction within the party led by Senator Sandro Gozi, with ties to the Catholic wing of the party.

Calabretta's first proposal for *Doparie* imagined the deliberations would be in person (Calabretta, 2010). The leaders of *Insieme per il PD*, however, were expected at an upcoming national party meeting to present proposals for methods of internal democracy using digital tools. What they needed was to find and test methods of online deliberation that could make the IDP more progressive and inclusive without duplicating what they saw as the more "marketing-oriented" methods of the M5S. An online *Doparie* could potentially be practiced more flexibly, cheaply, and engage a larger volume of members. But given the rise in vitriolic online speech, could the internet really be a good venue for serious deliberation?

Though this community of Italian Democrats did not claim, as did M5S, that digital platforms heralded a new model of "direct democracy" for the nation (Loucaides, 2019), their agreement to experiment with an online *Doparie* reflected the pressure on Italy's parties to engage their members differently in this new, more fluid political age.[2] There was, too, the hope that deliberative methods could produce new synergies of ideas and a deeper, more substantive engagement in public issues where models of direct democracy – based largely on binary, "yes/no" referenda – fell short.

To this point, most online deliberations, including those organized by the M5S, followed a "conversation-centric" structure of a discussion forum with comment threads. These deliberations were designed to resemble face-to-face conversations; newest comments were visible first, and individual users could scroll through the thread and reply directly to one another. As a design principle for online deliberation, the conversation-centric approach has some obvious advantages. It is intuitive and familiar to users, having been used in online communities since the inception of web-based forums and bulletin boards in the 1990s. In the conversation-centric model, individual members are expected to browse comment threads as they please, reading some in detail and skipping others. They can engage directly with other individuals if they choose, or alternatively, they can simply add their own comment and leave.

But as any frequent user of social media knows, the conversation-centric approach has its downsides. Reading through a long comment thread can be tedious, and entering a discussion in progress can be confusing. Comment threads are often cluttered by duplicative or unserious ideas. More provocative or extreme views are rewarded with greater visibility, while more thoughtful or moderate views can go unnoticed. Comment threads also tend to produce long and heated "tit for tat" arguments with no clear outcome, and the attention of the group may be wasted on side issues while major points go unaddressed. And because the discussion is loosely structured, the "sense-making" step of the deliberation often returns to the organizers themselves, defeating the democratic aims of the process. There are, finally, larger problems that have arisen from online discourse as it is typically structured: social polarization, the adverse effects of confirmation bias and "echo chambers," information cascades, and flat-out disinformation that can each wreak havoc on the quality of collective thought.[3]

Calabretta during a visiting period at Yale University in 2009 had met Spada, a PhD student who was working on randomized controlled trials designed to test deliberative processes. Together they had been trying to find an opportunity to rigorously test the *Doparie* design with an experiment. When the leaders of *Insieme per il PD* contacted Calabretta about the possibility of doing a *Doparia* in the fall of 2011, Spada, at that point a newly appointed postdoctoral researcher at Harvard, had just returned from a conference organized by Helen Landemore at Yale in October 2011 in which Klein had presented the deliberatorium. Spada,

highly skeptical of the possibility of high-quality deliberation in traditional online venues, had been fascinated by the unique features of Klein's collaborative argumentation platform, the Deliberatorium.

The Deliberatorium draws on a technique known as collaborative computer-supported argument visualization (CCSAV), which will be explained further in the following section. In short, CCSAV tools organize content by topic rather than by time, and represent it in a structured form where users can see the entire discussion and intervene where they choose. One common form of visual representation is the argument map: each "branch" of the map represents a sub-topic of the main question, and contains alternative positions on that sub-topic, as well as arguments for and against each position. In an argument map, every issue, idea, or argument appears only once to reduce repetition, making it far easier to discover what has or hasn't been posted already. Because they can see the entire conversation at once, participants can also focus on the content that is most interesting or relevant to them.

Klein's platform had been used to mediate complex deliberations in a variety of contexts, from universities to companies like Intel and BP, to public entities like the US Federal Bureau of Land Management, but had never been evaluated before with a rigorous randomized controlled trial in the wild.

Spada, who had been struggling to creating a randomized controlled trial design to evaluate in-person *Doparie* due to the logistics of engagement of Italian political parties, realized the unique possibility of testing the deliberatorium and proceeded to convince Calabretta and Klein and the leadership of *Insieme per il PD* to collaborate. Spada and Calabretta mobilized Italian artists, journalists, politicians, and university professors to volunteer their time to create videos and music to support the engagement campaign (see https://youtu.be/9YWs 6kPY0zY) and videos for the "knowledge library" on each electoral system. After one month of engagement and organization, the experiment was deployed in the spring of 2012.

The party leaders and research team agreed in advance on the qualities that would characterize a "good deliberation" for the purposes of the experiment:[4]

- Participants should be able to make their contributions without much training and in a reasonable amount of time;
- Participants should be respectful of one another;
- Exchanges among participants should focus on substantive arguments, ideas, and reasons as opposed to personalities;
- Participants should respond to the views of others as well as express their own opinions;
- All principal topics should be covered by the end of the deliberation.

The party leaders proposed that the main topic of the *Doparie* would be electoral reform. This issue was chosen for several reasons: It was a highly visible and relevant political issue that did not divide neatly on ideological lines; there was a perception that some new parties had manipulated the electoral reforms to their advantage; finally, these electoral rules would have major consequences on the balance of power between the secular leftist and Catholic progressive factions of the IDP.

Party members who agreed to join the *Doparie* would be assigned to a group and asked to share their views on three questions: (1) "What electoral law should Italy adopt?" (2) "What other important questions should be asked about the electoral system?," and (3) "What topics should be deliberated about in the future?"

The inclusion of party leaders in citizen deliberation is at the center of an unresolved debate in deliberative democracy. Some scholars believe that having leaders biases too much

the discussion, and other scholars instead believe that the presence of leaders is crucial to guarantee a full spectrum of information and to ensure impact (Courant, 2021). From the standpoint of the leadership of *Insieme per il PD* it was simply not possible to exclude the leadership of the party from the discussion because the process was not a traditional mini-public, such a Citizens' Assembly, but it was instead an organizational tool for party internal democracy. Moreover, a large component of the engaged participants were cadres of the party itself in different leadership positions and therefore it was impossible to draw a clear line between leaders and nonleaders. Thus, the research team decided to include a question in the presurvey that would identify the cadres of the party that could be considered more or less as influential leaders, and then proceeded to include such characteristics in the stratification algorithm to ensure that their presence was balanced across the four experimental groups. Lastly, the four top leaders of *Insieme per il PD* were randomly divided and asked to use anonymous avatars to avoid bias from the organizers themselves.

The research team proposed to divide the participant pool into four groups of equal size. Two of the four groups would be placed in the "forum condition," and would deliberate using a platform which resembled a traditional discussion forum. The other two groups would be placed in the "CCSAV condition," where they would deliberate on the basis of argument maps created with the help of moderators. The two platforms were designed to make the "look and feel" of the deliberation as similar as possible for users in all groups.[5]

Demographic information was collected from all the participants via a pre-survey (e.g., gender, age, education, interest in the topic, intensity of preferences over types of electoral laws, etc.). Participants were then assigned to the four groups using a stratified random procedure that ensured that the groups were as balanced as possible. Participation would be entirely voluntary and party members would not receive any compensation for participating.

Those assigned to the "forum condition" would simply be asked to share their ideas on the three chosen questions in a comment thread. Moderators would ensure that comments were "spam-free" and any comments considered abusive would be removed. Participants using the Deliberatorium, on the other hand, would receive more detailed instructions. They would be asked to create posts that expressed a single idea only; if they had multiple ideas, they would be asked to create a separate post for each. Having formulated an idea or opinion, they would then be shown an argument map of all contributions to that point and asked to place their contribution onto the appropriate section. All posts would be marked "pending" until a moderator verified that it met all the above guidelines. Upon certification by a moderator, each new post in the Deliberatorium would then be viewable by all other participants, who could rate the idea on a scale of one to five stars and freely respond to the arguments given (Klein, Spada and Calabretta, 2012).

In addition to certifying posts, the moderators in the "CCSAV condition" would be responsible for educating users on how the deliberation features worked. This would help ensure that the resulting argument maps were well structured, with sub-topics and pro/con arguments clearly delineated and duplicates removed. Participants would be promptly informed about any change to their posts via chat or email, and would be free to accept or reject the modifications.

The experiment would last two months and be divided into three different stages: (1) an advertising and enrollment phase, (2) a deliberation phase, and (3) a voting phase. The advertising phase would last one month, during which participants would be invited to share information on their social media accounts to encourage further enrolment.
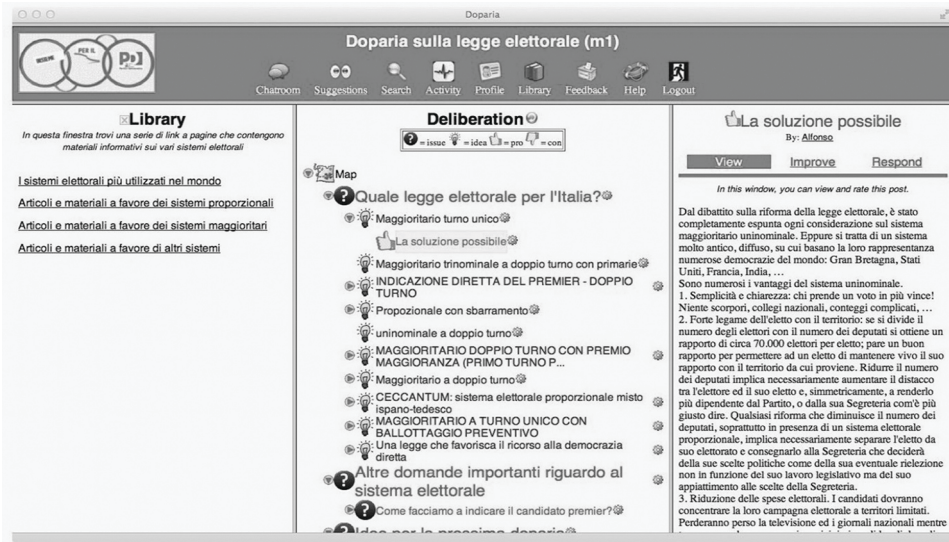
Figure 12.1 Map tool.

The deliberation phase would last three weeks, during which all participants could log in as often as they wished, contributing as much or as little as they liked. The final week would allow participants to vote on the proposals they preferred.[6]

Ten moderators were chosen among the graduate students of Prof. Luca Iandoli, many of whom had previous experience with argument mapping. The moderators in the CCSAV condition were tasked only with implementing simple changes, such as fixing where a post belonged, or if it had been incorrectly labeled as a "pro" or "con" argument. If a user's post was not straightforward, the moderators were instructed to send them a message, guiding them on how to make their idea more understandable to others. The moderators would not be engaged with the content of deliberation in any other way. Through this sort of tutorship, it was intended that participants would gradually learn how to use the platform on their own and the need for moderators' intervention would diminish.

Snapshots of the map and forum tools are presented in Figures 12.1 and 12.2.

Figure 12.1 shows the argument map treatment. Each line in the map shows the title of the corresponding post: users click on a post to see its full contents. Participants click on the gear next to a post to respond to it, for example, to add an argument for or against an idea. Participants could leave casual comments on posts, for example, to express appreciation or suggest improvements, but these did not show up in the map. This feature was included to allow participants to express emotions, without cluttering the map.

Figure 12.2 shows the forum condition. The forum had three layers: the first layers could not be controlled by the participants and posed the three aforementioned questions that had also to be asked in the map; in the second layer, participants could generate threads (the picture is showing the second layer for the question "what electoral law for Italy?"); and finally, within each thread there was a standard chat in which participants could respond to the OP that had set the topic.

As mentioned before, to maintain the integrity of the experiment the forum was a stripped-down version of the Deliberatorium and thus all the functions present in the
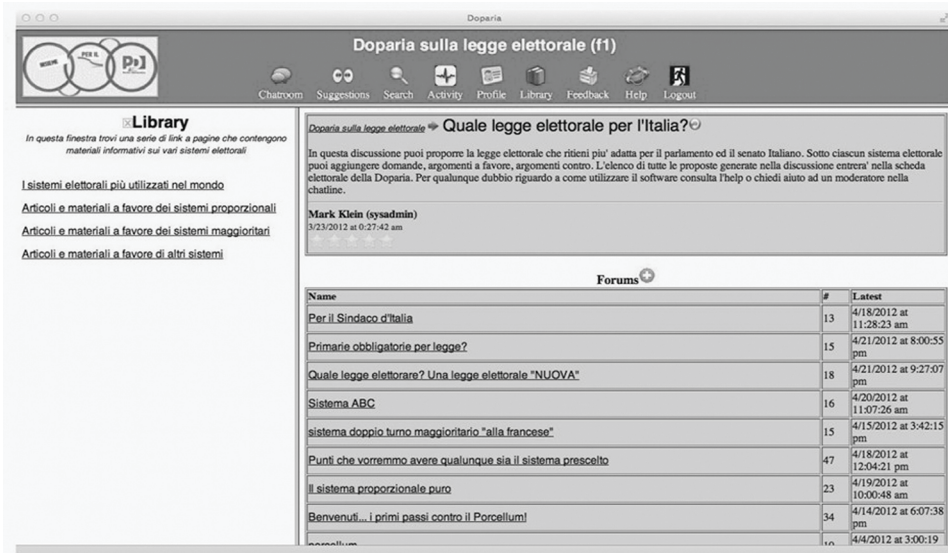
Figure 12.2   Forum tool.

platform (help, off-topic chat, library, recommendations, etc.) were present in the forum, as we can see from the top menu that is identical in the two pictures.

Three types of measures were used to compare the quality of the deliberative experience between the two conditions. First, the research team would measure each participant's volume of interactions: how many posts they viewed or created, how often they logged on to the platform, and the number of ratings, ideas, and arguments they contributed.[7] The team would also use these measures to study the distribution of activity across the group. A much-used rule of thumb in discussion forums is "1/9/90": it is commonly observed that 90% of participants will read the posts and add no comments of their own, 9% will respond to others' posts, and only 1% will create new posts (Wilkinson, 2008).

Second, the team would analyze the topology of the deliberations themselves. Moderators would take the "finished" deliberation in the forum condition (where participants had interacted using comment threads only), and transform it "after the fact" into an argument map – studying each idea in the thread, creating a map with sub-topics and arguments pro/con, and assigning each post in the forum to its appropriate place. At this point, the moderator-created maps from the forum condition would be compared side-by-side with the CCSAV maps created by participants themselves. Topological metrics such as the number of "self-arguments" (arguments proposed by a participant to defend or explain one of her own ideas) would then be used to compare the different maps.

Finally, users would be asked to answer a survey on their appreciations of the process. The questionnaire was composed of 19 multiple-choice questions divided into three clusters: "mutual understanding" (how well they understood others' ideas), "perceived quality of collaboration" (how well participants respected and responded to one another), and "perceived ease of use" of the online platform.[8] For each question posed, participants indicated their level of agreement with a given statement using a seven-point Likert scale ranging from "strongly disagree" to "strongly agree."

Summary of results[9]

The advertising campaign for the *Doparie* succeeded in enrolling 640 volunteers from the Italian Democratic Party membership to participate in the deliberation on electoral reform. The 640 volunteers were assigned to four groups of 160 participants each. Of these, 304 completed the deliberative phase and 95 filled in the post-deliberation survey. Over the course of the *Doparie*, 36,000 individual actions were tracked in the platform's time-stamped event log.

Participation in all conditions increased over time and did not plateau. Just over 50% of the participants (373 of 640) logged onto the platform at least once. Of all the participants, 30% (194 out of 373) created at least one post, well exceeding the 1/9/90 rule of thumb. Additionally, the distribution of individual contributions (the number of pro/con arguments or individual ideas) was very similar between the two conditions.

A key difference arose in levels of individual satisfaction between the two conditions. Participants in the forum condition perceived their platform as more usable and found the collaboration experience more satisfactory in terms of how well they were able to understand each other and how smooth and effective the deliberation felt to them (Iandoli et al., 2018).

Did this reduce the number of users in the Deliberatorium or CCSAV condition over time? Surprisingly, no. The cumulative number of first-time users increased over time and new users entered the discussion right up until the last day. The deliberation phase terminated after 21 days, but this trend shows that if deliberation had continued, participation may have risen still further. The total number of participants in both conditions was the same (respectively 152 per group), and there was no statistically significant difference in the level of engagement and retention rates among the groups. The number of logins per user for each platform confirms the high retention rate; users logged in an average of 4.7 times in the forum condition and 3.9 times in the CCSAV condition. Thus, although participants in the Deliberatorium reported being less satisfied with their individual experience, collectively they "stuck with it," maintaining a nearly identical rate of engagement over time.

If the Deliberatorium platform was perceived as less natural and fluid to use at the individual level, at the collective level certain benefits seemed to accrue. While the total number of ideas shared in the argument map was lower (78 vs. 290 in the forum condition), interaction and depth of discussion on the Deliberatorium was much higher: participants rated the posts of others more frequently and added more than twice as many arguments per idea than their counterparts in the forum (Spada and Klein, 2014).

Additionally, the number of "self-arguments" was significantly less in the argument-map condition, suggesting less self-referential reasoning and more cross-fertilization of ideas. An explanation could be that the presence of an argument map encouraged readers to take more time and consideration in formulating an idea, weighing how it compared with others' ideas, and then placing it on the right "branch" of the discussion. While this may have been a less familiar way of interacting within a large group online, the similar engagement and retention rates suggest that participants found value in this way of thinking together about a public problem. Interestingly, participants in the Deliberatorium were also found to be more respectful of others' opinions, with toxicity levels at nearly half of those observed in the discussion forum.[10]

A final difference concerned the intensity of effort required on the part of the moderators. During the three-week deliberation period, moderators in the CCSAV condition worked 42 hours, while moderators of the forum condition needed only 3 hours to complete their tasks. However, most of the additional effort required of the Deliberatorium moderators

was in the first week, after which users became much more adept in navigating the map. In order to draw the relevant comparisons for this study, transforming the raw ideas of the forum condition into a structured argument map also required an additional 160 hours of moderator time. Finally, though they were advised to be strictly neutral, we cannot be sure of the impact of the moderators' opinions on the content of the deliberation, though users were given a means to raise concerns about the moderators' actions and no complaints were noted. There remains a possibility of some posts being placed in areas that the original author did not intend, though this possibility likely diminished over the three-week period as participants became more familiar with the platform and thus more autonomous.

What science tells us

Much scholarly attention has been given to the social and political impacts of online platforms, but rather less to the design choices of these platforms that could produce or hinder the use of collective intelligence. Early research on large-group interactions online focused on forums, which have been for quite some time the dominant approach to managing online discussions (Sæbø et al. 2008). Since the 2010s, more attention has been given to social media and messaging tools such as Facebook, Twitter, YouTube, Snapchat, Slingshot, and Yovo (Effing et al., 2011; Magro, 2012). These studies have tended to focus on the ability of online platforms to mobilize large groups around a single cause, rather than their ability to facilitate high-quality deliberation or decision-making. While online technologies, and social media particularly, have proven their power to bring political communication and social advocacy to vast new audiences, their ability to promote fair and transparent debate is questionable at best. The present study aims to fill a need, therefore, in exploring how differently structured online spaces can favor or undermine large-scale deliberation on public issues.

As noted above, the Deliberatorium draws on a technique known as CCSAV (Kirschner et al., 2003). CCSAV platforms, by design, foster a "representation-centric" collaboration process that results in a shared representation of collective knowledge and preferences – in this instance, in the form of an argument map. Argument maps visually represent the structure of an issue in informal logic (Walton, 1996). The elements of a deliberation are displayed as trees or networks, whose nodes represent the argument constituents: the questions, propositions, claims, and evidence at issue. Visual links between these elements represent the argumentative relationships among them, such as support, criticism, sub-issues, and alternatives.

Proponents of CCSAV posit that traditional discussion forums have intrinsic limitations that will typically undermine the efficiency, quality, and scalability of online deliberation. In such forums, content is structured by time, so it can be scattered and redundant. Conversation-centric tools privilege the quantity of platform interactions over the production of joint knowledge artifacts and knowledge re-use. While offering smooth, large-scale interaction, these tools do not provide effective countermeasures to the possible emergence of a crowd's irrational behaviors and generally deliver very limited or no functionalities for content organization and evaluation. Without additional mechanisms (e.g., reputation tools such as rating) it is very difficult and time-consuming to sift high-quality contributions. Finally, forums tend to favor provocation and outrage over critical thinking and valid argumentation (Delborne et al., 2011).

CCSAV tools, on the other hand, organize content by topic rather than by time, representing a discussion as a network consisting of alternative positions on a same issue, as well as pro or con arguments for the proposed ideas. The Deliberatorium is one of a new wave of representation-centric tools that include Kialo, Miro, Debategraph, Compendium, and

others; each of these uses a different set of visualization techniques to represent a group deliberation in a clear and visually appealing way.[11] Typically, debates are visually represented by some form of map that displays alternative positions, arguments, and conceptual links among them. Studies have shown that such knowledge representations encourage participants to clarify their thinking (Brna et al., 2001) and to make it visible to others (Bell, 1997), to foster information and knowledge awareness (Englemann and Hesse, 2010), to provide resources for conversation (Roschelle, 1996), and to function as a "convergence artifact" that expresses the group's emerging consensus (Hewitt, 2001; Suthers 2001). By displaying knowledge in a "visual space," argument maps support several cognitive as well as practical tasks, such as sense-making (Kirschner et al., 2003; Okada and Buckingham Shum, 2010), distributed decision-making (Karacapilidis and Papadias, 2001), collective deliberation (van Gelder, 2007), online learning (De Liddo et al., 2011), and problem-solving (Cho and Jonassen, 2002). There is evidence that CCSAV tools support critical thinking (Twardy, 2004) and evidence-based reasoning (Carr, 2003) in that they "nudge" users to make explicit the rationale behind their claims. By favoring critical thinking and evidence-based reasoning, CCSAV tools may cultivate a more rational attitude among citizens toward controversial debates, and the knowledge maps they create can be reused over time. Finally, CCSAV tools may be particularly suited to fostering deliberation on controversial problems as they allow users to represent contentious points of view in coherent structures of ideas, rather than in conflicts of personalities or "political tribes" (Van Bavel and Packer, 2021).

CCSAV tools do have some limitations, including the need for users to undergo intensive training to become proficient with the formalism (Twardy, 2004) or higher coordination costs due to constant supervision and moderation (Conklin, 2006). Another point of debate is the concept of "social translucence" proposed by Erickson and Kellogg (2000), that is, the ability of digital collaborative systems to make participants and their activities visible to one another. Social translucence is considered to be an important factor in building trust and common purpose within a large group whose members may not know one another personally. On the other hand, deliberations that are socially translucent – where all comments are personally identifiable to all participants – present a risk that substantive debates will be derailed by interpersonal conflict. Notably, CCSAV platforms are *not* socially translucent: the structure of argument maps encourages participants to focus exclusively on the issue at hand, rather than on the personalities or power status of the other participants.

This exclusive focus comes with a potential trade-off: the content of the CCSAV deliberation may be more substantive and illuminating, while its structure may be less motivating for individual participants (at least initially). Interestingly, in this study, though Italian Democratic Party members found the argument-map platform less enjoyable, they nevertheless maintained their engagement at nearly identical rates as the forum condition. Could online deliberation be a hard-won pleasure?

Many interesting questions remain for those interested in the quality of public deliberation. For example, it is currently unknown what the maximum number of participants would be for a representation-centric online deliberation. It may be possible, for example, that the map grows too large and complex for participants to find the specific sub-topic that interests them. At some number of users, there will likely be a trade-off between deliberative quality and breadth of participation, but we are currently unsure where the "sweet spot" lies.

Additionally, the results of this study were obtained using a specific type of representation-centric approach based on argumentation theory, which uses different formal methods to capture the content of a deliberation. Many such formalisms exist, all differing in the number and type of their building blocks and interrelationships. The more complex formalisms

tend to capture more of the deliberations' semantics, which means that computer tools can "understand" the deliberations more fully, but at the cost of these platforms being more difficult to use by their human participants (Shum et al., 2006). It would be interesting to replicate this study with different types of argument-based and other online mapping platforms such as those which employ concept mapping (Novak, 1990) and causal mapping (Bryson et al., 2004), for example.

Further research could also explore how the argument-map approach is affected by the ideological diversity of the group. In this case, members of a single political party were likely to share somewhat similar views, and their motivation to participate was based on a shared political identity. Deliberation among a broader sample of the population may benefit from an approach which encourages substance over performance; alternatively, the lack of social translucence may negatively affect individual motivation to participate. On this question, more study is needed.

Finally, improvements to the user interface of the Deliberatorium and other CCSAV tools may have a positive effect on user engagement and retention. The version of the platform used in this study appeared to some participants as bulky and difficult to navigate. Improvements can certainly be made to make navigation more seamless and intuitive, as well as to give a more aesthetically appealing experience to those in the deliberation.

Do's and don'ts

Our study with the Italian Democratic Party revealed a potential trade-off for practitioners of collective intelligence: deliberations that achieve higher quality at the collective level may be perceived as more difficult – at least initially – by their individual participants. While the discussion-forum condition proved more immediately satisfying to users, and more successful in eliciting a high quantity of posts, the argument-map condition produced higher rates of peer-to-peer interaction and more substantive, respectful contributions overall. Strikingly, engagement and retention rates were nearly identical between the two platforms, suggesting that the less familiar argument-map approach produced an equally valuable experience for participants, even if it was less intuitive and required more learning.

For those interested in building large-group deliberations using digital tools, we offer four key suggestions:

1. **Representation-centric tools can help raise the quality of public deliberation.** Though less familiar, argument maps can help public actors harness collective intelligence by focusing citizens on reasoned arguments over personalities, reducing superficial, duplicative, or toxic content, and encouraging the combination and synergy of ideas.
2. **Decide whether ideation or deliberation is more important in your particular case.** For example, argument mapping may be particularly useful where the set of policy options is already well defined, and the goal is to weigh carefully the arguments for and against these options. Conversely, in "blue sky" situations where the goal is to generate new and innovative ideas, a traditional forum may be the better approach. Employing a forum-based approach to public innovation at the ideation phase could then be followed by an argument-map phase to deliberate over the ideas that seem most promising to the group.
3. **Establish a learning and moderation process that gets citizens ready to contribute.** Our team of ten moderators, already well trained in the logical structure of argument maps, made a critical contribution to the success of this study. Though the

moderators' task was significantly more intensive than in the discussion-forum condition, we found that much of this extra effort fell at the very beginning. Once they acquired the basics of argument mapping, most citizens needed little or no further help.

4. **Partnerships between politicians and researchers can advance the common good.** The political actors in this study had to do something unfamiliar: allow the participating party members to be divided into two experimental conditions. The scientists in this study also had to do something unfamiliar: negotiate the study objectives and types of data analysis to suit the real-world needs of a partner, in this case a political party. This flexibility on both sides ultimately allowed us to advance our understanding of public deliberation – a subject of great interest to researchers and politicians alike.

The scientific understanding of online public deliberation remains, if not in its infancy, at a relatively early stage. To bring it to its maturity, more scholarly attention must be paid to alternative designs, such as CCSAV, that have the potential to make large-scale deliberations more substantive and fruitful. Developing these new methods of deliberation will also require political actors to think a bit more like scientists – allowing the short-term uncertainties, even failures, that lead to longer-term wisdom.

Notes

1 *Doparie* contains a play on words in Italian. As a complement to *primarie* or primaries that come before an election, *doparie* (from *dopo* or "after") would be an internal contest coming after an election, when real policies are at stake. Calabretta also wanted to evoke the "chemical rush" (dopamine or *dopamina*) that would occur in the brains of happily participating party members.

2 Contemporary newspaper accounts described the *Doparie* as "a system of democratic common-sense wisdom" (Ceccarelli, 2010).

3 As the world has learned these past years, web technologies can be employed not only to promote democracy, but also to manipulate public opinion and diffuse false beliefs (Mocanu et al., 2015) and are successfully employed by extremist political organizations to promote their cause and recruit new supporters (Brachman, 2014; Klausen, 2015).

4 For the purposes of this case, we define deliberation as occurring when a community gathers to define, evaluate, and eventually select policy proposals.

5 To maximize resemblance between the two conditions, the "forum condition" was created from a version of the Deliberatorium platform from which the map had been stripped down and replaced by the usual forum threads structure. An advantage of this approach was the possibility of having full access to the activity logs of users who were given a unique ID and individual password.

6 In the voting phase, participants were allowed to vote and subsequently change their vote within the allotted time, but could cast only one final vote.

7 All user actions were automatically collected in both platforms in the form of time-stamped user activity logs.

8 The constructs used for mutual understanding and perceived quality of collaboration had been already used and tested in other studies (Convertino et al., 2008; Iandoli et al., 2018). Nevertheless, we performed full content and construct validity tests on the basis of the usual standards (Bryant, 2000; Fornell and Larcker, 1981; Gefen and Straub, 2005).

9 For a more detailed analysis of the results, see Spada and Klein (2016) and Iandoli et al. (2018).

10 The "toxicity levels" of the forum and Deliberatorium posts were assessed using the Google Perspective API, a system that uses a heavily trained neural network to estimate how toxic comments are (www.perspectiveapi.com/). This analysis showed that the Deliberatorium posts had roughly half the average toxicity score of the forum posts, meaning the likelihood of encountering a toxic post was twice as high in the forum condition.

11 More information on these tools can be found at the following websites: Kialo (www.kialo.com/), Miro (https://miro.com/), Debategraph (https://debategraph.org/), and Compendium (http://projects.buckinghamshum.net/compendiuminstitute/).

References

Calabretta, R. (2010). *Doparie dopo le primarie*. Nutrimenti, Rome.

Calabretta, R. (2011). *Doparies*: A novel party deliberative and aggregative decision-making mechanism to improve the quality of representative democracy. Sage Open DOI:10.1177/2158244011433699 http://sgo.sagepub.com/content/1/3/2158244011433699.full

Courant, D. (2021). Citizens' Assemblies for referendums and constitutional reforms: Is there an "Irish Model" for deliberative democracy?. *Frontiers in Political Science*, *2*, p. 591983.

Deseriis, M. and Vittori, D. (2019). The impact of online participation platforms on the internal democracy of two southern European parties: Podemos and the Five Star Movement. *International Journal of Communication* 13, 5696–5714, https://ijoc.org/index.php/ijoc/article/viewFile/10804/2874.

Iandoli, L., Quinto, I., Spada, P., Klein, M., and Calabretta, R. (2018). Supporting argumentation in online political debate: Evidence from an experiment of collective deliberation. *New Media & Society* 20(4), 1320–1341.

Klein, M., Spada, P. and Calabretta, R., 2012, May. Enabling deliberations in a political party using large-scale argumentation: A preliminary report. In *Proceedings of the 10th International Conference on the Design of Cooperative Systems* (p. 17).

Loucaides, D. (2019). Building the Brexit party: How Nigel Farage copied Italy's digital populists. *The Guardian* (21 May 2019), available at www.theguardian.com/politics/2019/may/21/brexit-party-nigel-farage-italy-digital-populists-five-star-movement.

Shum, S. J. B., Selvin, A. M., Sierhuis, M., Conklin, J., and Haley, C. B. (2006). Hypermedia support for argumentation-based rationale: 15 years on from gIBIS and QOC. In A. H. Dutoit, R. McCall, I. Mistrik, & B. Paech (Eds.), *Rationale Management in Software Engineering*. Springer-Verlag.

Spada, P., Calabretta, R, Klein, M., Iandoli, L., and Quinto, I. 2016. A first step toward scaling-up deliberation: Optimizing large group e-deliberation using argument maps. Unpublished manuscript. Available at: www.spadap.com/app/download/8937823668/scalingup_2016.pdf?t=1628152524

Van Bavel, J. J., & Packer, D. J. (2021). *The power of us: Harnessing our shared identities to improve performance, increase cooperation, and promote social harmony*. Little, Brown Spark.

Wilkinson D. M. (2008). Strong regularities in online peer production. In: *EC '08 Proceedings of the Ninth ACM Conference on Electronic Commerce*, Chicago USA, 8–12 July 2008, pp. 302–309. https://doi.org/10.1145/1386790.1386837

13

ACHIEVING PARITY WITH HUMAN MODERATORS

A self-moderating platform for online deliberation[1]

*Lodewijk Gelauff, Liubov Nikolenko, Sukolsak Sakshuwong,
James Fishkin, Ashish Goel, Kamesh Munagala, and Alice Siu*

The story

As society is moving online, conveners of civic deliberations and other consultations need to consider how they can organize conversations that traditionally take place offline in a way that supports and encourages both equitable and constructive participation. The coronavirus disease 2019 (COVID-19) pandemic especially triggered a prioritization to move communication from offline to online as more and more people were forced to work from home and in-person deliberations were prohibited. We see that many meetings, conferences, and other conversations have moved to one of the many commercial and noncommercial platforms, resulting in a large reported increase of daily active users on Zoom, Google Meet, and Microsoft Teams (Warren 2020).

In this chapter, we focus on Deliberative Polling (Fishkin 1991; Fishkin, Luskin, and Jowell 2000), a popular framework for civic deliberation. In the online version of this framework, a convener wants to organize moderated audio or video deliberations on a focused topic for relatively large groups of participants (typically 200–500 people) divided into parallel medium-sized "rooms" (5–15 people each) with a shared agenda. In addition to discussing the topic, each room is also tasked with coming up with a small set of questions whose answers would throw additional light on the topic being discussed.

While there are a large number of video conferencing platforms already in wide use, these platforms are not well-suited for civic deliberations, as they typically require a human moderator to manage the agenda, ensure progress, nudge participants, and maintain order. Hiring and training moderators is a challenging and expensive process to do reliably and consistently (Lukensmeyer and Brigham 2005).

We introduce a Self-Moderating Platform for Online Deliberation, built to address the challenges presented above. The platform is designed to host and moderate online deliberations for medium-sized groups. The platform automatically handles several key aspects of moderation, such as nudging participants who have not spoken in a while, handling interruptions in an orderly fashion, enforcing the timeline of the agenda, policing abusive behaviors, and

Figure 13.1   Impressions of the Stanford Platform for Online Deliberation, as it was used during *America in One Room* 2021.

maintaining a queue of participants who would like to speak. Our platform also provides extensive analytics, visualization, and monitoring support. Instead of having one trained human moderator per group, it reduces oversight to one human to monitor a large group of rooms for emergency intervention and technical support. Using this platform reduces the logistical overhead that would apply to an in-person deliberation and it also removes the need to hire and train human moderators. As a result, the platform could be used to provide access to deliberations to a much wider population, increasing civic awareness and civic engagement in the broader society outside the random sample.

The platform was designed to satisfy the requirements of Deliberative Polling, a process whereby stratified random samples of the public are randomly divided into small groups to discuss the pros and cons of policy proposals in detail.

Participants take a questionnaire during the initial recruitment process and then after the deliberations are concluded. Usually control groups take the same pre and post questionnaires in the same period so that the result is a controlled field experiment. Briefing materials (written and sometimes video) are provided to the participants after the initial survey. Questions from the small groups are directed to experts offering different points of view. These plenary sessions are conducted when all the small groups can be gathered together so that all the participants can have access to the answers.

This process has been conducted so far more than 110 times in over 34 countries. In many cases, the results have had policy impact. It has brought dramatic increases in wind power in Texas; it has been used officially in Japan and South Korea to help make energy policy about continuing the use of nuclear energy; it has contributed directly to the desegregation of the Roma-only schools in Bulgaria; and it has become a part of the official constitutional amendment process in Mongolia, where it has led to the passage of an amendment (Fishkin 2018b). Until recently most of the applications were face to face, but the process has moved online with human moderators (on Zoom), and now with this automated platform.

Based on this experience and the literature, the following success factors had to be considered:

- A diverse pool of participants representing different perspectives on the issues at hand;
- Clear ground rules for the discussion, emphasizing civility, inclusion, and evidence-based discussion;
- A neutral and process-focused moderator to manage the following tasks:
  - Keeping time;
  - Indicating who can speak;
  - Maintaining agenda progress;
  - Facilitating question development;
  - Abstaining from making statements about the content of the deliberation

- A balanced agenda that is available to the participants, with evidence based background on the issues;
- An opportunity to get answers to the questions developed in the groups. This could be accomplished through a plenary session in a webinar, with a selection of the developed questions, sorted to reduce overlap.

Our contribution: In this chapter, we describe the main design features of our self–moderating online deliberation platform. The platform evolved gradually over the last three years and has been extensively refined over the course of over a dozen user studies and increasingly complex real-world deployments. So far, 12 real deliberations (with most of them being Deliberative Polls or minor variations) have been conducted on the platform with a total of over 5,500 participants.

We also analyze the performance of the platform during a 2020 deployment, when it was used to conduct an online Deliberative Poll in Japan focused on solar energy. The motivation for focusing on this one deployment is the existence of an earlier in–person deliberation in the same country on a similar topic with a similar underlying partici-pant pool. We can use this earlier in–person deliberation as a benchmark, allowing for an apples-to-apples comparison. We find that the online platform performed on par with the in–person deliberation with human moderation, when measured using the same metrics that have been used to evaluate in–person deliberations in the past. In addition, the online platform resulted in more equitable participation along gender lines, which is a key metric for civic deliberation.

Separately from the results presented in this chapter, we are also in the process of conducting randomized controlled trials to evaluate the efficacy of individual features of this platform. However, we believe that results from real deployments of Deliberative Polling (with all its attendant real-world complexities), such as the ones we present here, constitute an important evaluation methodology in their own right and are worth reporting, especially since the most important initial goal in the design of the platform is to achieve parity with in–person civic deliberations. Both the online and the in–person deliberations were conducted as a serious civic exercise and not merely to evaluate the platform.

Other than the deployment in Japan (and a matching deployment in Hong Kong), other notable uses of our platform include Deliberative Polls on the Chilean constitution and on Canadian foreign policy, a two–part consultation on school restructuring at Stanford University with both faculty and students in separate samples, and an experiment by the CloseUp foundation to engage student leaders in a deliberation on the US economy and healthcare.[2] Most recently, the platform was deployed for national US climate change consultation with nearly 1,000 participants in 104 small groups (see https://cdd.stanford. edu/2021/a1r-climate-and-energy/).

In this chapter, we primarily focus on the results from Japan because they offer a unique opportunity to directly compare online and in-person deliberations in the same country on a similar topic with a similar demographic mix. However, for completeness, we also provide aggregate results from other online and in-person deliberations. We note that the survey results from deployments of the online platform are similar to those obtained from in-person deliberations, suggesting that the results from Japan are not an outlier.

The videos of the participants (shown here as avatars, in the audio-only option) are displayed alongside the speaker queue with a clock indicating the remaining time for the current speaker. Participants can join the queue by clicking "Request to Speak" or interrupt
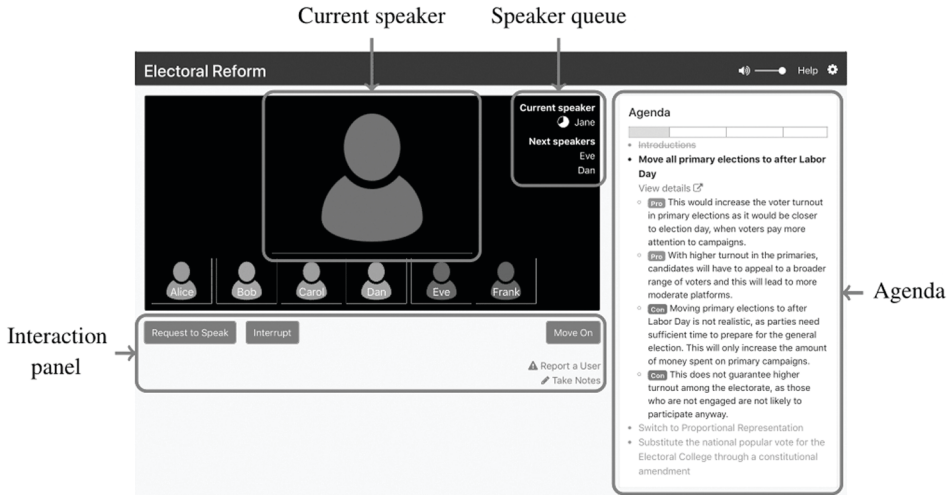
Figure 13.2　The main user interface of the Platform for Online Deliberation.

the current speaker for a brief period of time by clicking "Interrupt." The panel on the right shows the current agenda, along with time progression. If a participant feels that the current agenda item has been fully discussed, they can propose to move on to the next item by clicking "Move On."

Background: Deliberative Polling on an online platform

Deliberative Polling has been conducted in various settings, frequently resulting in significant policy changes (Fishkin 2018a; Neema et al. 2018; Fishkin et al. 2017; Sone 2014). For example, a series of Deliberative Polls in Texas showed an increase in support of raising monthly utility bills for the support of renewable energy from 52% to 84%, eventually influencing the Texas Public Utility Commission and the state legislature to adopt policies which made Texas the leading state in wind power in the US (Fishkin 1991; Luskin, Fishkin, and Plane 1999). Deliberative Polling has also been passed into law in Mongolia as a method of consulting the public prior to making any changes to its constitution, first put into use with a national Deliberative Poll in early 2017 (Martinovich 2017; Fishkin 2018a).

It is entirely possible that other deliberative mechanisms than Deliberative Polling could be better adapted to an online setting. However, given the historic success of the Deliberative Polling framework in a range of cultures and topics, we believe that trying to reproduce that framework as closely as possible in an online setting is a natural first step. Hence, the primary current goal of our platform is to *achieve parity* with in-person Deliberative Polling, as measured by the *same metrics* that have been used to evaluate these in-person polls in the past.

In-person Deliberative Polls pose several logistical challenges. They require assembling a large number of participants in one place and training a neutral moderator for each of the groups. Our platform presents a lower cost alternative to organize the small group discussions by removing the need to travel and to train moderators. This has important implications for

the scale at which Deliberative Polling (and other deliberative scaling activities) is conducted, in terms of the number of medium-sized groups or "rooms" that can be simultaneously active. In particular, this brings us closer to the vision of an online "Deliberation Day" which would integrate nation-wide Deliberative Polling on outstanding political issues into the fabric of a modern democracy (Fishkin 2018b). In addition, the use of an automated moderator reduces the preparation time needed for mounting a Deliberative Poll and makes the moderation style consistent; in addition to helping with scaling, we are optimistic that these two aspects will make the process more reproducible.

In addition, the analytics and visualization tools that our platform provides also make it easier to analyze the results of a Deliberative Poll and to improve the deliberation process itself; in particular, our platform tracks the number of times a participant speaks, the total amount of time a participant speaks, the amount of time spent on each agenda item, and the number of interruptions, all of which provide a good high-level view of the efficacy of the deliberation which complements survey results. The platform also flags the use of toxic language and facilitates analyses such as disparities in speaking time based on attributes such as gender and age. In addition, the provision of transcripts for which the speakers can be identified (with appropriate consent) allows for automated text analyses of the deliberations and further insights into the causes of opinion change.

Related work

There are several online video chat platforms such as Skype, Zoom, Microsoft Teams, and Google Meet that share core features with the Platform for Online Deliberation such as the ability to host video conversations over the Internet (Drake and Turner 2020; Bott 2020). However, the platforms mentioned do not offer the option to automatically moderate the conversation in a symmetrical setting (where anyone can speak at any time); there is no support for incorporating an agenda into the discussion; and there is no system to manage abusive language. While some moderation features may be available to the host of the meeting (such as muting participants or creating breakout rooms), this requires a human moderator. A self-moderating platform that also provides a structured conversation is not yet generally available.

In addition to our work, we are also aware of a number of other new video-conferencing platforms being developed specifically for civic deliberation. For example, Mismatch[3] is a video conferencing platform that is designed to schedule and facilitate political discussions guided by an agenda. While this platform provides features to support structured conversation such as agenda management, it does not provide automated moderation and is focused on smaller groups of 2–5 students where moderation may not be as important. Another platform, myjunto[4], aims to provide an experience similar to our platform, but appears to require a human moderator. However, it is important to note that both platforms are under active development, and it is entirely possible that their development roadmap includes additional capabilities. The existence of other nascent platforms that have similar goals makes it even more important to understand whether online platforms can match or exceed the efficacy of in-person deliberation, giving additional salience to our results. The authors are not aware of any formal evaluations of the effectiveness of the two platforms mentioned above.

Our work is not the first to attempt to mimic the Deliberative Polling process online. Luskin, Fishkin, and Iyengar (2006) observed that it is possible to have an online deliberation that is somewhat comparable with an in-person deliberation. However, we note that this still

required the use of a trained human moderator, and did not involve any automated moderation features. It also employed avatars rather than video-based discussions.

We also study the equity in speaking times on our platform across gender, income, and age. Similar issues have been studied before, with mixed results. Siu (2017) analyzed one face-to-face and four remote Deliberative Polls and concluded that there was no statistically significant difference between participation levels of more-privileged (either male, white, more highly educated, or higher income) and less-privileged participants. On the other hand, Gerber (2015) analyzed a face-to-face Deliberative Poll in the European Union and found that women, members of new EU countries, and working-class participants spoke significantly and substantially less than their counterparts. This points to the need for an additional study of this important topic, and we are optimistic that the data that is being continuously produced by the use of our platform would generate additional insight. Again, it is important to point out that the earlier studies mentioned above do not include the use of any automated moderation tools such as queues and nudges.

There have been various attempts to scale the broader set of deliberative experiences to larger populations (Weeks 2000; Lukensmeyer and Brigham 2005; Bächtiger, Setälä, and Grönlund 2014). These studies report that while their deliberative processes helped the participants arrive at more informed opinions and enabled local governments to come up with effective policies on the issues, hosting such a large-scale discourse was expensive, time-consuming, and manpower-intensive, issues that our platform is designed to alleviate.

For text-based group conversations, chatbots have been proposed and implemented to fulfill moderation-related tasks. For example, Kim et al. (2020) created a chatbot that facilitates text-based group discussions. The chatbot appears as a participant in the discussion and occasionally asks less active participants for their opinions. They evaluated their chatbot through user studies and found that the interactions helped increase the diversity of the opinions and promoted participants' equal participation for the open-debating task. We believe that text-based chatbots represent an important area for continued exploration, but it is also simultaneously important to develop moderated video-conferencing platforms such as ours. As both types of systems evolve, identifying common design guidelines will be an important area of future study.

Roadmap

In this chapter, we first discuss the design of the platform, describing the workflow, functionality, and features. Then we report on the performance of the platform by describing a deployment of the platform in Japan at a Deliberative Poll of around 150 people. We compare evaluations from participant surveys with two in-person, human-moderated Deliberative Polls and analyze the participation data and compare all available online deliberation evaluation scores to all available in-person deliberation evaluation scores. Finally, we discuss the findings and the future directions.

Platform design

This section discusses key features of the Platform for Online Deliberation and its implementation details. To achieve scalability, the platform utilizes automation and self-moderation while requiring minimal human intervention. Features are designed to mimic human moderators in in-person discussions while also taking advantage of the digital nature of the platform.

The Platform for Online Deliberation is a web–based audio/video conferencing plat–form enhanced by a set of features that enable automated moderation of a deliberation. The platform hosts multiple rooms with an agenda of one or more discussion topics and supporting up to 20 people per room. The deliberation consists of three phases: (1) Waiting, (2) Conversation, and (3) Outcome Development. Each phase is introduced with an audio guide supported by visual cues that walks the group through the phase's objectives and highlights some of the User Interface (UI) elements that are relevant.

Participants arrive at the room using a predetermined URL and after some basic automated tests of the microphone and/or video camera, wait until the start of the conversation in a waiting room. Organizers can choose to set up more thorough ways to test equipment.

This is the Waiting phase of the deliberation. When the convener decides it is time to start, everyone is transferred to the video chat room and the Conversation phase begins. Figures 13.1 and 13.2 present the user interface of the Conversation phase. The interface walks the group through each agenda item in a timely fashion, and reserves 15 minutes for Outcome Development, where participants typically propose, edit, and select two questions per room.

Speaker queue: All participants in the room have a disabled microphone by default. In order to speak the participant must press the "Request to Speak" button, which adds the participant to the end of the speaking queue. If there is no current speaker, the first partici–pant in the queue becomes the speaker and can speak for a limited amount of time (the exact amount of time is configurable; the default setting is 45 seconds) until they become muted again. Participants can cancel their request to speak to leave the queue.

Interrupt: participants can interrupt the speaker for a brief period of time (the exact amount of time is configurable; the default setting is 15 seconds). This interruption does not count toward the speakers' speaking time limit.

Abusive behavior and toxicity detection: Participants can report other participants for abusive language, talking off-topic or other reasons. The platform can also be set up to use speech transcription and toxicity detection through the Perspective API (Jigsaw 2021) to result in a report for toxic language. If a participant is reported for abusive/toxic language or off-topic discussion, the remaining participants are asked to confirm whether the behavior of the reported participant was problematic. If enough people confirm, this may result in a (temporary) removal of speaking privileges for the participant if enough people vote for it, and the supervising administrator is notified to check the logs.
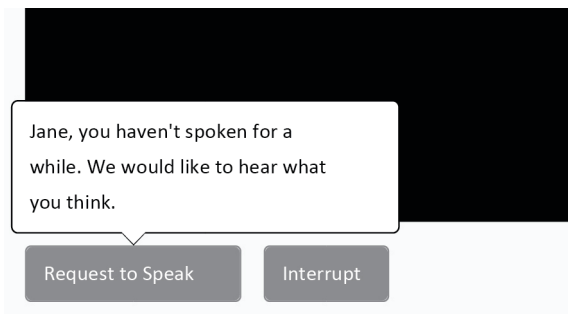
Figure 13.3 Participants are nudged if they have not spoken in a while.
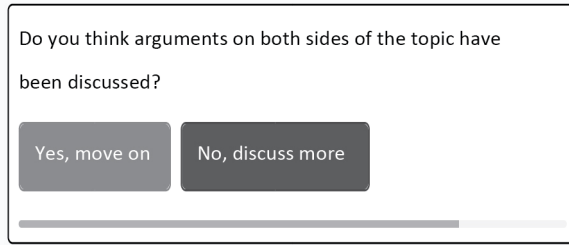
Figure 13.4   When a participant proposes to move on to the next agenda item, the system asks everyone else if they agree.

Nudges: If the participant has not spoken for a configurable amount of time (the default setting is 3 minutes), they are invited to speak by nudging them to the "Request to Speak" button (Figure 13.3).

Agenda timeline: During the Conversation phase the platform displays a (configurable) agenda next to the video chat. The agenda shows time progression, all agenda items, and the most important pros and cons of the current item. To keep the agenda concise, some of the arguments are not displayed in the agenda and the user has to click on the "View details" link to access them.

Each agenda item is configured to have an allocated amount of time available and an overall time limit is to be set for the room. If a participant feels that the current agenda item has been fully discussed, they can propose to move on to the next item by clicking "Move On" (Figure 13.2) which will trigger a poll (Figure 13.4) for the remaining participants with a majority threshold.

Time is reallocated after each agenda item, and the system will force the group to move on eventually.

Outcome development: When the group has moved through all topics on the agenda, the Conversation phase ends. If so configured, the system will then move to Outcome Development. This will by default be a development of questions for a plenary expert panel that would help clarify some issues or confusions for the group. The interface for this phase is similar to Figures 13.1 and 13.2, except for a panel for editing or ranking questions that is added above the agenda.

In this phase, all participants have 90 seconds to individually propose at most one question for their group to consider. Next, participants are asked to rank the proposed questions in order of importance. The group then has 10 minutes to discuss the proposed questions in order of the aggregate group ranking. For each question, participants can provide feedback and suggestions and the author has the opportunity to edit the question accordingly.

When all questions have been discussed or when the allocated time for editing has expired, the platform asks the participants to rank the questions in two rounds to select the two most important questions as outcomes. The two rounds of voting ensure that the selected questions are not overly similar by asking the preferences for the second question, given the selection of the first. The participants are then presented with the outcomes, and optionally forwarded to the plenary session or a survey.

Real-time monitoring panel: For each room, admins and observers can be granted access to a monitoring panel that gives a real-time overview of the transcript and logs, as well as graphs depicting speaking times, queue sizes, and question ranks. This panel allows

the convener to monitor the discussions and intervene as needed. If misbehavior is reported, a red flag is raised at the room overview.

Similarities and differences with human moderation

The starting point of the design process of the platform was to replicate a human moderator during deliberations and the best practices developed to the best extent possible (Fishkin et al. 2019). The key features of the platform such as the use of a speaker queue, interrupt functionality, timed nudges, and outcome development were put in place to mimic human moderation techniques.

There are also a few key differences. Most notably, a human moderator is able to infer a good time to prompt a participant to speak or switch to the next agenda item from the context of the conversation and visual cues, which is currently out of reach for an automated moderator. Vice versa, our automated moderator can provide visual nudges and poll opinions consistently and neutrally, but also in parallel to ongoing conversation, which is not always possible for a human.

This resulted in empirically determined configurable time limits for key events such as maximum allotted time for an agenda item. On the contrary, the responsibility for detecting off-topic conversations, abusive behavior of participants, and the need to move on early to the next agenda topic has been delegated to the participants' peer consensus, with the option of flagging particular concerns to a human supervisor. We have made this design choice because the existing machine-learning algorithms are not robust enough for detecting the issues mentioned above in all cases, and keeping a human in the loop of these decisions allows for more nuance and context.

Technical specifications

The web platform is built in Node.js and MySQL for the backend and React for the frontend. We use WebRTC, an open-source, real-time communication technology, to enable video chat in the rooms. The transcription for rooms' visualizations and abusive language detection are powered by Speech-to-Text from Google Cloud and the Perspective API. The web-application part of the platform is hosted on multiple servers on a cloud computing platform with a load balancer to handle the workload and achieve scalability. We use Twilio's programmable video service to host the WebRTC servers.

Key results

The Platform for Online Deliberation has been deployed to host nine large-scale (i.e. greater than ten rooms) Deliberative Polls at the time of submission. As mentioned before, we will compare the performance of an online deliberation in Japan using our platform with earlier in-person deliberations in the same country on the same topic (the future of solar power)[5]. For completeness, we will also present a brief comparison of three online Deliberative Polls with seven in-person Deliberative Polls; these do not represent an apples-to-apples comparison, and are presented just to illustrate that the results from Japan do not appear to be outliers.

Online Deliberation in Japan

We are only able to make a direct comparison with data from our deployment in Japan, as this is the only instance where data from both online and in-person Deliberative Polls is available on the same topic and with a similar demographic mix. The online Deliberative Poll was jointly conducted by research teams from Kyoto University, Hong Kong Baptist University, Stanford University, and College of the Mainland and focused on the future of solar power in Japan. The participants consisted of 156 randomly selected Tokyo residents above 18 years old who were willing to participate in the Deliberative Poll; they were compensated for their time and there was very little drop-off in participation rates. The age composition and gender ratio of the resulting group were set to be proportional to the actual population composition of Tokyo. The participants were randomly assigned to 15 rooms, each room with 8–12 people.

The deliberation had the following timeline:

1. Pre-surveys. Participants filled out two surveys before the deliberation.
2. Software Test (20 minutes). Participants logged in to ensure their headset and microphone were working.
3. Small Groups Round 1 (60 minutes). Participants logged into their assigned room and discussed the items on the agenda. After the discussion, each group developed two questions for the expert panel. There were 15 groups with 8–12 people each.
4. Plenary 1 (60 minutes). The expert panel met on Zoom to discuss the groups' questions and the session was live streamed to participants outside the platform.
5. Small Groups Round 2 (60 minutes). The participants reconvened in the same groups on the platform, discussed the second agenda and developed two new questions for the expert panel.
6. Plenary 2 (60 minutes). Experts addressed the new questions using the same setup as Plenary 1.
7. Small Groups Round 3 (45 minutes). Participants reconvened in the same groups to debrief.
8. Post-survey. Participants filled out a final survey immediately following Small Groups 3.

There were a total of 45 rooms (3 rounds of small-group deliberations for each of the 15 groups). Rooms that experienced a substantial amount of technical difficulty were excluded from analysis (three rooms in round 1). Rooms for round 3 were not included in the analysis due to their inherently different nature (debriefing as opposed to deliberating) and their shorter duration. This left a total of 27 rooms that are included in the analysis. In Figure 13.5, the flow of a typical small group discussion is depicted.

Deliberation experience comparison

We compare the quality of deliberation using the online platform with two in-person deliberations in the same language and country: a 2012 deliberation on energy and environmental policy options in Tokyo, Japan with a representative sample of 285 participants (Center for Deliberative Democracy 2012; Sone 2014), and a 2014 deliberation on snow removal in Sapporo, Japan with a representative sample of 204 participants (Center for Deliberative Poll 2014). Note that the topic in 2012 was broadly the same as the one in the online deliberation. The goal of this analysis is to examine whether the quality of a
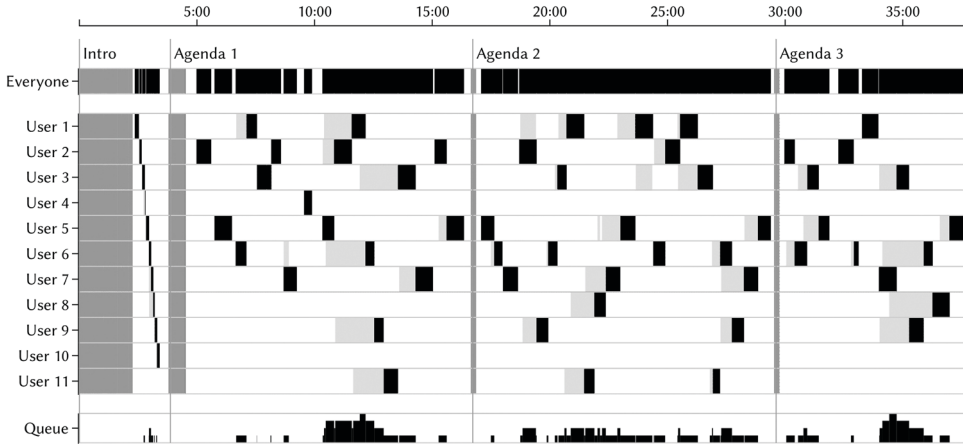
Figure 13.5   The user participation timeline of one of the online small–group deliberations in Japan.

Note: Black bars ▇ represent intervals where participants are speaking. Light gray bars ▇ represent intervals where participants are waiting in the speaker queue. Dark gray bars ▇ represent automated system announcements. The height of the black bars at the bottom represents queue length.
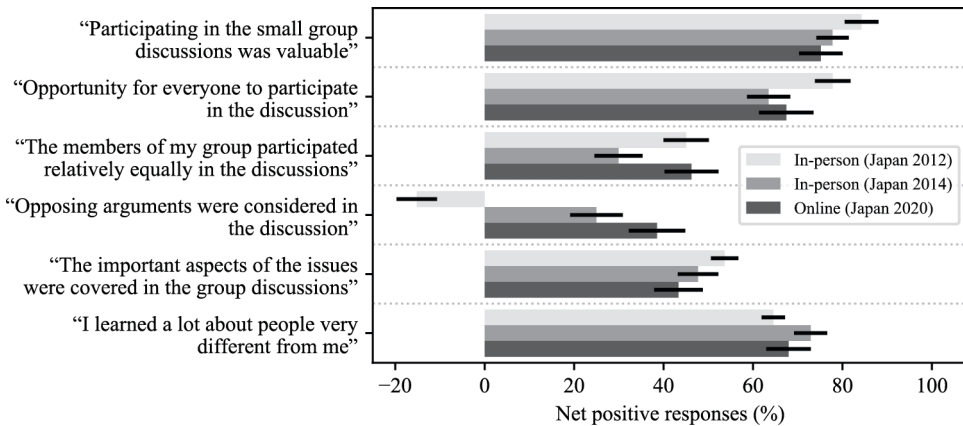
Figure 13.6   The net positive responses (positive–negative responses %) for our online platform versus two earlier in-person polls in Japan to the questions on the post-survey.

Note: Participants were asked to rate each statement from 0 (strongly disagree) to 10 (strongly agree), with 5 being neutral. Positive responses mean 6–10, and negative responses mean 0–4. The error bars represent ±1 standard error of the sample mean.

deliberation on our self-moderated online platform is on par with that of an in-person deliberation conducted using human moderators.

   To evaluate a deliberation, participants were asked to rate each statement on the post-survey shown in Figure 13.6 from 0 (strongly disagree) to 10 (strongly agree). We compare the responses by converting the scales to a low-middle-high score, as this is the format reported in (Center for Deliberative Democracy 2012). Figure 13.6 presents the difference between the percentage of respondents that gave a high score (6–10) and those that gave a low score (0–4) on each question. The detailed low-middle-high percentages for all three

Table 13.1 Comparison between in–person and online deliberations in Japan

Questions	Platform	Scores (%)			Normalized mean
		High	Middle	Low	
1. How valuable was participating in the	In–person (2012)	3.3	9.1	87.4	–
small group discussions in helping you	In–person (2014)	5.4	11.3	82.8	0.78
clarify your positions on the issues?	Online	10.2	4.4	85.2	0.75
2. The discussion platform provided	In–person (2012)	4.9	12.3	82.4	–
the opportunity for everyone to	In–person (2014)	9.4	17.2	72	0.72
participate in the discussion.	Online	12.1	8.3	79.4	0.78
3. The members of my group	In–person (2012)	16.8	20.7	61.3	–
participated relatively equally in the	In–person (2014)	24.5	20.1	54	0.60
discussions	Online	18.5	16	64.1	0.67
4. The discussion platform tried to	In–person (2012)	44.2	23.2	29.5	–
make sure that opposing arguments	In–person (2014)	19.6	32.8	43.6	0.57
were considered.	Online	16.6	28.2	55.1	0.65
5. The important aspects of the	In–person (2012)	10.2	25.3	63.1	–
issues were covered in the group	In–person (2014)	11.3	28.4	57.8	0.65
discussions	Online	16.6	23	59.6	0.66
6. I learned a lot about people very	In–person (2012)	8.9	17.2	72.6	–
different from me – about what they	In–person (2014)	3.5	19.6	75	0.75
and their lives are like.	Online	7.6	16.6	75	0.78

deliberations are available in Table 13.1. Similar trends are observed with a range of different combination measures.

While the online platform does not dominate the in–person deliberations with live moderators, it is within the same ballpark – as a quick benchmark, the sum of the net positive responses across the seven questions was 310 and 317 for the two in–person deliberations, and 339 for the online platform. In particular, the online platform does well on the two questions that it was specially designed for: (3) "The members of my group participated relatively equally in the discussions" and (4) "Opposing arguments were considered in the discussion."

Gender participation analysis

Ensuring equitable participation is an essential prerequisite for a successful Deliberative Poll, or any civic discussion. As discussed in the Related Work section, achieving equitable participation on gender is considered a challenge. We performed an analysis similar to Gerber (2015) and Siu (2017), which looked at gender participation in their respective deliberations, by comparing the speaking time distributions for male and female participants. Figure 13.5 shows an example of the user participation timeline of a deliberation. Figure 13.7 presents the distributions of total speaking time for all participants and males and females separately. The distributions of speaking time per person, per room for both genders have similar means and standard deviations.

We compare this deliberation with the 2012 in–person deliberation in terms of gender participation, for which average word counts are reported per gender (Center for Deliberative Democracy 2012) in Table 13.3. For both deliberations, the primary participation data available was used: speaking time for online and word counts for in–person. In the 2012
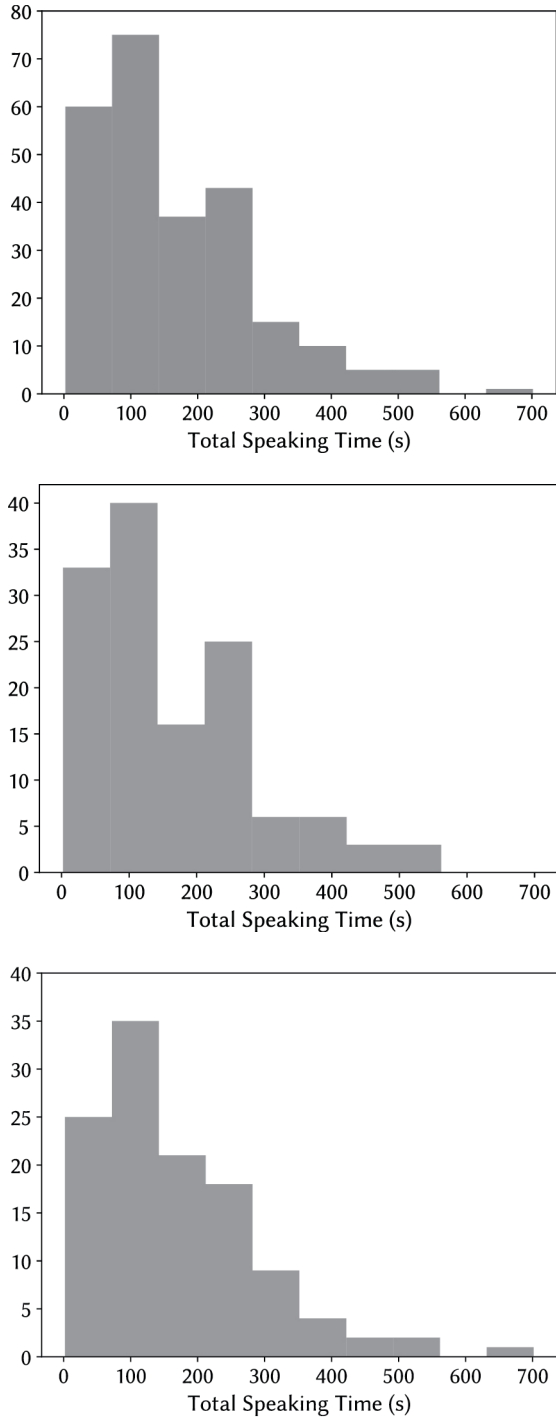
*Figure 13.*7   Distributions of total speaking time (s) for (a) all participants, (b) males, and (c) females in the online Japan data.

Note: (a) All participants (μ = 165.08, σ = 122.92); (b) Male (μ = 164.94, σ = 121.76); (c) Female (μ = 167.74, σ = 124.24).

Table 13.2 Spearman's correlation coefficients

Demographic	Speaking Time (s)		Speaking Time/Group Mean	
	ρ	p	ρ	p
Gender	–0.01	0.918	–0.01	0.764
Age	0.28	< 0.001	0.31	<0.001
Income level	0.04	0.594	0.08	0.250
Education level	0.03	0.628	0.06	0.506

deliberation, females were underrepresented and spoke on average considerably less. For the deliberation conducted on the Platform for Online Deliberation, we observed that both genders had similar average total speaking time.

After this deployment in Japan, the Platform for Online Deliberation was also used for a very similar deliberation in Hong Kong (in Cantonese). We do not report on the Hong Kong data in detail in this chapter (except as one of the data points in Figure 13.9), because there is no data from an in-person equivalent deliberation and hence no direct comparison is possible. However, for the sake of completeness we have included the gender "participation" ratios ("participation" measured in total speaking time) in that deliberation in Table 13.3: while the participation rates are less equal than the online deliberation in Japan, they are still much more equal than the in-person deliberation in Japan.

Other correlations

Gender is not the only factor that may lead to unequal participation in the deliberation. Siu (2017) defined being privileged as being either male, more highly educated, with a higher income, or white. We observed a significant correlation between the speaking time and age ($ρ=0.28$, $p<0.001$); this is consistent with the in-person deliberation from 2012. No significant correlation was found for education or income level.

In the interest of completeness, we also recomputed these correlations after normalizing each speaking time by the group mean, to account for possible dependencies between participants because they experienced the same events in their respective groups. The results are qualitatively similar; a more complete overview of correlations is available in Figure 13.8 and Table 13.2.

Other online and in-person deliberations

To further evaluate how the online platform performs, we compared the responses to the post-survey from seven in-person deliberations over the last decade with the responses from three online deliberations, using the same set of questions; the results are shown in Figure 13.9. In both cases, we restricted ourselves to Deliberative Polls where the participants were chosen through a sample of the general adult population. For in-person deliberations, we further restricted ourselves to instances where the aggregate evaluation data was publicly available[6]; this includes deliberations in Japan (2012), Japan (2014), Mongolia (2015), Ghana (2015), Senegal (2016), Iceland (2019), and the US (2019). For online deliberations, this includes data from deployments in Japan (in 2020, with 156 participants), Hong Kong (in 2020, with 181 participants), and Canada (in 2021, with 444 participants).

In the evaluation data, participants were asked to rate the statements on the post-survey about the deliberation from 0 (strongly disagree) to 10 (strongly agree). Some in-person
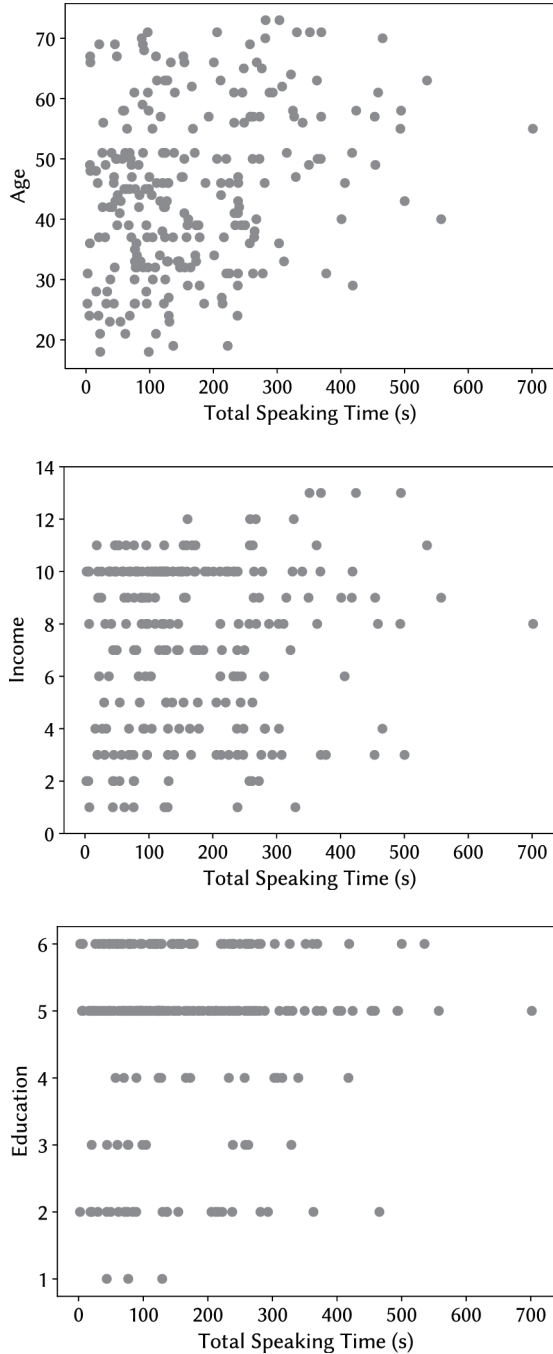
Figure 13.8 Scatter plots depicting the correlation between normalized total speaking time in the Japan online deliberation and participants' demographics, quantified with the Spearman's correlation coefficient ρ. (b) Income levels, with 1 being <2 million JPY and 13 being >25 million JPY, (c) education completion levels with 1 being primary/junior high school and 6 being graduate school. (a) Age (ρ = 0.28, p < 0.001); (b) Income levels (ρ = 0.04, p = 0.594); (c) Education levels (ρ = 0.03, p = 0.628).

deliberations reported only the aggregate of low (0–4)/middle (5)/high (6–10) score responses, while some reported only the mean scores. To compare the evaluation data across deliberations, we converted the scales to a low-middle-high score. Figure 13.9 presents the difference between the percentage of respondents that gave a high score and those that gave a low score on each question. In the case of the mean responses, we linearly scaled the range from [0,10] to [−100%,100%].

We observed that the net positive responses of the online deliberations mostly fall within the range of the net positive responses of the in-person deliberations. It is important to note that this comparison is presented for completeness, and to illustrate that the results from Japan do not constitute an outlier. It is not an apples-to-apples comparison, and given the need to rely on already published data, we had to make some assumptions on how to rescale the survey data from some of the in-person deliberations. For a more meaningful comparison, it is important to compare deliberations that sample their participants from the same population, are on the same topic, and use the same scale for the survey responses. The in-person and online Deliberative Polls in Japan that constitute the bulk of our observational results satisfy these conditions.

Do's and don'ts

As we have organized a number of online video deliberations in the past two years with our platform, there are a few practical lessons that impacted the quality of our deliberative exercises that may be helpful for organizers of similar exercises.

If the organizer wants to achieve diversity in the deliberation process, **it is not only essential to ensure a diverse recruitment pool, but also that the eventual participant pool is equally diverse**. Because the entire process is now online, this may cause different factors to dominate the drop-out ratio. For example, older individuals may feel more cautious to participate, and need some additional support in ensuring that they are comfortable with using a new platform, and people from less affluent backgrounds may need financial support to buy a better headset/webcam or temporarily upgrade their bandwidth. We have experienced the added value of high-touch recruitment organizations that follow up with their recruits and ensure that they go through all the steps and actually show up.

When a deliberation exercise is online, it is intuitive that participants may experience a lower threshold to show up a few minutes late. While waiting for the last person to arrive may not seem burdensome in some in-person settings, this turns out to be more problematic in online (and shorter) sessions. Because all participants receive instructions at the same time at the start of the deliberation, the organizer needs to choose whether to let the whole group wait, to let the late arrivals miss part of the instructions or to reorganize the assignment in rooms. When a group is even delayed a few minutes, participants can get nervous because they don't know whether this is caused by connectivity issues – putting an additional burden on the helpdesk. A practical work-around can be to instruct participants to arrive 5–10 minutes before the scheduled start time, to be proactive in sending reminders, and to be very explicit while recruiting participants about **the importance of being on time**.

The additional burden of technical questions and problems on organizers should not be underestimated. While the total number of questions may be reasonable, they tend to mostly arrive in a 15-minute window around the start time of the first session. This can be mitigated by a combination of two measures: (i) **put in place a well-trained helpdesk team**, that is equipped with a set of standardized responses, and (ii) **provide participants with a**

dummy environment and instructions to test their equipment for the most common issues well before the actual deliberation. Our platform facilitates both measures.

We found it useful to have functionality for **"observers" inside the platform** – a restricted set of people that are able to passively listen to the discussion without being seen by the participants or interact. That way the participants are not acting differently due to the presence of external actors and the discussion can be observed in real time in a more truthful way than any transcript could possibly convey. We have utilized this feature to analyze the discussion itself (e.g., see whether participants are staying on topic, what the overall sentiment is), to investigate/monitor when the automated transcript suggests that something may be going wrong, as well as discover technical issues with the platform.

In addition, the platform **incorporates analytics including transcripts and Natural Language Processing tools** that can help an organizer understand, in real time, whether a conversation is on topic and whether an agenda item has been fully discussed. In the near future, we intend to also use these tools to nudge the participants to discuss agenda items that have not been adequately discussed. Poor wording or a lack of detail in the description of agenda items can lead to these AI tools performing sub-optimally.

Finally, the importance of **a well-balanced agenda** cannot be overstated. Not only is the balance of the content important, but also the fact that participants need to be able to digest it on the spot. It should be calibrated to provide most groups with sufficient content to have an engaging conversation for the estimated time. The provided arguments were written a bit more concise than would be the case on paper, to ensure that they also fit on smaller screens such as tablets and phones. An essential step in this design process is to test them with a set of groups from a similar audience in exactly the same deliberation platform for the aimed time, well before the actual deliberation.

Conclusion

The Platform for Online Deliberation was able to facilitate a set of deliberations comparable to an in-person experience. The online participants reported similar or better satisfaction scores than during the in-person deliberations in Japan. An analysis of the speaking time across demographics suggests roughly equitable behavior on gender; on other demographics relevant for equity, a significant correlation was found only for age. This shows that self-moderation for medium-sized groups can be used effectively to arrive at a balanced discourse, which is especially promising as not all human-moderated deliberations are able to achieve equitable participation by different demographics (Gerber 2015). This platform also eliminates the need for in-person travel and for recruiting and training human moderators. If our results are corroborated by subsequent deployments, this may be a significant step towards large-scale online civic deliberation.

It is important to point out that the evaluation in this chapter is focused on an actual Deliberative Poll conducted on this platform, and that the comparison is to an actual in-person Deliberative Poll in the same country on a similar topic and agenda. Both the online and in-person deliberations were conducted as serious civic exercises, not as a test of our online platform or the in-person Deliberative Polling method. This "field experiment" has the obvious advantage that the platform was evaluated under real-world conditions with all its accompanying complexities. However, it also precluded a detailed examination of the causal connection between individual design decisions we made and the efficacy of the platform. While we have done substantial user-testing through smaller deployments, especially

Table 13.3 Average participation per person by gender[7]

Platform	Average Participation		Unit	Male/Female participant ratio	p
	Male	Female			
In-person (Japan 2012)	996	689	Words spoken	1.45	0.001
Online (Japan 2020)	293	302	Total speaking time (s)	0.97	0.802
Online (Hong Kong 2020)	487	426	Total speaking time (s)	1.14	0.121
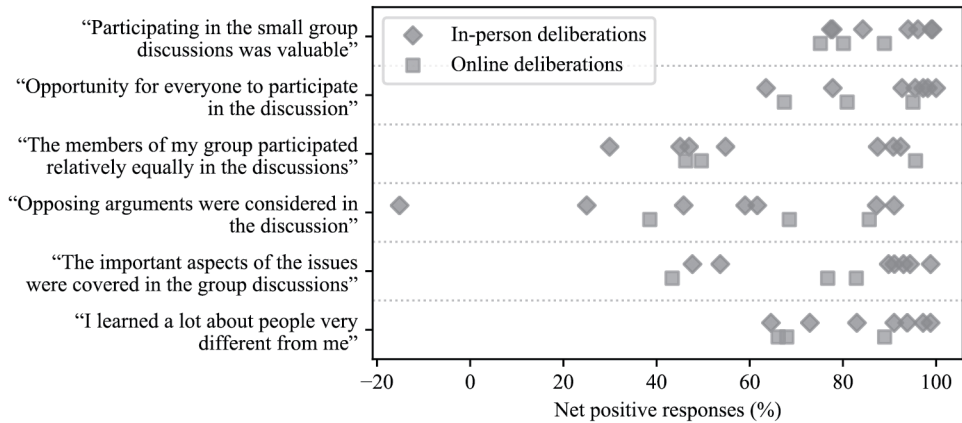
Figure 13.9   The net positive responses (positive–negative responses %) to the questions on the post-survey from seven in-person deliberations and three online deliberations.

in class settings, to iterate on the design of the system, a rigorous experimental evaluation of various design parameters remains a promising direction for future research.

In addition, our "field experiment" and deployments thus far did not provide many examples of hostile behavior, and it will be important to design experiments that stress–test and improve the ability of the platform to prevent abusive behaviors. As a precautionary measure while we further develop the ability of the platform to self–police abusive behaviors, we have developed a monitoring system allowing for a small number of human supervisors to track and observe multiple discussions at once.

It is important to recognize that while moving deliberations online has significant benefits for organizing a deliberation, especially at scale, and increases access for people who cannot afford to travel for a weekend, it may also **disadvantage people in areas with poor internet connectivity or with less advanced equipment**. Achieving a balanced sample of participants will remain a logistical challenge, and if our platform (or another similar platform) starts to see massive deployments, it will be important to provide technical support and access to equipment to participants who need them.

During the "field experiment," we encountered participants who were struggling with malfunctioning equipment and these challenges required the availability of a **virtual help desk**.

Finally, future research could look into using natural language processing and machine learning to make the system **nudge participants more intelligently**. For example, the

system could make the discussion more interesting by encouraging participants who hold different views or unorthodox opinions to speak more.

Acknowledgments

Notes

1 These authors contributed equally to this research.
2 A partial list, along with reports describing the agenda and the outcomes of such deliberations, is available at https://stanforddeliberate.org.
3 https://mismatch.org/.
4 https://about.myjunto.app/.
5 https://web.archive.org/web/20200511004839/https://www.onlinedptokyo.org/.
6 Via reports or publications linked from https://cdd.stanford.edu.
7 For the in-person deliberation in Japan, (i) the numbers of words spoken were reported, but not the total speaking time, and (ii) a "significance value" of 0.001 was reported, suggesting that it is very unlikely that the number of words spoken by the male and female participants come from the same statistical distribution (Center for Deliberative Democracy 2012). In contrast, the significance values for male and female speaking times in the online deliberations in Japan and Hong Kong (as computed using Student's t-test) were 0.802 and 0.121, respectively. This suggests that no significant difference was found in the speaking times of male and female participants in the online deliberations.

References

Bächtiger, A., Setälä a, M., and Grönlund, K. 2014. Towards a new era of deliberative mini-publics. *Deliberative mini-publics: Involving citizens in the democratic process*, 203–224.

Bott, E. 2020. Zoom alternatives: Best video conferences for business. *ZDNet*. www.zdnet.com/article/best-videoconferencing-software-and-services-for-business/.

Center for Deliberative Democracy. 2012. Results of deliberative polling on energy and environmental policy options in Japan. Technical report, Center for Deliberative Democracy. https://cdd.stanford.edu/2012/results-of-deliberativepolling-energy-and-environmental-policy-options-in-japan/.

Center for Deliberative Poll. 2014. Deliberative Poll on snow and our livelihood – Survey report. Technical report, The Center for Deliberative Poll, Keio University. https://cdd.stanford.edu/2014/sapporo-final-report-in-japanese/.

Drake, N., and Turner, B. 2020. Best video conferencing software in 2020. *Techradar*. www.techradar.com/best/ best-video-conferencing-software.

Fishkin, J. S. 1991. *Democracy and deliberation: New directions for democratic reform*. New Haven and London: Yale University Press.

Fishkin, J. S. 2018a. Yes, ordinary citizens can decide complex issues. *The Wall Street Journal*. www.wsj.com/articles/yes-ordinary-citizens-candecide-complex-issues-1533310053.

Fishkin, J. S. 2018b. *Democracy when the people are thinking: Revitalizing our politics through public deliberation*. Oxford University Press.

Fishkin, J. S., Garg, N., Gelauff, L. L., Goel, A., Munagala, K., Siu, A., and Yandamuri, S. 2019. Deliberative democracy with the online deliberation platform [Demonstration paper]. *The seventh AAAI Conference on Human Computation and Crowdsourcing*.

Fishkin, J. S., Luskin, R. C., and Jowell, R. 2000. Deliberative polling and public consultation. *Parliamentary Affairs* 53(4): 657–666.

Fishkin, J. S., Mayega, R. W., Atuyambe, L., Tumuhamye, N., Ssentongo, J., Siu, A., and Bazeyo, W. 2017. Applying deliberative democracy in Africa: Uganda's first deliberative polls. *Daedalus* 146(3): 140–154.

Gerber, M. 2015. Equal partners in dialogue? Participation equality in a transnational deliberative poll (Europolis). *Political Studies* 63: 110–130.

Jigsaw. 2021. Perspective API. www.perspectiveapi.com/#/home.

Kim, S., Eun, J., Oh, C., Suh, B., and Lee, J. 2020. Bot in the Bunch: Facilitating group chat discussion by improving efficiency and participation with a chatbot. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*, CHI '20, 1–13. New York, NY, USA: Association for Computing Machinery. ISBN 9781450367080. doi:10.1145/ 3313831.3376785.

Lukensmeyer, C. J., and Brigham, S. 2005. Taking democracy to scale: Large scale interventions—for citizens. *The Journal of Applied Behavioral Science* 41(1): 47–60.

Luskin, R. C., Fishkin, J. S., and Iyengar, S. 2006. Considered opinions on US foreign policy: Evidence from online and face-to-face deliberative polling. *The Center for Deliberative Democracy, Research Papers*.

Luskin, R. C., Fishkin, J. S., and Plane, D. L. 1999. Deliberative polling and policy outcomes: Electric utility issues in Texas. In *Annual Meeting of the Midwest Political Science Association, Chicago*, volume 4, 1999.

Martinovich, M. 2017. Collaboration at Stanford leads to Mongolian parliament passing law on public opinion polling. https://news.stanford.edu/press-releases/2017/05/02/collaboration-st-opinion-polling/.

Neema, S., Bua, G. M., Tuhebwe, D., Ssentongo, J., Tumuhamye, N., Mayega, R. W., Fishkin, J., Atuyambe, L. M., and Bazeyo, W. 2018. Community perspective on policy options for resettlement management: A case study of risk reduction in Bududa, Eastern Uganda. *PLoS Currents* 10.

Siu, A. 2017. Deliberation & the challenge of inequality. *Daedalus* 146(3): 119–128.

Sone, Y. 2014. Nuclear energy policy and the national deliberative poll. *Public Policy Studies* 14. https://cdd.stanford.edu/ 2016/nuclear-energy-policy-and-the-national-deliberative-poll/.

Warren, T. 2020. Zoom admits it doesn't have 300 million users, corrects misleading claims. www.theverge.com/2020/4/30/21242421/zoom-300-million-users-incorrect-meeting-participants-statement.

Weeks, E. C. 2000. The practice of deliberative democracy: Results from four large-scale trials. *Public Administration Review* 60(4): 360–372.

14

WHEN BOTTOM-UP AND TOP-DOWN MEET

The ADDIS process and the co-creation of the Nigeria Startup Bill

Jon Stever

The story

"It's time to innovate on economic policy in Africa. We aren't asking our governments to listen to us, rather we want to work with them to co-create policies that work for the innovation community." This observation by Markos Lemma, co-founder and managing director of iceAddis, a community innovation hub based in Ethiopia, exemplifies a new wave of collaborative problem-solving taking shape on the African continent.

Instead of waiting for civil servants and elected politicians to create better regulations, communities across Africa are applying entrepreneurial problem-solving techniques to develop better laws and policy frameworks with their governments. The energy and creativity of youth has long been heralded as a critical asset for social and economic transformation of the continent. But as Ory Okolloh, a Kenyan activist, lawyer, and blogger, once put it, "We can't entrepreneur our way around bad policies." Instead, a generation of youth are now asking whether they might rather entrepreneur better policies.

This trend coincided with an explosion of "third places" in many African countries – community spaces outside of home and work where people come together to share ideas, and collaboratively develop new skills, ventures, and social actions (Oldenburg 1999). Estimates suggest that the number of community innovation hubs across Africa increased from around 100 in 2013 to more than 600 in 2019.[1] These innovation hubs not only expand access to business development services, markets, finances, and networks but also provide a base from which to engender new collective actions and to put new policy reform ideas on the table.

In November 2016, a group of 25 innovation community leaders from across Africa came together in Rwanda at one such innovation hub, the Impact Hub Kigali, to start imagining a better way to work with their governments. They called themselves "Innovators for Policy" (or "i4Policy"), and began drafting what later became the Africa Innovation Policy Manifesto, a document setting out policy priorities and inviting governments to work with young people and communities to make better laws.[2]

This Manifesto highlighted topics such as easing mobility for Africans to travel within Africa, simplifying regulations to operate businesses and increasing national investment in

local research and development. The publication of the Manifesto led to an immediate request from the Rwandan government to support the development of a policy proposal to bring innovation into public procurement and to crowdsource inputs into a national strategy for private sector development and youth employment. The successes of these first collaborations with the Rwandan public sector led naturally to requests from other governments and communities, on and beyond the African continent, seeking to co-create public policies that could boost economic growth, youth employment, innovation, and human development.

Co-creating the Nigeria Startup Vision and Bill

"What would happen if you could get entrepreneurs, students, and business support providers to step into the shoes of policymakers for a day?" This was the question posed by members of the i4Policy community in bottom-up policy co-creation sessions in Lagos and Abuja, Nigeria, in March 2018. These community-organized activities, called policy hackathons, aimed to crowdsource a legislative agenda to accelerate entrepreneurship and youth employment.[3]

For decades, Nigeria's development was dependent on the exploitation of natural resources like oil and gas. In recent years, a new wave of entrepreneurs and technologists has appeared in sectors ranging from banking, health, fashion, and education, but many of these new companies have struggled with the requirements of a largely outdated regulatory code and the overlapping mandates of government agencies. National laws, policies, institutions, and regulatory decisions have not kept pace with the energy and innovation of entrepreneurs.[4]

With these stakes clearly in view, more than 100 citizens participated in the policy hackathons across Nigeria's economic and political capitals. Asked to role play "Senior Special Advisors" for the President, participants were tasked with developing policy proposals to accelerate job creation and innovation-led economic growth in Africa's most populous nation. Their work started with a facilitated brainstorm in the morning, exploring the challenges and constraints of doing business in Nigeria at the different stages of a business's journey from ideation to registration and growth. These challenges then inspired a round of proposals, with each "advisor" invited to pitch a solution to their peers.

Through the course of the first day, common themes began to emerge, such as tax and education reform, directing public procurement opportunities toward indigenous innovation, improving business registration, and extending broadband internet infrastructure. Using a special form of Open Space Technology (Owen, 2008), called a "BarCamp" approach, participants clustered proposals and autonomously formed groups to shape their ideas into legislative templates offering an overview of how a policy intervention might work to solve the problems they identified.[5]

"The room was buzzing with ideas and enthusiasm all day, and we pretty much had to be stopped, or we could have kept going into the night," recalls Sanusi Ismaila, the founder of CoLab, Kaduna State's first innovation hub.

> Hackathons such as these are important, because not only do they get you to appreciate the amount of work that goes into making policies, but they also expose you to a wide breadth of perspective and insights that helps you appreciate the problems and possible solutions a lot more.[6]

The Office of ICT, Innovation and Entrepreneurship (OIIE) enthusiastically informed the hackathon participants in Abuja that the agency had already – in the previous six

months – started organizing focus groups seeking similar inputs to develop a national policy framework. The Office's coordinator expressed her excitement at the ideas emerging from participants at the hackathon and promised that her office would review the crowdsourced proposals. In fact, the results of the hackathon were fully integrated by the OIIE into what then became a far more ambitious national policy vision for Nigeria.

From May to October 2018, the OIIE engaged in recurring rounds of drafting and consultation: OIIE staff elaborated proposals from the focus groups and hackathons into vision statements, then interviewed ministries, departments, and agencies to get more background information, and finally consulted hackathon organizers and participants to get feedback, then repeat.

Ultimately, the results of the hackathons were shared back with organizers and participants as the Nigeria ICT Innovation Entrepreneurship Vision (NIIEV), a "unifying policy vision for ICT Innovation and Entrepreneurship" seeking to "unlock our national potential." A bespoke online consultation platform[7] and Messenger chatbot enabled citizens to read the draft national vision online, access references and background information, and provide anonymous inputs and feedback.[8]

More than 2,500 comments and suggestions were crowdsourced in less than one week and were reviewed by members of the OIIE. The OIIE then integrated comments into a revised draft, and organized a public Town Hall meeting in Abuja, Nigeria on December 4. Community spaces nationwide were encouraged to decentrally organize meetings to collect feedback that was likewise integrated into the final draft of the NIIEV, which called for "an urgent technological revolution." Following the presidential election in 2019, the national vision was published by the incoming Minister of Communications and Digital Economy in August 2019, less than a year and a half after the initial policy hackathons were convened.

According to the Minister, during the consultative processes "it became apparent that there need[ed] to be specific policies and incentives… to encourage entrepreneurship."[9] But, in the year following the passage of the NIIEV, it was not apparent that any work was being done by the government to implement the vision. That all changed in October 2020. After three years of simmering protests against police brutality, many of whose participants used the hashtag #EndSARS, youth exploded onto the streets en masse, claiming space to demand security sector reform and better opportunities.

With the energy and attention created by these mass protests, the next round of the policy process had begun. In November 2020 President Muhammadu Buhari's Senior Special Assistant on Digital Transformation, Oswald Osaretin Guobadia, contacted the organizers of the 2018 policy hackathons to build a "big tent" approach to supporting youth employment and digital transformation. Following this, President Buhari announced in his new year address, "Your voices have been heard…Our young people are our most valuable natural resource." And, he further committed to "partner with the legislature to develop an enabling environment to turn their passions into ideas that can be supported, groomed and scaled."[10]

With this Presidential performative[11] in place, entrepreneurs, community leaders, and government advisors began to converge. In March 2021, the Innovation for Policy Foundation co-hosted a workshop with Mr Guobadia and the emerging coalition to sketch out the overall policymaking process (see "the ADDIS Process" below), and identify resources, opportunities, and needs to support an effective and inclusive law-making process.

Having observed that policy instruments have little impact without collaborative implementation and monitoring, the "big tent" coalition sought to activate a much larger community and to engage in mass public education efforts. The coalition grew beyond the usual

suspects and the familiar faces from the 2018 policy hackathons. Over 300 volunteers signed up online and actively supported outreach and consultation activities.

Members of the coalition were invited into a formalized presidential advisory group on start-ups, which announced that "it's time for our laws to start working for us, rather than against us. It's time for startups to participate in the creation of laws that concern startups."[12] And, building on the NIIEV and other policy instruments, two law firms were brought on board with resources fundraised by the coalition, to organize background research. Through extensive consultation and inputs, the firms developed a first draft of the Nigeria Startup Bill, a national legal framework to support youth that envisioned a credit guarantee scheme, measures to protect intellectual property of domestic innovators, and the ability to crowdfund growth capital.

The coalition began to develop educational materials, including animated cartoons explaining how national law-making processes worked.[13] A call center was set up to answer questions from the general public and, if you called, you would speak with a volunteer, learn about the Startup Bill, and be invited to provide your suggestions. Members of the coalition also held interviews on TV and radio stations across the country.

Public participation efforts were also far more extensive, inclusive, and collaboratively organized between government and communities (see "co-created civic spaces" below). Town Hall meetings were convened across states and geopolitical regions throughout August 2021, organized jointly by local community spaces and political leaders, to present the draft law to citizens and to crowdsource inputs.

Inputs from these sessions generated a number of key revisions to the Startup Bill. Having learned from previous policies, citizens pushed for greater oversight over implementation and monitoring of the law. As a result, the final draft version of the Bill included a provision to establish the National Council for Digital Innovation and Entrepreneurship, a formal co-created civic space composed of citizens and government officials. The labelization provisions in the law were also modified to ensure that all companies would be entitled to fiscal incentives based on objective criteria, rather than a discretionary approach that would be more prone to elite capture.

The Nigeria Startup Bill was submitted to the President in October 2021 and approved by Nigeria's cabinet in November 2021. Learning how to play the game of aggregative politics, members of the coalition organized rallies across the country with over 7,000 campaigners marching on national and state-level legislatures calling for swift passage of the Bill.[14] The Bill was received by the Nigerian Senate in March 2022 and was passed into law in the summer session. Then, as this chapter was submitted for publication in September 2022, the Startup Bill was transferred back to the President to be signed into law.

The coalition is preparing for the law's implementation and has been engaging decentrally across the states to push for "domestication." As a result, Kaduna and Lagos, among other states, have committed to adopt state-level laws. Tunbosun Alake, the Special Adviser on Innovation & Technology to Lagos state's Governor, said "currently, we are also trying to domesticate the Nigeria startup bill for Lagos state because going by the federal system we operate in Nigeria; each state is jurisdiction on its own. And for state actors to be able to implement some of the provisions of the law, they themselves have to domesticate."[15]

It's clear already that this story will not end here. A new kind of relationship is taking shape, with self-perpetuating dynamics of public participation. According to Mr Guobadia, "we now believe that the 'big tent' approach can become an effective way to drive a collaborative and engaging co-creation process for policy development in all sectors."

What science tells us

The scientific evidence of the impact of deliberative and participatory engagements indicates that context, design, participation rates, and the quality of interaction are all critical factors.[16] Analyzing nearly $80 billion spent on participatory processes by the World Bank, for example, Mansuri and Rao (2013a) found the impact of public participation activities to be poor. This is because it is so often "induced," that is, designed and implemented by governments, philanthropists, or external civil society with little intrinsic motivation, rather than as "organic" actions originating within concerned communities (Mansuri and Rao 2013a and 2013b).

Scaling deliberation and participation requires collaboration between induced and organic participation (Heller and Rao, 2015), as we observe in the case above. In other words, there needs to be a middle ground between the extremes of public participation being induced from the top and actions organically derived from the bottom.[17] We might call this "collaborative" public participation, whereby power holders and citizens come together to build "co-created civic spaces". These drivers of participation can be mapped along the spectrum from "bottom-up" to "top-down" alongside a heuristic of civic spaces in the lineage of Gaventa and colleagues (Brock et al, 2001; Cornwall, 2002; Brock et al, 2004; Gaventa, 2006). Figure 14.1 provides an expanded vocabulary of civic spaces according to who convenes the space, who is able to participate, and the dynamics of initiation. This ontology seeks to build on the work of Mansuri and Rao (2013a and 2013b), Gaventa (2006), and Fox (2019).

By providing a common language with which to understand and characterize public participation, we hope to enable reformers in government and civil society to then imagine and describe the spaces they wish to build. In practice, these definitions are dynamic and there are overlaps between the types of civic space and the participation drivers. In the Nigeria case, for example, we see the law-making process becoming increasingly collaborative to the point where the law will institutionalize a formal "co-created space", the National Council for Digital Innovation and Entrepreneurship, that will bring government officials and citizens together to oversee implementation and monitoring.
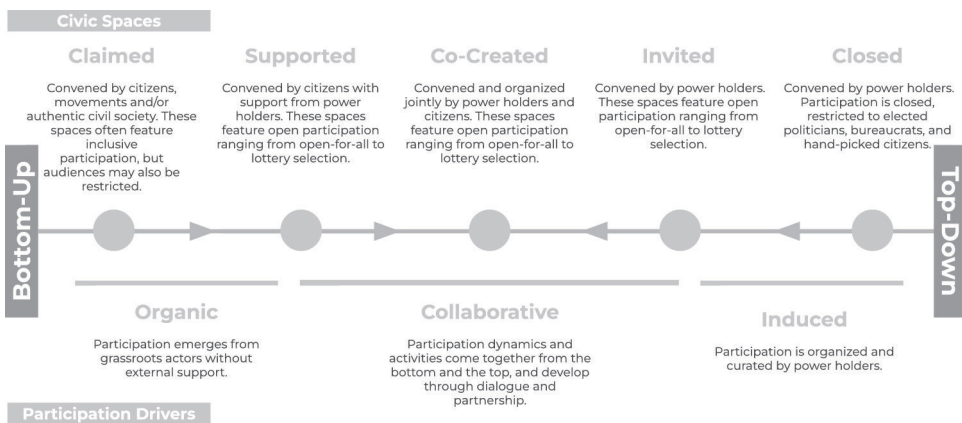
Figure 14.1 Types of civic spaces and drivers of participation.

Building on evidence, tools from often-siloed communities of practice, and our practice designing and hosting more than 100 co-creation activities across more than a dozen countries, we have developed an accessible heuristic of the policy cycle, a collective intelligence framework we call the "ADDIS Process."[18]

ADDIS is a mnemonic device, representing the main phases of a policy-making process: analysis, drafting, decision-making, implementation, and synthesis. It is a nonlinear characterization of the decision-making process, with 12 iterative and reflexive steps that support decision-making. The framework is ideologically agnostic, not presupposing a particular form of governance. Rather, it is designed to encourage greater inclusion and participation in public problem-solving on instrumental grounds (because inclusion and participation can lead to better policy delivery and outcomes) and normative ones (recognizing that inclusion and participation are often themselves intrinsic goals) (Figure 14.2).

This framework can be used to retroactively map the activities organized throughout a policy-making process, as we share above, to offer an understanding of how different civic spaces – ranging from claimed protest movements to closed elite deliberations – can work together in a deliberative ecology to contribute to a decision-making process. The framework can also be used to support citizens and governments to imagine, plan, and execute collective intelligence approaches to public policy co-creation.

The ADDIS Process evolved from applying the tools of social innovation communities – such as human-centered design – and community organizing to the theories and practice of participatory policy-making processes. Although it was originally developed in isolation of the policy cycle heuristics inspired by Laswell (1956), it has since integrated learnings from these frameworks and their criticisms.[19] Important correspondences can be made with other modern policy cycles, such as the Kaleidoscope Framework developed by Resnick and colleagues (2018), the Problem-Solving Pathway from Beth Noveck and the GovLab,[20] and the OODAL Loop framework of observation, orientation, decision, action, and learning (Klein, 2017; Enck, 2012).

Do's and don'ts

Throughout the process to co-create the start-up law, we would remind colleagues and stakeholders that the Nigeria startup conversation was far more important than the Nigeria Startup Bill. It was the dialogue, interaction, and opening of space – the **continuously expanding "deliberative chain"** to use the words of Arjun Appadurai (2015) – that will create lasting impact, not the law *per se*.

Deliberative ecologies evolve best when there is a multiplicity of activities and drivers that bring governments and citizens together. For this, we need to activate more public servants and citizens as co-creators of public policies and as organizers of public participation. People learn about deliberation and participatory policymaking by organizing platforms and gatherings, sitting together in dialogue, weighing arguments, and ultimately making public policies together. We learn by doing. Or, as Paolo Freire reminded us, "a person learns to swim in the water, not in the library" (Freire 1970). In order to build civic experience through practice – in turn, expanding future possibilities of practice – public participation activities must be **pedagogical, accessible and explicitly organized as learning environments**.

For this to happen, all actions, heuristics, and learning materials need to be open sourced, accessible, translatable, and re-mixed to fit each process and each community's needs. For example, during the training of the Nigerian policy hackathon's facilitators, the facilitators

Phases

Analysis
A topic is identified and explored, specific issues and opportunities are defined and prioritised to come up with a plan.

Drafting
Potential solutions are explored and developed into concrete proposals and decision instruments (such as, contracts, laws, policies, strategies, visions, constitutions, diagrams, etc), and refined through feedback.

Decision-making
Decisions are proposed and then taken through relevant norms and processes.

Implementation
The phase in which decisions are put into practice and monitored.

Synthesis
Learnings are gathered, organized and understood to improve future decisions.

Steps

Empathize
Understand the situation by empathizing with the people and organizations affected

Initiate
Launch a process with relevant collaborators and a clear vision

Define
Identify and prioritize the specific issues or conditions to be addressed

Ideate
Brainstorm, benchmark and evaluate potential solutions

Develop
Transform potential solutions into drafts

Consult
Share the draft for inputs and then integrate feedback

Propose
Suggest a decision

Adopt
Approve a decision through appropriate processes

Implement
Execute the agreed decision

Monitor
Track and assess implementation of a decision against its desired results

Harvest
Gather insights from implementation and the overall decision thinking process

Understand
Make sense of observations to inform and inspire future decisions

Activities

Figure 14.2   The ADDIS process.

co-created the conversation norms for the session they would lead while practicing the same methods of crowdsourcing and prioritizing that were used in the hackathon itself. The training featured a dialogue among facilitators to identify important norms and rules to ensure a good deliberation. Then, borrowing from the latest "standards for good deliberation,"[21] we offered facilitators **a list of "minimum viable dialogue rules"**[22] as a point of reflection for a further round of deliberation to refine and define their conversation norms. In this way, even the norms of the hackathons were derived within the community of participants, and therefore relevant.

In our experience, it is also critical to **have a vision and pathway for a process in mind**, to organize actions, to build a coalition, and to ensure that each participant in a given activity can understand its purpose and the larger context. In the first quarter of 2021, for example, conversations among the coalition behind the Startup Bill centered around the policy cycle (see "the ADDIS Process"), identifying a hypothetical journey of the law from analysis through drafting and decision-making. This ensured that individual activities were connected, and that participants could **understand the context of their participation** and how their engagement would contribute to the overall process.

Finally, it is important to remember that no polity achieves perfection. Do political institutions make people, or do people make political institutions and processes? Our systems of governance, our decisions, and even our goals must be understood to be corrigible.[23] Although we live in a seemingly static world of governance nouns – constitutions, leaders, norms, regulations – the co-creation processes in Nigeria emphasize that as verbing citizens we can reshape our societies and our politics when we work together.

Legend

Stylized Steps	Dates	Short Description (Type of Civic Space)	Stage(s) of the ADDIS Process
1	Oct–Nov 2017	Focus Groups (Closed)	Harvesting through to ideate
2	20 & 22 Mar 2018	Policy Hackathons (Supported)	Harvesting through to ideate
3	Apr–Nov 2018	Writing the NIIEV (Closed)	Develop
4	Apr–Nov 2018	Interviews (Invited)	Consult
5	13–17 Nov 2018	Online Consultation (Invited)	Consult
6	4 Dec 2018	Town Hall meetings (Invited & Supported)	Consult
7	Feb 2019	NIIEV transferred to NITDA (Closed)	Propose
8	2 Aug 2019	NIIEV signed (Closed)	Adopt
9	Oct 2020	#EndSARS (Claimed)	Define
10	Dec 2020	Presidential Performative (Closed)	Initiate
11	Jan 2021	Coalition Workshop (Co-Created)	Empathize
12	Mar–May 2021	Legal Review (Supported)	Harvesting to understanding
13	Jun–Jul 2021	First Draft of the NSB (Co-Created)	Ideate to develop
14	Aug 2021	Town Hall meetings (Co-Created)	Consult
15	Sep 2021	Final Draft of the NSB (Co-Created)	Develop
16	Oct 2021	NSB submitted to FEC (Co-Created)	Propose

Stylized Steps	Dates	Short Description (Type of Civic Space)	Stage(s) of the ADDIS Process
17	Oct 2021	Rallies & Summits (Co–Created)	Initiate
18	Oct–Nov 2021	Learning Series (Co–Created)	Consult
19	Dec 2021	NSB Submitted to NASS (Closed)	Propose
20	Mar–Jul 2022	Readings in the NASS (Closed)	Consult
21	Jun 2022	Public hearing in NASS (Invited)	Consult
22	13 Jul 2022	Senate (Closed)	Adopt
23	20 Jul 2022	House of Representatives (Closed)	Adopt
24	Jul 2022	Kaduna and Lagos States (Closed)	Initiate

Acknowledgments

Notes

1 See Kelly and Firestone (2016) and www.gsma.com/mobilefordevelopment/blog/618-active-tech-hubs-the-backbone-of-africas-tech-ecosystem/, accessed Sept. 5, 2022.
2 See https://qz.com/africa/1255296/startup-and-innovation-hub-leaders-are-taking-the-lead-in-shaping-digital-policy-in-africa/ and www.facebook.com/i4Policy/videos/918076765039392/, accessed Sept. 5, 2022.
3 See https://guardian.ng/features/nigerias-first-multi-stakeholder-policy-hackathons-held-in-lagos-and-abuja/, accessed Sept. 5, 2022.

4 This is a general issue facing modern governments that Downes (2009) has called this the Law of Disruption: "Technology Changes Exponentially, but Social, Economic and Legal Systems Change Incrementally."

5 A BarCamp is a type of meeting in which participants design the agenda themselves. Content is provided by the participants who must all, in one way or another, bring something to the event. The core principle of a BarCamp is "no spectators, all participants."

6 See https://guardian.ng/features/nigerias-first-multi-stakeholder-policy-hackathons-held-in-lagos-and-abuja/, accessed Sept.5, 2022.

7 See, for example, a version of the free and open source software iConsult: https://github.com/i4policy/iConsult, accessed Sept. 5, 2022.

8 See https://twitter.com/ONDINigeria/status/1062318678019133440 and https://twitter.com/ONDINigeria/status/1066749751813656576?lang=ca, accessed Sept. 5, 2022.

9 See www.rmp.nitda.gov.ng/pdf/2019NIIEVfinal.pdf, accessed Sept. 5, 2022.

10 See www.vanguardngr.com/2021/10/new-year-vow-buhari-restates-commitment-to-endsars-youths-5-demands/, accessed Sept. 5, 2022.

11 For a discussion of performative speech acts and their relevance for deliberative processes, systems, and "chains," see Appadurai (2015).

12 See https://startupbill.ng/, accessed Sept. 5, 2022.

13 See www.youtube.com/watch?v=uKvDHJKaSO4, accessed Sept. 5, 2022.

14 See https://independent.ng/7000-campaigners-rally-support-for-nigeria-startup-bill-at-nass/, accessed Sept. 5, 2022.

15 See https://lagospost.ng/lagos-to-domesticate-nigeria-startup-bill/, accessed Sept. 5, 2022.

16 For relevant studies of impact in the field of democratic innovation, see Boulianne (2019), Cutler et al. (2008), Gastil et al. (2012), Goodin (2005), Grönlund et al. (2010), Halvorsen (2003), Luskin and Fishkin (2002), O'Toole (1986), Pincock (2012), Mansbridge (1999), Mansbridge (2015), Mansuri and Rao (2013a and 2013b), Nabatchi (2012), Strandberg and Grönlund (2012), Warren (1992), and Webb (2013). The "Impact" chapter of the Handbook examines several of these studies in detail.

17 Jonathan Fox has developed what he calls the "sandwich strategy" to bridge top–down and bottom–up dynamics, whereby "state actors take actions that tangibly reduce the risks or costs of collective action by the socially and politically excluded" (Fox 2019).

18 "Addis" (አዲስ) is an Amharic adjective describing something as new. The capital of Ethiopia, Addis Ababa, the home of the African Union and a symbol of pan-Africanism, for example, means "new flower." The ADDIS process is v5.2 of the i4Policy Process, see https://participedia.net/method/6426, accessed Sept. 5, 2022.

19 See, for example, Goodin and colleagues (2006), Howard (2005), Sabatier (2007), and Smith and May (1993).

20 See www.solvingpublicproblems.org, accessed Sept. 5, 2022.

21 Mansbridge (2015) offers a recent evolution of good deliberation standards, for example.

22 For example, clarity of common purpose; inclusion; safety; honesty; and, "revisability," being open to changing our minds and empowering others to do so as well.

23 We often consider our goals, for example, as a "north star," recognizing that while a goal can guide our direction we never expect to end up at the north star. This is what Jenny Mansbridge has begun referring to as "aspirational ideals" (Mansbridge 2020), expanding on what Kant originally called "regulative ideals": "a focus imaginarius, a goal to be approached but which can never be attained... both a standard for the unrealisable completion of a practice and also has a role in directing practical reason in advancing towards this, and thus it orients a practice" (Emmet 1994).

References

Appadurai, A. (2015). "Success and Failure in the Deliberative Economy", in Heller, P. and Rao, V. (Eds.), *Deliberation and Development*. World Bank.

Ayers, A.J. (2008). "'We All Know A Democracy When We See One': (Neo)liberal Orthodoxy in the 'Democratisation' and 'Good Governance' Project." *Policy and Society*, 27(1):1–13.

Banerjee, S.B. (2021). "Decolonizing Deliberative Democracy: Perspectives from Below". *Journal of Business Ethics*.

Boulianne, S. (2019). "Building Faith in Democracy: Deliberative Events, Political Trust and Efficacy". *Political Studies* 67(1):4–30.

Brock, K., Cornwall, A., and Gaventa, J. (2001). *Power, Knowledge and Political Spaces in the Framing of Poverty Policy*, IDS Working Paper 143, Brighton: IDS.

Brock, K., McGee, R., and Gaventa, J. (Eds.). (2004). *Unpacking Policy: Actors, Knowledge and Spaces in Poverty Reduction*. Kampala: Fountain Press.

Chenoweth, E., and Stephan, M.J. (2021). *The Role of External Support in Nonviolent Campaigns: Poisoned Chalice or Holy Grail?* International Centre for Nonviolent Conflict, Monograph Series.

Cornwall, A. (2002). *Making Spaces, Changing Places: Situating Participation in Development*, IDS Working Paper 170, Brighton: IDS.

Cutler, F., Johnston, R., Carty, R. K., Blais, A., and Fournier, P. (2008). "Deliberation, Information, and Trust: The British Columbia Citizens' Assembly as Agenda Setter." *Designing Deliberative Democracy: The British Columbia Citizens' Assembly*, 166–91.

Downes, L. (2009). *The Laws of Disruption: Harnessing the New Forces that Govern Life and Business in the Digital Age*. Basic Books.

Dryzek, J.S., and Lo, A.Y. (2015). "Reason and Rhetoric in Climate Communication", *Environmental Politics*, 24(1): 1–16.

Druckman, J.N. (2000). "Evaluating Framing Effects", *Journal of Economic Psychology*, 22(01): 91–101.

Druckman, J., and Nelson, K.R. (2003). "Framing and Deliberation: How Citizens' Conversations Limit Elite Influence," *American Journal of Political Science,* 47(4): 729–745.

Emmet, D. (1994). *Regulative Ideals: Kant in the Role of the Unrealisable*. London: Palgrave Macmillan. https://doi.org/10.1007/978-1-349-23158-4_2

Enck, R.E. (2012). "The OODA Loop", *Home Health Care Management & Practice*, 24(3):123–124. doi:10.1177/1084822312439314

Escobar, A. (2004). "Beyond the Third World: Imperial Globality, Global Coloniality and Anti-Globalization Social Movements", *Third World Quarterly*, 25(1): 207–230.

Fishkin, J.S. (2011). "Deliberative Democracy and Constitutions", *Social Philosophy and Policy*, 28(01): 242–260.

Fishkin, J.S. (2018). *Democracy When the People Are Thinking: Revitalizing Our Politics through Public Deliberation*. Oxford University Press.

Fox, J. (2019). "The Sandwich Strategy: Opening from Above Meets Mobilization from Below", in Fox, J. (Ed.), *The Politics of Food in Mexico: State Power and Social Mobilization* (pp. 151–205). Ithaca, NY: Cornell University Press.

Freire, P. (1970). *Pedagogy of the Oppressed*. New York: Continuum.

Fung, A. (2003). "Survey Article: Recipes for Public Spheres: Eight Institutional Design Choices and Their Consequences", *The Journal of Political Philosophy*, 11(3):338–367.

Gastil, J., Knobloch, K., and Kelly, M. (2012). "Evaluating Deliberative Public Events and Projects", in Nabatchi, T., Gastil, J., and Weiksner, G.M. (Eds.), *Democracy in Motion: Evaluating the Practice and Impact of Deliberative Civic Engagement* (pp. 205–230). Oxford: Oxford University Press.

Gaventa, J. (2006)." Finding the Spaces for Change: A Power Analysis", *IDS Bulletin,* 37(6).

Goodin, R. (2005). "Sequencing Deliberative Moments". *Acta Politica* 40(2):182–196.

Goodin, R., Rein, M., and Moran, M. (2006). "The Public and Its Policies", in Goodin, R., Rein, M., and Moran, M. (Eds.), *The Oxford Handbook of Public Policy*. Oxford, UK: Oxford University Press.

Grönlund, K., Setälä, M., and Herne, K. (2010). "Deliberation and Civic Virtue: Lessons from a Citizen Deliberation Experiment", *European Political Science Review,* 2(1): 95–117.

Halvorsen, K.E. (2003). "Assessing the Effects of Public Participation", *Public Administration Review,* 63(5):535–543.

Heller, P., and Rao, V. (2015). "Deliberation and Development", in Heller, P. and Rao, V. (Eds.), *Deliberation and Development*. World Bank.

Howard, C. (2005). "The Policy Cycle: A Model of Post-Machiavellian Policy Making?", *Australian Journal of Public Administration*, 64(3): 3–13.

Kaufman, A. (1968). "Participatory Democracy: Ten Years Later", La Table Ronde, no. 251–252, reprinted in William E. Connolly (Ed.) (1971). *The Bias of Pluralism*. New York: Atherton Press.

Kelly, T., and Firestone, R. (2016). "How Tech Hubs Are Helping to Drive Economic Growth in Africa", Background paper for 2016 Digital Dividends Report, World Bank.

Klein, M., (2017). "Towards Crowd-Scale Deliberation". Available at SSRN: https://ssrn.com/abstract=2987624 or http://dx.doi.org/10.2139/ssrn.2987624

Lasswell, H.D. (1956). *The Decision Process: Seven Categories of Functional Analysis*, Bureau of Governmental Research, College of Business and Public Administration, University of Maryland.

Luskin, R.C., and Fishkin, J.S. (2002). "Deliberation and 'Better Citizens'", in workshops of the European Consortium for Political Research, Turin, 22–27 March.

Mansbridge, J. (1980). *Beyond Adversary Democracy.* Chicago: The University of Chicago Press.

Mansbridge, J. (1999), "On the Idea That Participation Makes Better Citizens", in Elkin, Stephen L. and Soltan, Karol E. (Eds.), *Citizen Competence and Democratic Institutions* (pp. 291–325). University Park, PA: The Pennsylvania State University Press.

Mansbridge, J. (2003). "Practice-Thought-Practice", in Fung, A. and Wright, E.O. (Eds.), *Deepening Democracy.* Institutional Innovations in Empowered Participatory Governance, London: Verso.

Mansbridge, J. (2015). "A Minimalist Definition of Deliberation", in Heller, P. and Rao, V. (Eds.), *Deliberation and Development.* World Bank.

Mansbridge, J., (2020). "A Citizen-Centered Theory", *Journal of Deliberative Democracy* 16(2):15–24. doi: https://doi.org/10.16997/jdd.411

Mansuri, G., and Rao, V. (2013a). *Localizing Development: Does Participation Work?* Washington, DC: World Bank.

Mansuri, G., and Rao, V. (2013b). "Can Participation be Induced? Some Evidence from Developing Countries", *Critical Review of International Social and Political Philosophy*, 16(2):284–304.

Meier, K. (2009). "Policy Theory, Policy Theory Everywhere: Ravings of a Deranged Policy Scholar", *The Policy Studies Journal*, 37(1):5–11.

Morell, M. F., and Hidalgo, E.S. (2020). "Co-Creation Applied to Public Policy: A Case Study on Collaborative Policies for the Platform Economy in the City of Barcelona", *CoDesign.*

Nabatchi, T. (2012). "An Introduction to Deliberative Civic Engagement", in: Nabatchi, T., and Gastil, Weiksner, G.M. (Eds.), *Democracy in Motion: Evaluating the Practice and Impact of Deliberative Civic Engagement* (pp. 3–17). Oxford: Oxford University Press.

Nijstad, B.A. and Stroebe, W. (2006). "How the Group Affects the Mind: A Cognitive Model of Idea Generation in Groups", 10(3):186–213.

Oldenburg, R. (1999). *The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community* (3rd edn.). Da Capo Press.

O'Toole, L. (1986). "Policy Recommendations for Multi-actor Implementation: An Assessment of the Field". *Journal of Public Policy* 6(2): 181–210.

Owen, H. (2008). *Open Space Technology: A User's Guide* (3rd edn.). Berrett-Koehler Publishers.

Pincock. H. (2012). "Does Deliberation Make Better Citizens?", in Tina Nabatchi et al. (Eds.), *Democracy in Motion: Evaluating the Practice and Impact of Deliberative Civic Engagement.*

Porta, D.D. (2020). *How Social Movements Can Save Democracy: Democratic Innovations from Below.* Cambridge: Polity Press.

Rao, V. (2019). "Commentary: Process-Policy & Outcome-Policy: Rethinking How to Address Poverty & Inequality", *Dædalus*, Summer 2019.

Resnick, D., Haggblade, S., Babu, S., Hendriks, S.L., and Mather, D. (2018). "The Kaleidoscope Model of Policy Change: Applications to Food Security Policy in Zambia". *World Development* 109:101–120.

Sabatier, P. (2007). "The Need for Better Theories", in Sabatier, P. (Ed.), *Theories of the Policy Process*, Westview Press, pp. 3–17.

Smith, G., and May, D. (1993). "The Artificial Debate between Rationalist and Incrementalist Models of Decision Making", in Hil, M.l (Ed.), *The Policy Process: A Reader*, Harvester Wheatsheaf.

Spada, P. (2013). "Who Moderates the Moderators? The Effect of Non-neutral Moderators in Deliberative Decision Making", *Journal of Public Deliberation.*

Spada, P., and Ryan, M. (2017). "The Failure to Examine Failures in Democratic Innovation", *Political Science & Politics,* 50: 772–778.

Strandberg, K., and Grönlund, K. (2012). "Online Deliberation and ITs Outcome – Evidence from the Virtual Polity Experiment", *Journal of Information Technology & Politics,* 9 (2):167–184.

Warren, M.E. (1992). "Democratic Theory and Self-Transformation", *American Political Science Review,* 86(1): 8–23.

Webb, P. (2013). "Who Is Willing to Participate? Dissatisfied Democrats, Stealth Democrats and Populists in the United Kingdom", *European Journal of Political Research*, 52(6):747–772.

Eliciting citizen knowledge for collective intelligence as a public good

Introduction

Carina Antonia Hallin

The idea that knowledge is a public good for citizens is not new. The third president of the United States, Thomas Jefferson, described knowledge in the following way: "He who receives an idea from me, receives an instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me" (Jefferson, 1813: 13:333–35). In doing so, Jefferson coined the modern concept of a public good. That is, a public good has two critical properties: non-rivalrous consumption—the consumption of one individual does not detract from that of another, and non-excludability—it is difficult, if not impossible, to exclude an individual from enjoying the good (Stiglitz, 1999).

Today, it is widely expected that knowledge is not only a public good but a global public good. Knowledge is central and needed for the successful development of societies and the planet, such as through the funding of scientific knowledge published as open access and sharing of insights on the internet. It is commonly expected that both local and international communities, through institutions, have a collective responsibility for the creation and dissemination of a global public good: the development of knowledge for the progress of societies and humanity at large.

In contrast to such perspectives, what blunts the free flow of knowledge is the fundamental characteristics of knowledge—the tacit knowledge component that cannot be easily codified. This tacitness of knowledge refers to that "we know more than we can tell' (Polanyi 1958). The tacit knowledge component is described in chapter 2 of this handbook. Tacit knowledge has traditionally created natural excludability for society and its effective exploitation of its creator. For example, Polanyi (1969:144) states: "While tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence all knowledge is tacit or rooted in tacit knowledge. A wholly explicit knowledge is unthinkable."

This perspective is also implicit in Marshall's (1920) localized knowledge-spillover hypothesis on agglomeration (geographical concentration) economies, in which clusters of organizations benefit from spillovers of localized developed (tacit) knowledge that makes

them beneficial to each other, but not necessarily to the wider society. Another example is company patents that provide exclusive rights to the inventor to enjoy the fruits of the innovative activity.

A legitimate question that the constituents of a nation-state can ask is whether their public investment in knowledge development and innovation benefits the overall local and global economy, and how it can exploit tacitly and locally held knowledge to benefit a nation at large. While individual tacit knowledge is, by definition, exclusive and often unconscious to the holder, it is difficult to aggregate for decision-making. The aggregation of tacit knowledge into collective intelligence requires socialization of people and/or combination of people's insights, thus harnessing collective intelligence (i.e., in solving tasks, being creative, being analytical, or being predictive).

At the political level, collective intelligence can arguably be viewed as a public good when citizens contribute with their tacit insights, and the outcome of such insights is shared with the wider society, assuming that the majority of citizens within a given geographic area have access to such insights. By definition, collective intelligence is "the wisdom, talent, information, and knowledge that can be used/shared for intellectual cooperation in order to solve problems, create, innovate, invent, and predict" (Aitamurto, 2016; Kim, Altmann & Hwang, 2010; Hallin et al., 2019). Moreover, the growing use of online communities coupled with artificial intelligence (AI) technologies for work purposes provides additional knowledge dimensions when combining tacit knowledge, explicit knowledge in the form of big data and AI to read across knowledge patterns, thereby resulting in an expansion of the conceptual scope and practical utility of collective intelligence for society, as the cases in this chapter illustrate.

The purpose of this introduction to Part 3 of the handbook is to review tacit knowledge to inform collective intelligence as a public good and provide the reader with anecdotal cases presented in this Part 3 of the handbook. To explain the sense in which tacit knowledge can be harnessed for the public good through its aggregation into a collective intelligence, in particular, we shall emphasize the role of citizen tacit knowledge for societal development.

Citizen tacit knowledge

The tacit component of knowledge encompasses both cognitive and technical elements. While technical elements are related to skills and learned know-how of specific actions, cognitive elements refer to paradigms, schemes, and beliefs that provide individuals with the ability to understand the environment (Baumard, 1999). Tacit knowledge may also refer to tacit knowledge below our conscious awareness that is not directly taught but learned as a result of domain-specific knowledge (Wagner and Sternberg, 1985). In societies, a major part of citizens' domain-specific tacit knowledge is developed due to their everyday experiences and interactions in their local environments, such as with family members, friends, neighbors, and through activities with their networks and other external interest groups. During social interactions with these groups, citizens form impressions of how each of such groups perceives various situations and events, and thereby form judgments. As a consequence, they become skillful and knowledgeable agents about various political and everyday issues of relevance to policymaking (cf., Polanyi, 1958).

Socialization among citizens enables an organization, a community, or a society to convert tacit knowledge through interaction between individuals (Nonaka, 1994; Nonaka et al., 2000). The questioning and reconstruction of existing perspectives, interpretation frameworks, or decision premises lead to the creation of new knowledge (Nonaka, 1994). In line with Nonaka (1994) using the context of organizations, societies continuously create

new knowledge by reconstructing existing perspectives, frameworks, or premises on a day-to-day basis. For example, the recent global pandemic has demonstrated how organizations have learned to work through more hybrid forms of collaboration that are likely to have changed the nature of work for good. The externalization activities of tacit knowledge can happen through collective intelligence technologies (i.e., for task solutions, innovation, analysis, creativity, and predictions) converting tacit knowledge into explicit knowledge forms.

For policymakers and decision-makers, it is relevant to understand how geography plays an important role in tacit knowledge creation. It is argued that there are five ways in which geography impinges on tacit knowledge formation (Howells, 1996, p. 873). First, the individual citizen's knowledge is dependent on geographical influence by its cognitive, social, cultural, and economic circumstances that are formed through its geographical and local environment.. Second, associated with this, the development of an individual's knowledge-is influenced by human interaction, again shaped by place and constrained by distance. Third, the ongoing development of an individual's knowledge, in turn, requires externally acquired information, which can be constrained by distance or acquisition barriers. Fourth, although an individual's tacit knowledge-base depends on externally acquired information, tacit knowledge is also taken up through learning, which is by its nature situated within a geographical, social, and economic context. Much of this learning is done jointly with others—not only in educational establishments but also through the ongoing process of work which is for the most part site- and location-specific schools. Lastly, all the information taken up by an individual has to be filtered and interpreted. Even highly "digestible" codified knowledge by the individual requires interpretation using tacit know-how, based on experience and shaped by geography.

Converting individual tacit knowledge into collective intelligence for public policy

There is an overall scarcity literature which examines the conversion of tacit knowledge into collective intelligence, especially in respect to the public sector. The majority of knowledge studies focus on the formation of tacit knowledge and its benefit for strategic decision making in the private sector (e.g., Nonaka and Takeuchi, 1995). For example, Massaro et al. (2015) argue for the development of a distinct research agenda that takes full account of the specifics of knowledge management in the public sector context. Social, economic, and political factors all help shape the institutional norms of the public sector (Pettigrew, 2005), and the management of public services occurs in a complex policy and political environment, including direct political oversight and with high levels of scrutiny and accountability (Hartley and Skelcher, 2008). Unlike the private sector with its clear profit motive, the overarching purpose of the public sector is to add value through service delivery that maximizes resource allocation, and the drivers for change in the public sector come from government policy rather than competitive pressures. However, decades of reform have seen governments push fundamental changes in the leadership, management, and organization of public services in an attempt to achieve gains from the adoption of a knowledge, entrepreneurial and "customer-focused" approaches (Pettigrew, 2005). This has placed greater emphasis on the need for public sector professionals to share information and knowledge to foster learning and innovation and to meet stakeholder expectations. Knowledge sharing, therefore, has been seen as crucial to public sector improvement, with wide recognition that good ideas and practices should not be limited to one organization or service, but should be transferred across services, and between levels within organizations (Hartley, 2008).

The growth of collective intelligence citizen platforms such as CitizenLab, Decidim, and Wazoku, are examples of this progress.

To understand citizen tacit knowledge as a source for public policy, Nonaka's (1994) constructs of socialization and externalization qualify the processes of collective intelligence through which policymakers and decision-makers mobilize knowledge to change policies and practices. As tacit knowledge emerges as an ever more important feature of organizations and societies, the major contribution of this chapter is the new understanding of the role tacit knowledge plays in the design and implementation of development policies. In particular, the case studies of this chapter highlight the circumstances under which policy actors draw upon evaluation-based organizational knowledge when taking action; how this knowledge is used for thinking; and whether drawing upon evaluations "improves" the quality of decisions and policies.

Storytelling is seen as the oldest technique of knowledge transfer and is regarded as the most effective medium to pass across a message to someone since we tend to memorize stories better than facts and can easily link them to our own personal experiences (Davenport and Prusak, 1998). Individual memory is mainly sporadic (Schank, 1990), and this is where stories can trigger memories and the articulation of tacit knowledge (Stewart, 1997). The Institute for Knowledge Management (1999) refers to a story as "a tiny fuse that detonates tacit understanding in the mind of the listener." Stories have structure building on a beginning, middle, and an end (Escalas, 1998), exhibiting a plot line and a protagonist (Thompson, 1997; Woodside et al., 2008). Nonaka (1994) described the need to create environments in which individuals interact, exchange their knowledge and stories to elicit tacit knowledge for new knowledge to grow, such as that represented in Nonaka and Konno's (1998) concept of *ba*. In such environments, stories can trigger the transformation of tacit knowledge into explicit knowledge.

There is a growing focus on the role of online platforms in tacit knowledge sharing in the public sector, which aims to deepen the understanding of the domain, taking into consideration work from associated areas, such as extensive work on tacit knowledge sharing techniques with focus on communities of practice (Lave and Wenger, 1991). These approaches are embedded in the theory of *Ba* (Nonaka and Konno, 1998), which identifies shared "space" (physical, virtual, or mental) as a foundation for knowledge creation, and has clear relevance when considering the transmission of tacit knowledge into collective intelligence.

The emergence of new affordances for knowledge sharing, being the quality or property that defines the possible uses of knowledge or makes clear how knowledge can or should be harnessed on social media and collective intelligence platforms, brings an additional imperative to revisit foundational tacit knowledge concepts, such as Ba. The knowledge that resides within a shared space "Ba" is intangible, and the knowledge that is separated from Ba is explicit information that is codified and communicated in intangible forms. Nonaka and Konno (1998) originally defined four types of Ba.

First, there is an *Originating Ba* which is an "existential" place in which individuals can share experiences, emotions, feelings, and ideas face-to-face through a process of socialization. As barriers between the individual and others are diminished over time, organizational culture is implicitly communicated. Communities of practice, such as the yearly collective intelligence conference series organized by CI research environments and the Association for Computer Machinery and its collective intelligence conferences as an emergent discipline, the yearly democracy conferences in Almedalen, or the Brussels Public Innovation Week, are examples in which such Ba can take place. This is a type of "primary" Ba, where the initiation of the knowledge creation process primarily takes place physically through direct encounters between people.

Another type of shared space is *Dialoguing/Interacting Ba* which is more consciously constructed than Originating Ba, through the assembly of participants, for example, on collective intelligence platforms. This is a space in which knowledge, skills, and mental models are shared among peers through an externalization process and where tacit knowledge is converted into explicit forms such as when citizens make statements, arguments, and suggest ideas on the a citizen platform (e.g. the Citizen Lab platform). That is, typically platforms for tacit knowledge sharing in online environments for public sector professionals but could also be for *Ba* in the private sector, and in which individuals consider their knowledge, skills, and mental models alongside that of others.

Third, there is *Cyber Ba (also known as "Systemizing Ba")* as a virtual space in which explicit knowledge is shared and combined in systematic ways. Technologies such as online networks, groupware, and databases provide collaborative environments suitable for the facilitation of this information and knowledge sharing. Wikipedia is an example of *Cyber Ba*.

The fourth type, *Exercising Ba,* is a space where new knowledge is absorbed through an internalization process. During this, explicit knowledge is converted into tacit knowledge. Unlike Dialoguing/Interacting Ba (which emphasizes knowledge sharing through thought), Exercising Ba emphasizes action and learning-by-doing. Here, individuals use the explicit knowledge made available to them to translate knowledge into action. An example of this is seminars hosted by public institutions to train citizens in certain behavior, such as becoming collectively intelligent citizens through dialogic processes.

However, the degree of tacitness among citizens also varies (Howells, 1996). Within the range of tacit knowledge itself, the less explicit and codified tacit know-how is, the more difficult it is for organizations to assimilate and source it (Cohen and Levinthal, 1990, p. 135; Nelson and Winter, 1982). For policymakers and decision-makers, it is therefore relevant to first assess if they should harness tacit knowledge through "learning by doing" (Arrow, 1962), "learning by using" (Rosenberg, 1982), and "learning to learn" for decision-making (Ellis, 1965; Estes, 1970; Argyris and Schon, 1978; Stigilitz, 1987)—these approaches are critical tacit knowledge acquisitions which are means to deal with some of the complexity in citizen tacit knowledge for policymaking.

Tacit knowledge for collective intelligence as a public good

There is a considerable number of studies that have analyzed the presence and significance of localized knowledge spillovers to the wider society (for an overview see Saviotti, 1998). The process by which knowledge development can spill over to other citizens has been largely assumed in traditional economic literature as an almost costless and frictionless process. Knowledge is treated as a public good because it is easily transferred between people and organizations. Yet, as knowledge can easily spread, it is difficult for its creator to prevent it from being used by other agents who do not pay in exchange for it (Saviotti, 1998).

Knowledge becomes generally available with limited costs through various means including YouTube presentations, publications, and informal knowledge sharing. Such non-excludability of knowledge sharing is all associated with knowledge spillover effects. For example, governments and organizations expect that academia develops valuable knowledge that can spill over for the advancement of organizations and society beyond academic publications, e.g., it could be as in research dissemination to the public or in the development of public innovation initiatives.

The majority of spillover studies of knowledge as a public good have primarily been examined looking at the relations between patent activity, industry, labor mobility, and

university R&D levels and innovation rates (see, e.g., Jaffe, 1989; Acs et al., 1992; Jaffe et al., 1993). There are several ways in which these knowledge spillover studies can be grouped. Perhaps the most direct way is to follow the idea or innovation from its very inception and then describe the whole process in which such knowledge has transferred into a spillover process and become a public good. Early studies have also examined knowledge codification activities and studied the spillover effects to other organizations analyzed especially through patent activity and patent citations (Jaffe; 1989, Jaffe et al., 1993). These spillover studies have highlighted that the spillover process remains mainly localized and that this holds, at least initially, for codified knowledge.

Few studies have covered the spillover process of harnessing citizen tacit knowledge for collective intelligence as a public good—that being both the transfer and sharing of tacit knowledge. In fact, until recently tacit knowledge has merely been viewed as a "black box" in terms of our conceptual understanding of the concept (Howells, 2002). Yet, Hallin et al. (2017; 2019) have validated on how judgmental predictions at the collective level is a means to harness tacit knowledge both in organizations and society to explain fluctuations in economic measures. .

Such studies have indicated that to harness tacit knowledge for collective intelligence as public good, such as citizen predictions of key economic measures (i.e. savings, debt, loans and unemployment), it would require that: (i) people are motivated to make predictions and insights that could be shared to form a collectiveness, and (ii) it should be possible to aggregate it to a collectiveness so it can translate into meaning for policymaking and other citizens as a public good.

Recently, scholars have introduced *Collective Intelligence for the Common Good* (CI4CG) as a distinctive type of public good and a theory within collective intelligence (Schuler, De Liddo, Smith et al. 2018)). The idea is that CI4CG emerges in civic contexts and is aimed at generating societal good, improving civic engagement, enabling democratic decision-making and deliberation, and promoting solutions to complex challenges through digital networks and collective intelligence platforms. It is recognized that collective intelligence technology acts by mediating collective intelligence for the common good by helping to produce different viewpoints. Discussions and dialogue are part of the learning process which is socially constructed (De Liddo et al., 2012). Such citizen conversations can bring to light contextual barriers, personal values, and other external issues that again can create spillover effects for not only the local area but also other local areas or situations that can learn from such insights. Some of the collective intelligence systems that fall under this focus include online deliberation, sensemaking, storytelling, argumentation and discussion-mapping, community ideation and idea management systems, collective decision-making, group memory, participatory sensory networks, early warning systems such as group predictions, collective awareness, and crowdsourcing.

Conscious engagement is a key requirement for CI4CG because the pursuit of the common good requires an active and aware commitment to collaboration and action. It is an emergent property, the process that allows society, or a collective of people to evolve towards higher forms of complexity and harmony (articulating insights, knowledge, and aspirations) (Schuler et al. 2018).

Learnings on sharing of tacit knowledge for collective intelligence as a public good

The following four case chapters in this section present some interesting insights on the challenges and opportunities on how to harness tacit knowledge into collective intelligence as a public good.

The Slagelse Municipality case is an example of how collective intelligence can be perceived as a public good. The approach to citizen-sourcing and public participation used in the Slagelse project entails a transparent and participatory approach to crowdsourcing across all citizens' groups, the development of marketing campaigns to foster crowd motivation for contributing to Slagelse becoming the healthiest municipality in Denmark. It draws both on the civil servants' experience and the research team's direct observations through the research process, as well as a comparative analysis of data from 15 citizen-sourcing and public-participation platforms in Europe and the US. Frequent discussions with Slagelse Municipality, integrating academic expertise and local input, helped ensure that the project tailored crowdsourcing methods for the concrete local context to deal with health issues of the municipality. Using a combination of CI and AI/NLP (natural language processing) in this project the project aims to reinforces individual tacit knowledge to a group pattern across the data as NLP and its underlying algorithms help to cluster data across the insights. AI/NLP can thereby help to convert and scale tacit insights into collective intelligence for a common good by distributing such insights back to citizens in the open platform.

The second case describes how an entire geographical region searched to find solutions for structural changes in the economy. It provides some indications about the challenges related to organizing and implementing the governance of a territory harnessing tacit knowledge and collective intelligence across a region as a public good. Wallonia had earlier witnessed a profound change in the economy going from material capital to an accumulation of intangible capital and thus acknowledged the need to harness collective intelligence for understanding growing complexities in the economy. It needed new and more sophisticated methods to deal with new types of innovation to grow the economy of the region. The scholars of the project identified relevant stakeholders across the whole region to ensure representativeness and sharing of insights across a region, such as students from technical and non-technical schools, business leaders, social partners, parents, researchers and journalists, and other relevant stakeholders. The learnings from the case on harnessing tacit knowledge and developing a project for a common good are that it requires that the sponsors of a project are engaged to make the project meet their expectations so that it can become successful. The less involvement of sponsors hindered the free flow of the project. Moreover, the study thereby raises a fundamental question on how to make politicians aware of the importance of a slower, more open, yet more innovative and more collective way of resolving political issues.

The third case chapter "Turning problem makers into creative problem solvers" can be considered a success story, and resembles originating *ba* (as described in the theory section above). It presents how tacit insights harnessed from youngsters in a series of regional youth summits (through participatory activities), facilitated by the New York State Division for Youth (DFY), and the Association of New York State Youth Bureaus could help turn troubled kids into engaged problem-solvers for the betterment of themselves and their communities. These Youth Summits captured the attention of the former New York Governor, George Pataki, and invited the Regional Youth Summit to design a three-day statewide conference for Youth held in Albany in 1996. More than 1,500 New Yorkers had participated in the Youth Summit series, including young people, parents, business leaders, educators, juvenile justice professionals, youth workers, journalists, legislators, and bureaucrats. The Regional Youth Summit gained over 600 participants and was organized into 66 teams of youth and adults, each representing a diverse cross-section of stakeholders. More than half the number of invited participants were young people. The summits highlighted the benefits of highly inclusive bottom-up processes and how sharing of tacit knowledge can create positive

spillover effects and become common good across a US state. There was a strong consensus among those who participated in the design, development, and implementation of this collective intelligence project that it produced meaningful and lasting change across several state and local agencies that serve young people and their families.

The fourth case chapter presents how the nation of Morocco focused on storytelling through listening sessions, as described in *Originating Ba,* as a method to harness tacit knowledge from citizens. In 2017, the king of Morocco declared that its current model of development for the country had to be improved. In an address of August 2019, King Mohammed VI announced that the *Commission spéciale pour le Modèle de Développement* (CSMD), counting 35 members, would be in charge of making recommendations as to the new direction of the country. The commission's president, Benmoussa, announced that the mission of the commission was to conduct an "objective and precise" diagnostic of the nation's economic, political, and social development, and propose the contours of a new model "with human development at the center." This new model was not to be in the form of a judicial decree or economic simulations. The CSMD would be responsible for conceiving a "shared vision" of the nation's development for the coming 15 years, with recommendations for new policies and reforms to diversify the "sources and beneficiaries of national wealth" across "all territories and social categories." In the 14 months of its mandate, the CSMD received over 10,000 written pages of contributions from 6,600 individuals and 165 organizations, and through organized consultation activities, both in-person and virtually, as represented in the *Dialoguing/Interacting Ba,* commission members interacted directly with 9,700 citizens to harness tacit knowledge on the state of the nation and ideas for improvement. The guided storytelling format through *séances d'écoute* succeeded by drawing on a rich cultural context of community storytelling from citizens, whereas the town-hall format of the *rencontres citoyennes* tapped into more "protocol-heavy" habits and expectations to the future of Morocco as a public knowledge good.

In the coming chapters we present the four cases on how to harness tacit knowledge for collective intelligence as a public good.

References

Acs, Z., Audretsh, D.B., and Feldman, M.P. (1992). Real effects of academic research: Com- ment. *American Economic Review*, 82, 363–367.

Aitamurto, T. (2016). Collective intelligence in law reforms: When the logic of the crowds and the logic of policymaking collide. In *2016 49th Hawaii International Conference on System Sciences (HICSS)* (pp. 2780–2789). IEEE.

Argyris, C. and Schon, D. A. (1978). *Organisational Learning: A Theory of Action Perspective*. New York: Addison-Wesley.

Arrow, K. (1962). The economic implications of learning by doing. *Review of Economic Studies*, 29, 155–173.

Baumard, P. (1999). *Tacit Knowledge in Organizations*. London: Sage.

Cohen, W. M. and Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128–152.

Davenport, T. H. and Prusak, L. (1998). *Working Knowledge: How Organizations Manage What They Know.* Boston, MA: Harvard Business School Press.

De Liddo, A., Sándor, Á., and Shum, S. B. (2012). Contested collective intelligence: Rationale, technologies, and a human–machine annotation study. *Comput Support Coop Work,* 21(4–5), 417–448.

Ellis, H. C. (1965). Transfer of learning. In Macmillan Estes, W. K. (1970) (Eds.), *Learning Theory and Mental Development*. New York: Academic Press.

Escalas, J. E. (1998). "Advertising narratives: What are they and how do they work?" In B. Stern (Ed.), *Representing Consumers: Voices, Views, and Visions* (pp. 267–289). New York: Routledge Press.

Estes, W. K. (1970). *Learning Theory and Mental Development*. New York: Academic Press.

Hallin, C. A., Andersen, T. J., and Tveterås, S. (2017). Harnessing the frontline sensing of capabilities for decision support. Decision Support Systems. 10.1016/j.dss.2017.03.009.

Hallin, C. A., Jensen, J. J. U., Koren, O., Perel, N., and Tveteraas, S. L. (2019). Testing smart crowds for the economy, in ACM Collective Intelligence 2019 paper series.

Hartley, J. (2008). The innovation landscape for public service organizations. In Hartley, J., Skelcher, C., Donaldson, C. and Wallace, M. (Eds.), *Managing to Improve Public Services* (pp. 197–216). Cambridge: Cambridge University Press.

Hartley, J. and Skelcher, C. (2008). The agenda for public service improvement. In Hartley, J., Skelcher, C., Donaldson, C. and Wallace, M. (Eds.), *Managing to Improve Public Services* (pp. 1–24). Cambridge: Cambridge University Press.

Howells, J. (1996) Tacit knowledge, innovation and technology transfer. *Technology Analysis & Strategic Management*, 8, 91–106.

Howells, J. (2002). Knowledge, innovation and location. In Bryson, J. R., Daniels, P. W., Henry N. and Pollard, J. (Eds.), *Knowledge, Space, Economy* (pp. 50–62). London: Routledge.

Jaffe, A. B. (1989). The real effects of academic research. *American Economic Review*, 79, 957–970.

Jaffe, A. B., Trajtenberg, M., and Henderson, R. (1993). Geographic localization and knowledge spillovers as evidenced by patent citations. *Quarterly Journal of Economics*, 108, 577–598.

Jefferson, T. (1813). T*he Writings of Thomas Jefferson*. Edited by Andrew A. Lipscomb and Albert Ellery Bergh. 20 vols. Washington: Thomas Jefferson Memorial Association, 1905.

Kim, K., Altmann, J., and Hwang, J. (2010). Measuring and analyzing the openness of the Web2. 0 service network for improving the innovation capacity of the Web2. 0 system through collective intelligence. In *On Collective Intelligence* (pp. 93–105). Springer, Berlin, Heidelberg.

Lave, J. and Wenger, E. (1991). *Situated Learning. Legitimate Peripheral Participation*. Cambridge: University of Cambridge Press.

Marshall, A. (1920). *Principles of Economics*. MacMillan.

Massaro, M., Dumay, J., and Garlatti, A. (2015). Public sector knowledge management: A structured literature review. *Journal of Knowledge Management*, 19 (3), 530–558. https://doi.org/10.1108/JKM-11-2014-0466

Nelson, R. R., and Winter, S. G. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science,* 5(1), 14–37.

Nonaka, I. and Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review,* 40(3), pp. 40–54.

Nonaka, I., Toyama, R., and Konno, N. (2000). SECI, Ba and leadership: A unified model of dynamic knowledge creation. *Long Range Planning: International Journal of Strategic Management,* 33(1), 5–34. https://doi.org/10.1016/S0024–6301(99)00115-6

Pettigrew, A. (2005). The character and significance of management research on the public services. *Academy of Management Journal,* 48, 973–977.

Polanyi, M. (1958). *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge.

Polanyi, M. (1962). Tacit knowing. *Review of Modern Physics*, 34, 601–616.

Polanyi, M. (1969). The logic of tacit inference. In Grene M. (Ed.), *Knowing and Being*. Chicago: The University of Chicago Press.

Rosenberg, N. (1982). *Inside the Black Box: Technology and Economics*. Cambridge: Cambridge University Press.

Samuelson, P. (1954). The pure theory of public expenditure. *Review of Economics and Statistics*, 36, 387–389.

Saviotti, P. P. (1998). On the dynamics of appropriability of tacit and of codified knowledge. *Research Policy*, 26, 843–856.

Schank, R. C. (1990). *Tell Me a Story: A New Look at Real and Artificial Memory*. Cambridge, UK: Cambridge University Press.

Schuler, D., De Liddo, A., Smith, J., and De Cindio, F. (2018). Collective intelligence for the common good: Cultivating the seeds for an intentional collaborative enterprise. *AI & Soc* 33, 1–13. https://doi.org/10.1007/s00146–017-0776-6

Stewart, T.A. (1997). *Intellectual Capital*. New York, NY: Currency/ Doubleday.

Stiglitz, J. E. (1987). Learning to learn, localised learning and technological progress. In Dasputa, P. and Stoneman, P. (Eds.), *Economic Policy and Technological Performance* (pp. 125–153). Cambridge: Cambridge University Press.

Stiglitz, J. E. (1999). Knowledge as a global public good. In Kaul, I., Grunberg, I., and Stern, M. A. (Eds.), *Global Public Goods: International Cooperation in the 21st Century* (pp. 308–325). New York: Oxford University Press.

Thompson, C. (1997). Interpreting consumers: A hermeneutical framework for deriving marketing insights from the texts of consumers' consumption stories. *Journal of Marketing Research*, 34(4), 438–455.

Wagner, R., and Sternberg, R. (1985). Practical Intelligence in real-world pursuits: The role of tacit knowledge. *Journal of Personality and Social Psychology*, 49(2), 436–458.

Woodside, A., Sood, S., and Miller, K. E. (2008). When consumers and brands talk: Storytelling theory and research in psychology and marketing. *Psychology and Marketing*, 25(2), 97–145.

15

REINVENTING LOCAL GOVERNMENT THROUGH COLLECTIVE INTELLIGENCE AND ARTIFICIAL INTELLIGENCE

How a Danish municipality harnesses citizen insights

Carina Antonia Hallin and Naima Lipka

The story

Slagelse municipality in Denmark has set out to reinvent how the government carries out policymaking by using collective intelligence (CI) and artificial intelligence (AI) to enhance the transparency, accountability, and inclusiveness of the municipality.

Located along the coastline on the west of Zealand, the municipality lies at the head of the Great Belt Bridge, one of the largest construction projects in Danish history. The municipality is home to around 79,000 citizens. Slagelse faces similar challenges to the average municipality in Denmark – a tightened budget to fight mounting issues such as mental health well-being and remnant bureaucratic structures, residues from the consolidation efforts in 2007, in which Denmark merged smaller municipalities together, reducing the number of municipalities from 271 to 98.

The aim of harnessing citizen knowledge in the municipality was initially brought to life when the Mayor of Slagelse municipality picked up Frederic Laloux's (2014) book *Reinventing Organizations*. Laloux lays out approaches to creating new participative and empowering organizations through the breakup of the stiff layers of bureaucracy and hierarchy. The book inspired the idea to include the knowledge of citizens in policymaking processes to reinforce citizen participation in government processes:

> We need to change the way we interact with our citizens. So right now we're chan-
> ging the whole organization and the way we do municipality in Denmark.
> *(John Dyrby Paulsen, Mayor of Slagelse municipality)*

The typical steps carried out in the policy cycle of a Danish municipality are agenda setting, policy formulation, decision-making, implementation, and evaluation. These are each normally taken within the confinements of the town hall. A selective number of citizens are invited to review and provide feedback on pre-formulated plans. Although citizens often contribute valuable knowledge and local insights into the policy process, the number of citizens brought into the early stages of the policy process is critical if the municipality aims to embark on the collective intelligence from citizens throughout the policy process.

The local government of Slagelse, however, stands out in the way it is trying to find solutions to these problems. By changing the interaction between government and citizens and involving citizens earlier in the policymaking process, their expertise can shape the formulation of policy and lead to better policy outcomes (cf. Aitamurto and Chen, 2017). This process is focused on a decentralized and bottom-up approach that aims to build a knowledge bridge between citizens and the municipality, bringing them closer together. As part of a broader restructuring process within the municipality that flattened hierarchies and simplified its bureaucracy, the municipality established a research project together with the Collective Intelligence Research Group at the IT University of Copenhagen. The four-year research project on "citizen-sourcing" aims to investigate opportunities and challenges of using CI and AI in policymaking, mainly related to solving the municipality health issues. Statistically, the municipality has a low health standard with a huge concentration of citizens smoking and less active in their daily lives. The project seeks to explore the benefits and limitations of combining CI and AI for engaging citizens in the political decision-making process to address health issues and other democratic challenges.

Through involving citizens, the municipality has access to a much more diverse knowledge base than what is possible through a sole consultation of experts. As an example, for the development of the local harbor, in this case it was beneficial to involve experts, but also citizens, such as fishermen, local businesses, and homeowners, who might be able to bring in perspectives that would otherwise not be heard.

The project thus studies how citizen-sourcing can strengthen the policymaking process through the inclusion of local insights scaled by AI mechanisms. For this purpose the municipality contracted with CitizenLab in Brussels, a civic technology company that offers a citizen-sourcing platform integrating AI using natural language processing (NLP), machine learning and neural network software to identify patterns and sort citizens' insights on health issues. The platform enables the municipality to post some of their health challenges, such as "How can we become Denmark's healthiest municipality," and invite either the whole municipality or a targeted group of citizens, such as school young people, to contribute with their insights, vote on the best inputs and therefore filter the preferred ideas themselves. The expected implications of the study are to lay a foundation for an in-depth understanding and validation of the challenges and benefits of combining citizens' collective intelligence with AI/NLP over time to strengthen both local and national democratic processes. The study will run until 2023. The theoretical foundations of the study, and early reflections on the challenges from adaptation to testing to implementation, are presented in this chapter.

The science behind

In 1962, Michael Polanyi introduced the term "tacit knowledge" which he later circumscribed with the notion "we can know more than we can tell," which refers to ways of knowing which are not easily expressed in language, such as riding a bicycle (Polanyi, 1966, p. 4).

Nonaka and Takeuchi (1995) later distinguished between *explicit knowledge*, which contains identifiable facts and is independent of the individual, and *tacit knowledge*, which resides in individuals, and cannot be easily externalized, as it is shaped by cognitions, feelings, and emotions. The authors introduced this new way of viewing knowledge to Western organizations, which traditionally had viewed the organization as a machine for information possessing where knowledge is seen as something explicit. Japanese organizations, on the contrary, recognize that knowledge expressed in words and numbers only represents the tip of the proverbial iceberg. Rather, many Japanese organizations are built on the view that human knowledge is primarily tacit, hence highly personal and hard to operationalize, thereby enabling unique competitive advantages for organizations. An example is Toyota company that practices deep, experiential, and tacit knowledge into explicit form, for broader sharing within the organization. It is common for Toyota to encourage verbalization and writing down the knowledge that they embody through their employee experiences (Nonaka and Takeuchi, 1995).

As tacit knowledge is often anchored in years of experience within a specific knowledge domain, it is a fertile ground for intuitive processing and judgments (Bennett, 1998). In recent years, crowdsourcing has been noted as the preferred search tool for solutions resting on tacit knowledge (Certomá, Dyer, and Pocatilu, 2017), enabling cost-effective value creation through collecting relevant knowledge and deep insights for improving policy and citizens engagement in policymaking (Aitamurto and Chen, 2017).

Yet, the adoption of crowdsourcing at the project level does not necessarily lead to successful implementation at the organizational level (Lüttgens, Pollock, Antons, and Piller, 2014). Gammelgaard and Hallin (2018) show that barriers can include *ambiguity* (lack of common language and shared understanding leading to sparse common ground), *multiplicity* (diverse practices and approaches producing a lack of coordination and consistency), *complexity* (poor insight into one's own organization tied to a lack of innovation management and governance), *inconsistency* (lack of combined efforts and priorities leading to imprecise objectives and poor implementation), and *uncertainty* (crowdsourcing is associated with conditions of risk and ambiguity.

Do's and don'ts

Citizen-sourcing approaches should be tailored to the needs of the local government and citizens. This in turn compels government actors to ask themselves: what kind of inputs do we need most from our citizens, what tools can help us to harness the inputs and, maybe most importantly, are we ready for new ways of governing?

Crowdsourcing embraces a way of thinking about a problem through open means that brings online communities into the problem-solving process (Brabham, 2015). Peter Drucker (1993) pointed out that in order to make room for new knowledge, organizations should be prepared to abandon outdated knowledge. The journey from the intention to crowdsource, over adaptation of the crowdsourcing tool, to successful implementation therefore requires a shift in mindset and the internalization of new ways of thinking. Crowdsourcing methods are often adopted in a pragmatic, learning-by-doing way, which brings its own challenges. The effectiveness of implementation therefore depends largely on the degree to which organizations manage the learning challenges that arise in the transition from initial adoption to consistent implementation.

The approach to citizen-sourcing and public participation used in the Slagelse project entails a transparent and participatory approach to crowd design, crowd motivation, and

drawing both on the civil servants' experiences and the research team's direct experience, as well as a comparative analysis of data from citizen-sourcing and public-participation platforms in Europe and the USA. Frequent discussions with Slagelse municipality, integrating academic expertise and local input, helped ensure that the project tailored these crowdsourcing methods for the unique local context. The combination of CI and AI, NLP in this project, transcends and reinforces simple individual intelligence, but does so in different ways. While NLP and its underlying algorithms along with machine learning help to sort the data from citizen crowds, CI aims to delve into collective human knowledge to make better decisions (cf. Malone, 2018). AI can help scale CI, while CI can ensure that AI is ethical and "human" (Verhulst, 2018).

The Slagelse research project is still ongoing and outcomes will be finalized in early 2023. The results will be twofold. One part concentrates on the practical outcomes for Slagelse municipality and its citizens using crowdsourcing to harness collective intelligence from citizens. Slagelse municipality would like to create the best possible municipality to live in and believes that by using and sharing citizen knowledge and ideas the municipality could create the best conditions for everyone in the municipality. The crowdsourcing process is used to provide ongoing ideas for shaping local health and well-being policies and suggestions on how to improve local public health services in Slagelse municipality, such as how the municipality can become the healthiest municipality in Denmark. The combined CI and AI approach provides possibilities to reinvent local policymaking practices and renew the relationship between local government and citizens.

The other outcome is a theoretical and empirical and comparative study of fifteen open government platforms across Europe and abroad, and their integration of CI and AI for policymaking. It supports the current debates, represented in this handbook, on the opportunities and challenges of harnessing collective intelligence for policymaking. It will gain further insight into how policymakers use, integrate, and adapt to collective intelligence facilitated with AI in policymaking processes.

References

Aitamurto, T. and Chen, K., 2017. The value of crowdsourcing in public policymaking: Epistemic, democratic and economic value. *The Theory and Practice of Legislation*, 5(1), pp. 55–72.

Bennett, R., 1998. The importance of tacit knowledge in strategic deliberations and decisions. *Management Decision*, 9(3), pp. 589–597.

Brabham, D., 2015. *Crowdsourcing in the Public Sector.* Georgetown University Press.

Certomá, C., Dyer, M., and Pocatilu, L., 2017. *Citizen Empowerment and Innovation in the Data-Rich City.* London: Springer.

Drucker, P., 1993. *Post-capitalist Society.* Oxford: Butterworth Heinemann Ltd.

Gammelgaard, F. B. and Hallin, C. A., 2018. Changing the innovation game: Crowdsourcing in incumbent firms. Paper presented at Collective Intelligence 2018, Zurich, Switzerland, 07/07/2018–08/07/2018.

Laloux, F., 2014. *Reinventing Organizations* (1st ed.). S.L.: Nelson Parker.

Lüttgens, D., Pollok, P., Antons, D., and Piller, F., 2014. Wisdom of the crowd and capabilities of a few: Internal success factors of crowdsourcing innovation. *Zeitschrift für Betriebswirtschaft*, 84(3), pp. 339–374.

Malone, T., 2018. *Superminds.* Boston: Little and Brown.

Nonaka I. and Takeuchi, H., 1995. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation.* New York, NY: Oxford University Press.

Polanyi, M., 1962. *Personal Knowledge: Towards a Post-Critical Philosophy.* London: Routledge & Kegan Paul.

Polanyi, M., 1966. *The Tacit Dimension.* New York, NY: Dubleday & Co.

Verhulst, S., 2018. Where and when AI and CI meet: Exploring the intersection of artificial and collective intelligence towards the goal of innovating how we govern. *AI & Society*, 33, pp. 293–297.

16

SLOWING DOWN TO BETTER TACKLE A REGION'S CHALLENGES

Lessons from Co-Intelligence Wallonia

Pierre Portevin

If I had only one hour to save the world, I would spend fifty-five minutes defining the problem, and only five minutes finding the solution.

(attributed to Albert Einstein)

The story

Wallonia, the Southernmost of Belgium's three regions, faces a number of economic and social challenges relative to Flanders and Brussels. Having struggled to overcome the decline in traditional 19th and 20th century industries, it is today seeking new avenues for greater prosperity. It is in this context that, in 2012, the idea of a development program based on the principles of collective intelligence (CI) was launched.

The reference to CI was gaining traction among public officials in those days, yet very few understood the full meaning of the term and its implications for public administration. Around the same time, the European Center for Collective Intelligence (EC4CI) was formed to support civic leaders interested in CI but ill–equipped to deploy it. While the nonprofit organization met little to no interest among European officials, its original target audience, the founders of EC4CI decided to propose a pilot program to the leaders of Wallonia, called *Co-Intelligence Wallonia* (CIW),[1] developed in partnership with the University of Namur. *"Only people who think that it is possible to change things actually succeed,"* argued a Wallonian offi–cial at the time. What lessons can we draw from this ambitious program, aimed at instilling collective intelligence at the heart of a region's administration?

Walloon officials' interest grew when EC4CI organized an international conference on collective intelligence, using CI approaches during the conference itself. The concept caught the attention of two officials in particular, with whom EC4CI decided to form a consortium and develop the Co-Intelligence Wallonia program. Although the understanding among officials was limited, the time was right for such a program, with politicians understanding that new approaches had to be tried to tackle the region's arduous challenges. The ministers

and officials involved wanted action and fast results, expectations which would eventually cause difficulties for the program, as we will see.

At the outset, the project was aimed at understanding how to develop capacity in perceiving, thinking, innovating, and acting in a more collective and creative fashion for the region; to address the challenge of continuous innovation; and to turn knowledge into new ideas, innovations, business projects, innovative research, or solutions to endemic problems affecting Wallonia as a territory.

> We are witnessing a profound transformation of Wallonia, not only of its economy, which has gone from a stage of accumulation of material capital to the accumulation of intangible capital and knowledge, around twenty years ago, and we are already witnessing further change. We have to combine knowledge. A collective intelligence approach such as this one is important for Wallonia, just as it is for any territory.
>
> (Henri Monceau, then Chief of Staff to the Minister in
> charge of innovation and new technologies)

The regional leaders had indeed reached the conclusion that their approach to innovation had attained its limits. So they understood the need to innovate the very manner in which innovation could be fostered. They accepted the fact that no one was able to find, on their own, appropriate solutions to problems that had become too vast, hybrid, deep, and interconnected in nature. Véronique Cabiaux, then Director of the Wallonia Technological Stimulation Agency, opined: "When a problem is complex, it is multifaceted; no one sees the whole. You need a link, a binder." One of the keys to the program's success was to place CI at the very heart of the process.

The decision was thus made to apply a collaborative approach to concrete regional challenges, which had themselves been identified collectively within small groups. The number of salient issues for the region was indeed large, but stakeholders had never sat down to identify their multiple root causes and thus sort out priorities for action. In order to identify the key factors behind the region's issues, it was decided within the Co-Intelligence Wallonia program to take sufficient time – for once – not to rush to formulate solutions, but to understand together what was blocking the region's progress. The organizers brought together some 70 people relevant to the problems at hand to explore why, despite decades of efforts, the problems of unemployment, ill health, education, and many others had not found an adequate solution. The members of this group were chosen using creative CI techniques, notably adopting the divergence-convergence sequence,[2] borrowing from the "elections without candidates" approach developed by the sociocratic movement, as well as adopting Do Bono's *six thinking hats* approach to structuring meetings (De Bono, 2016).

It was decided that even if this experiment was only a pilot, it was necessary to look at real issues rather than focus on theoretical matters. Thus, the project was designed with a steering committee that consisted of a wide variety of profiles, personalities, and roles, as summarized in Figure 16.1. A flexible operational framework which could be adapted continuously was also designed (see Figure 16.1). As with making a good mayonnaise, which requires adding oil very slowly to the mix, the idea here also was to add new elements very gradually. The program thus involved a series of meetings using different CI approaches, each ending with the definition of the role, setting, and participants of the next. This helped ensure the loyalty and buy-in of existing participants before involving new ones. Each meeting involved taking

Key milestones of the program
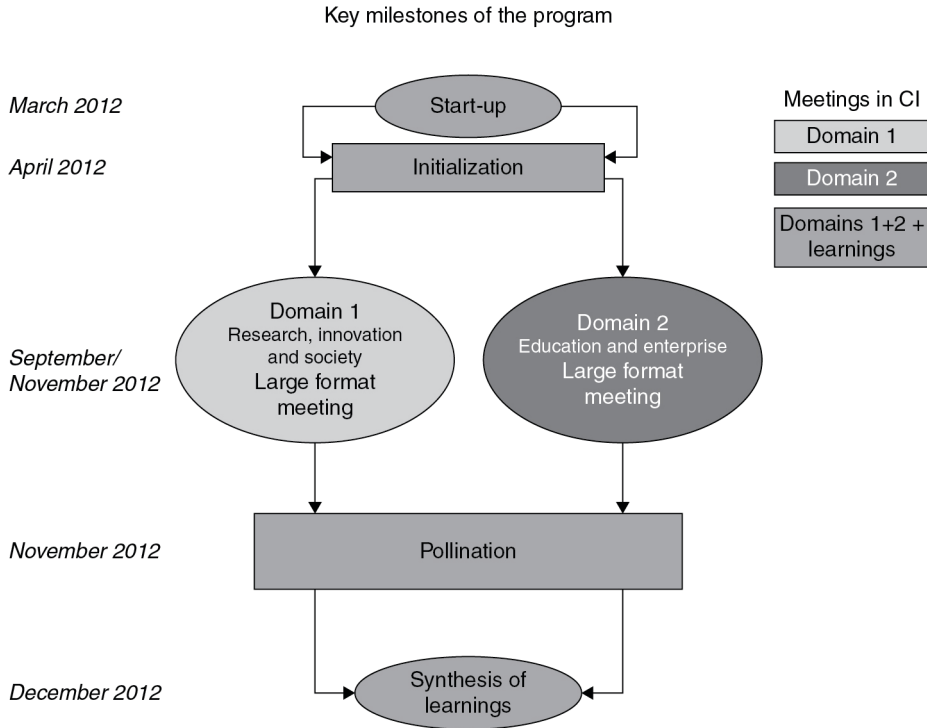
Figure 16.1   Co-Intelligence Wallonia: The program's key steps.

Source: Author.

stock of the previous achievements and cross–pollinating with the new participants, thereby progressively enriching the understanding of the group.

A core principle in this gradual approach was that the people who had taken part in pre-vious meetings recruited and briefed the participants for subsequent sessions, and that each meeting designed the next step. The initial core group for each topic was therefore small, with no more than 6–7 participants, who identified who might be the right participants for the rest of the journey, and explored the ecosystem of actors for each challenge. A challenge thus explored was the shortage of technical professionals, workshop operators, and specialized engineers in Wallonia. The group in charge first mapped the stakeholders in this ecosystem, such as business owners, directors of human resources, workers, university professors, students, parents of secondary school pupils, technical schools principals, primary school directors… Each meeting of the working group made it possible to further refine the list of relevant actors and recruit new members. Each meeting also involved going over what the group had learned. This is how we were able to make the mayonnaise little by little while keeping it together.

Four main challenges stood in our way in this process:

1. **Motivation:** How can one motivate participants to voluntarily travel and spend time exploring complex questions with strangers, knowing that any potential answers would, *a priori,* not bring about any personal benefit in the short term? To answer this question, the team chose two mobilizing topics for the exercise, in terms of their impact on the

region and the difficulty of resolution. This particular question resulted in a large audience participating enthusiastically. The issues were presented as *burning questions* by the team after the problem had been carefully examined and analyzed by the group itself.[3]

2. **Time:** How can one change the ambient culture that focuses only on addressing painful symptoms rather than the real problems at hand? How can we slow down the exchange of ideas enough to avoid conflicting debates, but also to create an environment that is conducive to co-construction and that goes further than just a simple exchange of opinions? The organizers needed to design appropriate physical and temporal "containers," providing pleasant and easy-to-access reflection formats, and helping the participants slow down the pace of discussions to facilitate deeper and more open conversations. In this case, we took time not to focus immediately on solutions, taking more time to explore the obstacles and to get the participants to accept to examine those obstacles with an open mind. The "containers" were thus physical and temporal.

3. **Stakeholders:** How can we bring together people from the ecosystems of actors involved? We started by identifying relevant stakeholders, then proceeded by picking a diverse set of individuals without selecting official representatives for the groups (e.g., we chose teachers and educators but not official representatives of the faculty group). Our major meetings brought together between 30 and 80 people: students from technical and non-technical schools, business leaders, social partners, parents, researchers, journalists, and many others.

4. **Mindset:** We focused on preparing participants to approach our meetings with an open mind to facilitate the clear expression of individual views (where individuals represent themselves and not their organization), opening up to opposing points of view and questioning their personal opinions – all while being creative. To achieve these objectives, the gatherings were planned in a particular way – stimulating invitations were designed; the format, environment, location, and decoration of the venue were meticulously organized; strategic design of the sequence of meetings, each building on the previous one; identification of "burning" questions and sub-questions; mindful introduction of sensitive topics; careful restitution and promotion of everyone's contribution, with the help of a skillful graphic facilitator. Graphic facilitation allows the synthesizing of ideas to show relationships, serves as a focal point to keep the group engaged, and also provides a tangible takeaway from the exercise.

At the meta level, the process made the participants much more familiar with what the words "collective intelligence" actually involved. They were successfully made aware about the added value of CI, and this is probably one of the project's main successes. In the project's final report that we co-authored with Walloon officials, we argued that "The participants identified a common desire to strengthen the existing operating methods by exploring innovative approaches which enabled them to overcome dead ends, chaos and vagueness in a rigorous, secure environment."

At the micro level, the contributions of the project were numerous. Many improbable ideas blossomed. For instance, in relation to the issue of the lack of technical specialists, the region set up a "tech-show" showcasing the ins and outs of technical professions. This was developed with the participants in the "Pôle Image" of the region. Another very useful and unexpected outcome was the realization by participants of how important the personal well-being of SME leaders was to their ability to innovate.

Unfortunately however, the pressure to obtain quick results, combined with budgetary constraints, led to the early termination of the project. The two Walloon officials who had

sponsored moved on. A change of political majority led to a reshuffle in the regional ministries. Eventually, other civil servants less familiar with the program did not see fit to fund it any further.

What science tells us

Should we focus on producing the maximum number of results with minimum effort, or doing the right things? This experience confirmed to me the adage that efficiency is about doing things right; and effectiveness about doing the right things. We took time to try to do the right things, resisting the pressure to produce short-term quick fixes. When approaching complex societal problems creatively, we need to curb our impatience and urge to find solutions quickly. We need in fact to take more time to examine each problem at stake, broaden our perception and understanding of it, and explore more opinions and ideas before finally converging on a solution. When the challenge at hand is both individual and collective in nature, organizations and society as a whole need to address it together. In this perspective, it is key that we learn to inhibit our automatic thoughts as they often generate cognitive biases or errors in reasoning (McGilchrist, 2019). We need to recognize our biases so that we can counteract them when we encounter them in order to give way to our more expert, rational, and algorithmic ways of thinking, operated by our prefrontal cortex. Furthermore, as even the most astute specialists of cognitive biases have a hard time countering such biases, it is also key that we inhibit faulty reasoning. As facilitators, the task is about promoting what scientists call "cognitive resistance" (Borst, Aïte, and Houdé, 2015). According to psychologist Olivier Houdé (2014), learning is indeed about resisting automatic thinking, inhibiting our instinctive thoughts.

Barbara Fredrickson also elaborates on an interesting approach with regard to promoting creative thought, which she refers to as the "*Broaden and Build Theory of Positive Emotions*" (Fredrickson, 2001). In her research, she shows that when we feel and cultivate positive emotions, our thinking opens up and becomes more constructive. This is what we tried to ensure in the context of Co-Intelligence Wallonia, as every element was designed and communicated in order to foster positive emotions such as enthusiasm, joy, pleasure, curiosity, involvement, and even, at times, wonder.[4] Simple but effective techniques such as Bono's Six Thinking Hats contributed to this. By inviting participants to look at issues from different angles (creativity, constructive criticism, destructive criticism, factual analysis, etc.), this structured approach to deliberation can help counter the pitfalls of thoughts that are too rapid and reductive. It also enables the participants to adopt different perspectives on the problem at hand.

Psychologists call the idea of one's personal worth and the resultant feeling toward one's self as self-esteem. That concept plays an important role in CI (Portevin, 2017). Even if people appear to display healthy levels of self esteem, it is often unstable by nature, and conditioned by external factors, such as the approval of others. This poses a problem in group reflections. After all, if my opinion is criticized or challenged, I will doubt my personal beliefs and feel the urge to protect myself. My reactions could subsequently include imposing my point of view onto others or abandoning it altogether. So that everyone's self-esteem is not threatened when confronting opinions, we ensured that participants adopted a "learning state of mind" (Dweck, 2016) which was conducive to the transmutation of ideas into solutions that go beyond the personal opinions of individuals. American psychologist Carol Dweck (2016) stresses the decisive role of this state of mind. She presents it in opposition to another so-called "fixed" or frozen mindset when a person seeks to confirm and protect

the qualities that they think they have. If I think I am talented or intelligent, it matters to me that my actions prove this. Otherwise, I risk thinking that my qualities are called into question, which would hurt my self-esteem. So, either I reject the information or opinions of others, or I disqualify them, or I completely abandon the field in which my qualities are not acknowledged. Fostering the right mindset is therefore essential.

Do's and don'ts

This case illustrates the importance of mobilizing and empowering the participants of a CI exercise. For the success of programs similar to Co-Intelligence Wallonia, it is necessary that:

- The topic makes strong sense in the eyes of the participants.
- They feel ownership, psychological safety, and pride in participating.
- They feel that their voice has been heard, and that they are considered as important actors in the resolution of the issue.
- They feel they are discovering and learning something that will be useful to them.
- They enjoy each stage.
- They feel a strong sense of interdependence, connection, and resonance.
- They feel that both their individual participation and collective action will have an impact.

The "art of hosting" approach that we sought to apply was fundamental in achieving this, allowing us to create conditions of sincere humility, empathy, and openness to divergent thinking and new ideas (Quick, 2014).

Five factors were decisive in ensuring these aspects, mainly:

- The sincere involvement of participants in the planning of each step and in the mobilization of other participants;
- Defining "burning issues" by a pilot team, and formulating them as "burning questions" that would mobilize a wide variety of audiences (see above for details);
- Sharing information on a user-friendly public website;
- Strategic choices of techniques to ensure the quality of each activity;
- Ensuring the pedagogy and quality of feedback while making sure to respect the diversity of the same.

In terms of the weaknesses of Co-Intelligence Wallonia, it was observed that the political leaders of the Region and the rectorate of the University of Namur who sponsored the project were not as engaged as the rest of the participants. They opted against participating in the experiment in person. This is the essential tension and challenge between bottom-up (community led) and top-down (institution led) processes. Not having the top decision makers involved was detrimental to the successful achievement of the process (Butler et al., 2015). We, the organizers, did not manage to spend enough time with the sponsors on the objectives of the project and we did not have the courage to make its launch conditional on their further involvement. CI was (and still seems) too new and abstract for decision-makers at the highest level to pay enough attention to it. Their lack of involvement unfortunately led them to evaluate the results of this pilot program according to its concrete contribution in terms of immediate solutions to their endemic problems. They did not consider the many valuable indirect contributions of the project, both at the meta and micro levels.

Consequently, the subsidies that were necessary to keep the momentum that we had initiated were halted, although the majority of the participants had explicitly indicated their desire to keep going. Some of them continued onto the next steps on their own initiative, using several ideas conceived during the initial phases. This also meant that the second phase that was planned as a part of the exercise, called Co-Intelligence Europa (a European summit intended to bring together three different audiences over three days to reflect in CI on CI), came to a halt.

The core question at the heart of this promising project remains open: how can we in the future make politicians better aware of the importance of a slower, more open, more innovative, and more collective way of resolving issues?

Notes

1 For further information, visit: www.ec4ci.eu/ciw.
2 Readers interested in this central tenet of creativity processes should read Tim Switalski's case in this handbook: "Turning problem makers into creative problem solvers: How New York state creatively shifted the paradigm from managing troubled kids to engaging them."
3 For more about the "Asking Big" or "Burning Question" approach, designed to keep the participants interested, see www.theworldcafe.com/wp-content/uploads/2015/07/askingbig.pdf.
4 This was carefully documented in the process through surveys, and the recording of meetings on video.

References

Borst, G., Aïte, A. and Houdé, O. (2015). "Inhibition of misleading heuristics as a core mechanism for typical cognitive development: Evidence from behavioral and brain-imaging studies". *Developmental Medicine & Child Neurology*, 57, pp. 21–25.

Butler, J. R. A., Wise, R. M., Skewes, T. D., Bohensky, E. L., Peterson, N., and Suadnya, W. (2015). "Integrating top-down and bottom-up adaptation planning to build adaptive capacity: A structured learning approach". *Coastal Management*, 43(4), pp. 346–364. DOI: 10.1080/08920753.2015.1046802

De Bono, E. (2016). *Six Thinking Hats*. Mamaroneck, NY: International Centre for Creative Thinking.

Dweck, C. (2016). *Mindset*. New York, NY: Ballantine.

Fredrickson, B. (2001). "The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions". *American Psychologist*, 56(3), pp. 218–226.

Houdé, O. (2014). *Apprendre à résister.* Le Pommier.

McGilchrist, I. (2019). *The Master and His Emissary: The Divided Brain and the Making of the Western World*. Yale University Press.

Portevin, P. (2017). *Mon meilleur ami… c'est moi - Éloge et mode d'emploi de l'amitié avec soi-même*. Eyrolles.

Quick, K., and Sandfort, J. (2014). "Learning to facilitate deliberation: Practicing the art of hosting". *Critical Policy Studies*, 8(3), 300–322. DOI: 10.1080/19460171.2014.912959

17

TURNING PROBLEM MAKERS INTO CREATIVE PROBLEM SOLVERS

How New York State creatively shifted the paradigm from managing troubled kids to engaging them

Tim Switalski

> It is far more cost effective to prevent youth from engaging in delinquent and violent acts than it is to incarcerate them in a State facility. We must concentrate our efforts at the front end of the system rather than the back end.
> – John A. Johnson, Director, New York State Division for Youth

The story

What if youth labeled as "juvenile delinquents" can instead be engaged as key stakeholders in resolving challenges in their communities?

In the Summer of 1995, The New York State Division for Youth (DFY) and the Association of New York State Youth Bureaus did exactly that. These two large state organizations, both of which have a long tradition of providing "delinquency prevention" services, were able to creatively shift the paradigm from managing "troubled" kids to engaging them as problem-solvers. Funding and support from Annie E. Casey Foundation was used to build a unique planning and policy development initiative around this vision.

Historically, policy planning and funding typically involved largely agency representatives. This time it was opened to a broad array of stakeholders, including young people. Even though the majority of research on youth development clearly endorsed such an approach, a high level of skepticism had to be overcome.

The need for broad-based participation was identified by key decision-makers, prompting the search for a process that would be inclusive, potentially scalable for accommodating different group configurations, could produce outcomes that would be consistent across different contexts and would result in novel recommendations. Creative problem solving (CPS) was identified as a process that met all of these criteria. CPS also relies on the active

participation of diverse group members to generate innovative ideas (see the box below for a description of the CPS method).

A cohort of 24 professional staff were recruited as facilitators from both the state organizations. They underwent an intensive training program in CPS, learning how to facilitate groups using this process.

Following the development of this "Facilitator Team," a series of nine Regional Youth Summits were conducted throughout the state of New York. A diverse cross-section of stakeholders in each region were brought together. More than 1,500 New Yorkers participated in these events, including young people, parents, business leaders, educators, clergy, juvenile justice professionals, youth workers, journalists, legislators, and bureaucrats. During each Regional Summit (which lasted one day per Summit), small and diverse groups worked with a facilitator to identify problems in their communities, explore creative ideas and refine these into innovative solutions. The following categories of challenges were identified by the participants of all nine Regional Summits.

- Poorly functioning families;
- Deterioration of community values;
- Fragmented communities;
- Lack of focus on prevention of juvenile delinquency;
- Failing education system;
- Unemployment/underemployment;
- Substance abuse.

Each summit produced new solutions to overcome the challenges that were identified. These recommendations are consistent with the growing volume of research studies in the youth development/prevention field.[1]

The Summits highlighted the benefits of establishing a proactive, highly inclusive, bottom-up process that examines challenges facing all young people and explores solutions that are grounded in the context of local communities, while considering the unique configurations of resources, interests, and opportunities specific to each context. Participants at these summits recognized that a better future for young people within their communities is dependent on partnerships among all key stakeholders. As one of the youth participants put it, "I wasn't sure what to expect when I got invited to the summit. Once I joined my group, I felt like an important person…like my ideas really mattered."

The momentum that was generated by the Regional Youth Summits caught the attention of the New York Governor, George Pataki. He invited the organizers of the Regional Youth Summits to design a three-day statewide conference for youth to be held in Albany in the Spring of 1996 in collaboration with his office. The Governor's Conference on Youth – like the nine Regional Summits – was a participatory event. The goals of this conference were to gather ideas (from the state's youth, from business leaders, from government officials, and from policymakers) to help shape the direction for youth development policy in New York State.

Over 600 participants were organized into 66 teams of youth and adults, each representing a diverse cross-section of stakeholders. More than half the number of invited participants were young people. All teams followed a structured process based on the main phases of the CPS process led by members of the statewide facilitation team. The output from these teams was organized into the "Youth Goals for the Year 2000," which summarized recommendations for short and long-term objectives to promote the welfare of youth. State

policymakers involved with youth services were invited to hear these outcomes on the final day of the conference.

Following the statewide conference, the lead state agencies consolidated the outcomes of the nine Regional Youth Summits and the Governor's Conference on Youth into a "Blueprint for State and Local Action" which was submitted to the Governor for inclusion into the State's annual budget. As a result, $2.5 million was earmarked to support the following objectives proposed in the Blueprint:

1. Expand opportunities for youth to serve as problem solvers.
2. Strengthen and support their families.
3. Build opportunities within communities for the welfare of youth.
4. Mobilize public and private resources through collaboration with businesses, and religious, civic, educational, and youth organizations.
5. Support and promote measurably effective programs for promoting the welfare of youth.

The year that followed saw the implementation of many of the ideas that were generated from these events, including the formation of a statewide "Youth Leadership Congress" and the development of a single, proactive, county-level planning process for youth services. Additionally, a second New York State "Governor's Conference on Youth" was held to recognize and inspire meaningful action for youth and their families.

What is Creative Problem Solving (CPS)?

CPS is a comprehensive system built on natural thinking processes that deliberately ignite creative thinking and produce innovative solutions. Through alternating phases of divergent and convergent thinking, CPS provides a process for managing thinking processes and related actions, while avoiding premature conclusions. We use Divergent thinking to generate options and alternatives. When we apply Convergent thinking, we evaluate, select, and refine our best options.

The CPS process was conceived by Alex Osborn and Dr. Sidney Parnes in the early 1950s as a way to deliberately engage our imagination to find solutions to complex human problems. Early research conducted at the University of Buffalo showed that individuals trained in CPS were far better at producing novel and useful ideas than their untrained counterparts. An extensive body of research related to CPS can be found at the International Center for Studies in Creativity at Buffalo State College. The way that CPS has been understood and described has changed over the past 70 years of research, development, and practice. The changes that have taken place were primarily in relation to the steps in the model and the language used to describe them. Each change also included the development of a set of basic divergent and convergent tools.

The structure of the CPS model comprises three conceptual stages that reflect the natural creative process that people apply when they face a challenge or opportunity. These include:

- In the *Clarification* stage, we begin by exploring the broad vision, and end with the identification of challenges that need to be overcome to achieve it.
- In the *Transformation* stage, we begin with a search for a wide range of ideas to address the identified challenges, and end with the development of workable solutions to each challenge.

- In the *Implementation* stage, we first explore the context that might either support or inhibit these solutions and end with a detailed plan for action.

Each phase includes two subphases of divergent and convergent thinking. It is important to remember that the dynamic balance of divergent and convergent thinking occurs within each of the stages of CPS. Therefore, we always begin each stage with a broad search for novel and diverse alternatives followed by an evaluation and selection of those options that are most promising.

What science tells us

The principal methodology used for this initiative was CPS. The uniqueness of CPS lies in its reliance on a dynamic balance of divergent and convergent thinking through three main stages: clarifying the challenge, generating ideas, and planning for action. There are specific tools and techniques that can be applied to move effectively through each of these stages, the best known of which is "Brainstorming." A popular variation of this technique is "Brainstorming with Post-its" which allows participants to write their ideas on a colored Post-it and speak it aloud when the facilitator takes it and posts it on a large flipchart. This allows all ideas to be captured quickly and shared visually with the group. When participants need to converge on their "top" ideas, working visually with ideas allows elimination of duplicates and voting for top selections becomes easier and more efficient. Because of the time constraints and logistical challenges of the regional summits, the challenges that participants worked on were prepared in advance so that the team could focus on generating ideas and solutions. These challenges were consistent with those identified above in this chapter and consistent with the national literature on youth development, especially the research findings from the Search Institute in Minneapolis.

Youth Summit participants also went beyond idea generation by also focusing on evaluating and refining the ideas they selected. They did this by first generating and selecting criteria for evaluation (i.e., cost, feasibility, and impact) and applying those to the list of top ideas. This allowed each small group to modify and improve selected ideas to refine them even further, moving toward a more complete solution to the challenge they were focusing on. This helped to keep ideas from being produced that were pure fantasy rather than novel and useful recommendations.

CPS also focuses on the importance of diversity among group members so that novelty can emerge from unique points of view. It was important that each group was large enough to allow for sufficient diversity but small enough to be effectively managed to complete its task. Therefore, a typical group was eight members and led by one trained facilitator. The typical mix included youth from different communities, parents, teachers, service providers, and administrators. Age, gender, ability, sexual identity, and profession were also varied within the group.

The challenge presented by this blend of diverse participants was addressed in three different ways.[2] First, each group was expected to participate in its own self-management by assuming different roles throughout the process of working together. These included timekeeper, recorder, and reporter, so the main focus of the facilitator was on managing the process while ensuring that all participants were fully engaged. Second, each group engaged in a creative warm-up activity, designed to increase trust and boost collaboration. Third, as
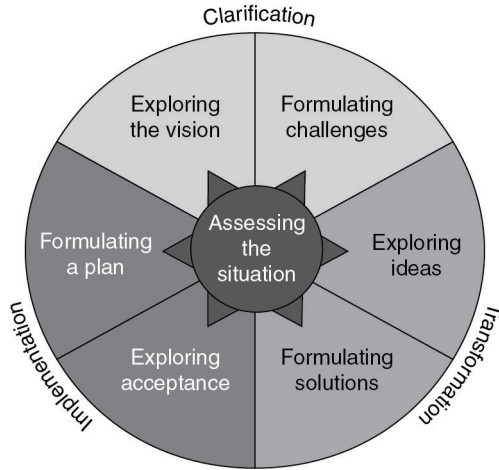
Figure 17.1　The creative problem solving model.
Source: 2006 Puccio, Murdick and Mance, provided by Tim Switalski.

a group they built their own ground rules which were used to maximize productivity and shared participation.

On several occasions, activities that facilitated the creation of a safe and open environment were conducted at a plenary level. For example, one of the first statewide youth conferences featured 600 participants collectively creating a thunderstorm indoors by following prompts to individually create sounds mimicking the sounds of a storm at various stages. Another warm-up featured participants at tables creating a patchwork quilt made of individual drawings of the unique strengths they brought to the group. These were then posted together as a dramatic backdrop to the entire conference (see Figure 17.1).

Do's and don'ts

A three-day CPS Facilitator training was delivered which focused on the CPS model and the tools and techniques to use within each of the stages and steps of CPS.

The facilitators were carefully selected using the following criteria:

*   Regional representation across the state;
*   An equitable balance between New York State and local county agencies;
*   An equitable balance across age, gender identity, race, and physical ability;
*   Experience as a facilitator.
*   An openness to collaboration with a larger team and willingness to commit to the duration of the project.

Since each of the Summits used the same team of facilitators as they moved across the State, they were able to learn and improve the process from one location to the next by debriefing each Summit and tweaking the design. Team members were also able to collaborate with different partners, leading to a high level of trust and camaraderie.

When the Governor's Conference on Youth was announced, the size of the facilitator team was doubled and new training was provided for managing 600 participants through

the CPS process. The expansion of the facilitator team provided us with an opportunity to recruit and train more young people as facilitators. The summit organizers identified youth participants from the previous Regional Summits and invited those who demonstrated high potential to serve as table-level facilitators at the Statewide Governor's Conference on Youth. This action not only provided more human resources to manage the small group work, but it also had a huge symbolic benefit by visibly demonstrating the need for adults and youth to work together with equal status.

The emphasis also shifted toward the top ideas generated from the Summits, inter-agency collaboration, and commitments to action at the state and local levels. The extension of that work continues today as evidenced by the following actions that were a direct outcome of the event:

- A paradigm shift began to take place across New York State regarding the planning process for youth services at the county level. Youth and family representation became an integral part of the process for formulating policies governing youth services and the accompanying budgetary process.
- Two additional Governor's Youth Conferences were conducted in the years following the initial event. The participant list included all state agencies who were stakeholders in providing services to youth and their families. This resulted in a commitment from the commissioners of these organizations to integrate their planning efforts for youth across all agencies. This has led to better services, less redundancy, greater alignment, and a collective commitment to positive youth development.
- The shift to integration in planning and service delivery created a demand for youth to be trained in a common approach toward positive youth and family engagement, including an emphasis on creative thinking and evidence-based outcomes. This training has subsequently become certified across the state and is now a requirement for all direct care staff working with youth.
- As a direct outcome of the Regional and Statewide Youth Summits, the Office of Children and Family Services (OCFS) created the Office of Youth and Young Adults Services whose mission is to "design, coordinate and promote innovative strategies to advance youth development." They provide funding and support that enable youth to build on their strengths, gain important life skills, and develop core competencies that facilitate meaningful roles in the homes, schools, and communities. They also work with local communities to ensure that youth and families are represented at state, regional, and local levels in the planning and funding for youth programs.

There is a strong consensus among those who participated in the design, development, and implementation of this project that it produced meaningful and lasting change across several state and local agencies that serve young people and their families. Much of that change grew out of the interactions that Youth Summit participants experienced during their sessions. Particularly, the leadership provided by the facilitators allowed all participants to feel like their voices were heard, their ideas were taken seriously, they were treated as colleagues, they worked collectively toward common goals, and they were fully engaged in the process. These were the behaviors that allowed us to be creative together.

Notes

1 These findings and action strategies are available in the publication: *All Kids Count: Forging Partnerships for Positive Youth Development, 1995 Regional Summit Findings* available from the NYS Division for Youth (1997a and 1997b) or from local Youth Bureaus.

2 CPS is an open-source method. It is not owned by anyone. There are many resources available online to explore CPS's different tools, for instance, the *Creative Problem Solving Tools & Techniques Resource Guide*, put together by the Creative Education Foundation, available at www.creativeeduc ationfoundation.org/wp-content/uploads/2015/06/ToolsTechniques-Guide-FINAL-web-waterm ark.pdf.

References

Bens, I. (2000) *Facilitating with ease!*, Sarasota, FL: John Wiley & Sons.

Benson, P.L. (1995) *Uniting communities for youth: Mobilizing all sectors to create a positive future*, Minneapolis, MN: Search Institute.

Ekvall, G. (1996) "Organizational climate for creativity and innovation", *European Journal of Work and Organizational Psychology*, 5: 105–123.

Gesell, I. (1997) *Playing along: 37 learning activities borrowed from improvisational theater*, Duluth, MN: Whole Person Associates.

Hawkins, J.D. and Catalano, R.F. (1992) *Communities that care*, San Francisco, CA: Jossey-Bass.

Isaksen, S.G. and Treffinger, D.J. (1985) *Creative problem solving: The basic course*, Buffalo, NY: Bearly Limited.

New York State Division for Youth (1996) *Building a youth development policy for New York State (proceedings from the 1st New York State Governor's Conference on Youth)*, Albany, NY.

New York State Division for Youth (1997a) *New York youth: The key to our economic and social future (proceedings from nine Regional Youth Summits)*, Albany, NY.

New York State Division for Youth (1997b) *Changing perceptions of New York youth (proceedings from the 2nd New York State Governor's Conference on Youth)*, Albany, NY.

Nilson, C. (1995) *Games that drive change*, New York, NY: McGraw-Hill, Inc.

Office of Children and Family Services webpage (2022) *Youth and young adult services*, Albany, NY.

Parnes, S.J. (1992) *Source book for creative problem solving: A fifty year digest of proven innovation practices*, Buffalo, NY: Creative Education Foundation Press.

Puccio, G.J., Mance, M., Switalski, L.B., and Reali, P.D. (2012). *Creativity rising: Creative thinking and creative problem solving in the 21st century*, Buffalo, NY: ICSC Press.

Puccio, G.J., Murdock, M.C., and Mance, M. (2007). *Creative leadership: Skills that drive change*, Thousand Oaks, CA: Sage Publications.

Weisbord, M.R. and Janoff, S. (1995) *Future search. An action guide to finding common ground in organizations and communities*, San Francisco, CA: Barrett-Koehler.

18

TACIT KNOWLEDGE SPEAKS THE LANGUAGE OF STORY

Morocco's *Commission spéciale sur le modèle de développement*

Lex Paulson and Marwane Fachane

The story

All eyes in the library were on the young woman as she spoke. In her eyes, tears had begun to appear. "There was no road from our valley to the town," she recalled.

> From when I was six, every day I walked two hours up to the main road and another 45 minutes by bus to go to school. Maybe because I seemed tired, I was never one of the 'favorite kids', but I always sat in the front row. One time I had to miss two weeks of school because my mom had an eye problem and I had to go to the city to find her medicine. I kept the school books on my lap every trip. Some children have education showered on them as a gift. I had to fight for it.

This fearless young woman, a 20-year-old named Fatimzahra,[1] was one of three dozen young people from the community who had been invited to take part in a *séance d'écoute* ("listening session") and share their points of view on the state of their country. In a culture where young people often feel pressured to speak less and defer to their elders, this was an unusual encounter for nearly everyone in the room. Fatimzahra's story, one of many emotional experiences shared that evening, was not given in the context of grievance or seeking personal aid; rather, she was taking part in an exercise to set a new direction for Morocco based on the collective needs, values, and intelligence of its citizens.

The faces around her – a former prime minister; a famous political scientist and playwright; a veteran activist for the rights of HIV patients; the CEO of Morocco's largest company – were full of emotion as well. These 35 newly named members of the *Commission spéciale sur le modèle de développement* (CSMD) were the representatives of the state, personally designated by His Majesty Mohammed VI. But rather than giving speeches and asking the young people for their feedback, the majority of participants that evening simply listened. And in doing so they began to discover what lay just beneath the surface in this country of 36 million people. A reservoir of experiences, pride, pain, and ideas for a new direction.

Just three weeks before that night in the university library, the Honorable Chakib Benmoussa, Morocco's former Interior Minister and at the time its Ambassador to France, gathered 35 colleagues of the newly named CSMD at the Royal Academy in the leafy outskirts of Rabat. Asked to serve as the Commission's president, Ambassador Benmoussa announced a twofold mission to be completed by June 2020: create an "objective and precise" diagnostic of the nation's economic, political, and social development, and propose the contours of a new model "with human development at the center."

This new model was not to be in the form of a judicial decree or economic simulations. Rather, the CSMD would be responsible for conceiving a "shared vision" of the nation's development for the coming 15 years, with recommendations for new policies and reforms to diversify the "sources and beneficiaries of national wealth" across "all territories and social categories."

The 35 men and women present that afternoon, whether they knew it or not, embodied the cognitive diversity that studies suggest is essential for collective intelligence (Hong and Page, 2004; Page, 2017).[2] In a country whose high political offices are typically filled by older men, ten of the 35 CSMD members were women and nine were under the age of 45. What this highly diverse group shared was a record of leadership in their fields and a patriotic commitment of an unknown but gargantuan amount of time, energy, and intellectual effort in the months to come.

Why did Morocco need a new model of development? By some measures, the nation had made significant strides: Its average gross domestic product (GDP) growth of 4.4% from 2000 to 2017 placed Morocco's economy among the most dynamic in Africa, and the percentage of its population in severe poverty had declined from 15.3% in 2001 to 4.8% in 2014.[3] By other measures, however, the nation was lagging: in the United Nations Development Program's ranking of human development, Morocco stood at 121 out of 189 nations measured; its Gini coefficient, the international measure of economic inequality, had remained unchanged since the 1980s; and only 21% of the estimated 13.4 million Moroccan women of working age participated in the workforce.[4] Though its working-age population grew by 270,000 people annually between 2012 and 2016, just 26,400 net new jobs were created on average per year. Only 17% of the working-age population had formal employment, and less than 10% a formal private-sector job.[5]

These demographic pressures were compounded by ecological ones. Due to historic investments in renewable energy, by 2019 Morocco was one of only two countries in the world to meet its Paris Accord targets.[6] Nevertheless, stress on the nation's water supply had lowered its reservoirs to only 37% of capacity, with some in the south falling below 5%, with agricultural production – a sector employing 40% of Moroccan workers – threatened by severe droughts.[7]

These challenges unfolded within a context of political change in which institutions formerly under the exclusive control of a monarchy became subject to new forms of citizen representation and input. Widespread protests in the spring of 2011 had led to the proposal of a new constitution by King Mohammed VI, designating primary legislative authority to an elected parliament, allowing the free competition of political parties, and decentralizing a range of functions to elected regional and local authorities. In 2011, over 130,000 Moroccan citizens had used an online platform organized by civil society actors, Réforme. ma, to propose and debate new ideas for the nation's constitution.[8] Nevertheless, while public approval of the monarchy had remained steady in the years following the constitutional reforms of 2011, participation in elections was uneven and dissatisfaction with the political class deepened.[9] Though Morocco's parliament completed the accession process to

the Open Government Partnership in 2018,[10] these commitments to greater transparency and accountability had not yet led to widespread citizen participation in public decisions.

In an address to the nation in July 2017, the King declared that Morocco's current model of development was no longer working. He declared that he had "identified the difficulties that prevent the evolution of our development model, and noted the dysfunctions that plague all levels of the Administration and at the level of elected councils and local authorities."[11] In a speech to representatives of the nation in October 2017, he elaborated his analysis: "While Morocco has made clear, globally recognized progress, the national development model, however, is now proving unable to meet the pressing demands and growing needs of citizens, reduce categorical disparities and territorial gaps and achieve social justice." He concluded this address by inviting "the government, the parliament and the various institutions or bodies concerned, each in its own area of competence, to reconsider our development model to bring it into line with the developments that the country is undergoing."[12]

The CSMD was created to make sense of these contributions. In an address of August 2019, the King announced that this Commission of 35 members would be charged with making recommendations for a new road map of national development. Rebuilding trust between the Moroccan people and their government would require, in his words, "an inclusive, participatory approach when addressing the major issues of the nation to make sure all key stakeholders are actively involved."[13]

Though new spaces for public dialogue and consultation had been opened since 2011, relatively few Moroccans had made use of them, and a culture of free expression remained nascent at best. By 2019, the Democracy Index produced by the Economist Intelligence Unit placed Morocco at 95th out of 167 countries ranked, with an average score of 5.1.[14] Trust needed to be built, and new methods tried. The CSMD's challenge was not only to propose a model of development centered upon the citizen – a difficult enough task – but to produce this model using methods that embodied these values. But how best to hold a conversation with 36 million people?

In defining its methods, the CSMD made several public commitments. One was to study the full breadth of public concerns. "National development" could touch upon topics as diverse as rural infrastructure, monetary policy, gender and cultural identity, public corruption, and inefficient bureaucracy. Equally important were its commitments of frankness and of inclusion: within the bounds of the 2011 constitution, any criticism would be heard and any Moroccan citizen who wished to participate would have an opportunity.[15] Finally, the Commission was charged with presenting actionable recommendations, not merely criticisms; and while it was free to take inspiration from international examples, the new model of development would be, in the King's words, "*maroco-marocain*."

Fulfilling these commitments would require keeping sight of certain constraints as well. While enjoying a strong remit from the head of state, the CSMD was a *commission consultative*; legally speaking, its powers were advisory, and its recommendations would not be self-enacting. Furthermore, this was not to be a "blue-sky" exercise, but a continuation of a national dialogue that the King had inaugurated two years before. A 500-page document, representing two years of inputs from public and private organizations, was handed to the CSMD in December 2019 at the start of its work. Finally, the Commission's recommendations, while subject for public review and debate, would need the head of state's consent and the follow-through of government actors to take effect. Given the historic control of the monarchy over public institutions, the role of citizens in the Moroccan political system would have to evolve within centuries-old cultural and institutional constraints.

Would these avenues of citizen participation lead to greater transparency and accountability, and ultimately to greater control over public decisions?

At its first retreat in December 2019 on the UM6P campus in Ben Guérir, the CSMD's president issued a challenge to his fellow commissioners: collective intelligence would guide all aspects of their work. What would this mean in practice? Researchers and trainers from UM6P School of Collective Intelligence (SCI) were asked to support the CSMD in developing consultative methods adapted to the Moroccan context and reflecting international best practices.[16] On the first day of the retreat, researchers from the School presented to the CSMD some of the latest scientific thinking on the drivers of collective intelligence, including the results of studies on cognitive diversity as well as aggregative and deliberative methods of citizen consultation.[17] Close attention was given to how these methods are practiced differently across cultures, including the combinations of "moral languages" common in different parts of the world (Graham, et al. 2013), as well as direct or indirect styles of communication (Tannen, 1981; Holtgraves, 1997).

With these scientific references in place, SCI's facilitators worked together with CSMD members to define a format for the first *séance d'écoute* ("listening session") planned for the following evening. The 35 members were looking forward to hearing directly from a group of invited young people from the local community, but they knew that this listening session came with risks. On the one hand, relationships between the young people of this community and the public authorities were strained. Unemployment levels were high, and the typical way for young people to express themselves to local authorities was by way of angry protests in front of public buildings. A listening session could easily become a parade of grievances and accusations. Conversely, if the 35 members adopted the expected posture of public officials – speaking first and last, from privileged positions often vertically separated from their audience – the participants would be much less likely to speak frankly and honestly about their experiences. A listening session could easily become a check-the-box exercise.

Keeping this local context in mind, the SCI team recommended a format of guided storytelling for the first *séance d'écoute*. The 30–40 young participants would be asked in advance to prepare a story of a personal experience on any topic that they thought was relevant to understanding the state of the country today and its needs. These stories would form the heart of the listening session with the CSMD. Instead of taking place in an auditorium with a stage and fixed seating, the *séance d'écoute* would be held in an open space in the university library, with chairs arranged first in small circles, then moved to form a single large circle including young people and CSMD members alike.

As they arrived, young people were guided by the facilitators to different small circles, which would comprise 3–4 young people and 2–3 members of the CSMD. The session began with a brief welcome from CSMD President Benmoussa and the president of the university, Hicham El Habti, following which the circles began their work. Over the next 45 minutes, the young people took the leading role. After a brief round of introductions within the group, each participant shared a story and the CSMD members listened attentively. After each story, anyone in the circle could pose follow-up questions to better understand the story.

Finally, the small circles joined together in one large plenary circle. Over the final 45 minutes, the CSMD members, rather than sharing their own views, shared with the full group what they had heard from the young people, retelling the most memorable details of their stories. Several of the young participants expressed to the facilitation team afterward how astonishing and empowering this moment was, as they heard their own stories

recounted by a former prime minister, a nationally known novelist, and the like. After these brief restitutions by the CSMD members to the full group, the young people were given the floor again to complete these summaries in their own words, often adding new details to the story. By this point, the room was brimming with emotion.

The young people painted a picture of a Morocco full of contradictions, a proud and patriotic people with deep frustrations about the injustices around them. Here is a small sample, taken from the young people's own words during the plenary session, of their contributions:

- "The schools I've studied in never permitted the development of critical thinking. We should think of education as the development of minds and souls, not just of future workers."
- "I'm tired of feeling ashamed to talk about sexuality and individual liberty in our society."
- "Our communities are polarized between those who have everything and those who have nothing."
- "Religion should be a force to unite and welcome instead of a force to separate."
- "I want a Morocco that is proud of its intellectual heritage, and that puts elegance and learning at the heart of its values. Let's put books and art everywhere."
- "We've been speaking all night about an educational system; I would call it an educational coma. Morocco spends around 16.000 dirhams[18] per year per student, and we end up producing illiterates."
- "We also need to talk about military service, about the huge budget we put there instead of investing it into education."
- "We grow up in toxic environments. The solution is to reform the education system, certainly, except that we're now in an emergency. We need to open new spaces and multiply alternative programs to serve the young people who have been failed."
- "Do young people still have the right to dream? Can we still dream of being able to dream? That's what we're asking from you [the CSMD], not to sell us dreams but to give us a reason to dream."

The pilot *séance d'écoute* in Ben Guérir was widely considered a success, in that serious public issues were discussed frankly and rarely heard perspectives brought to light. CSMD members reported seeing issues of education and territorial inequality in a fresh way, and participants voiced their gratitude in being given an opportunity to voice their opinions in an unusually unfiltered way. For the following series of *rencontres citoyennes*, an open call and registration form were posted on the CSMD.ma platform and Facebook page, informing interested citizens that given space constraints, the CSMD would randomly select attendees from the pool of RSVPs to create a balance by age, gender, and urban/rural residence. While approximate, these proxy indicators of cognitive diversity were decided to be the most feasible given time constraints and the sensitivity of the public to any "filters" created for participation in these events.

To accommodate a larger number of participants (typically 40–80 people), these *rencontres* were designed in a more traditional town hall format, with a single plenary session and individual participants taking the floor one at a time. Though collegiality, active listening, and openness to all views remained the guiding principles, the small-group storytelling model was seen as less feasible than a single plenary session where each citizen would be heard by all. After words of welcome, individual participants were given the floor one at a time, with the presiding CSMD members (generally a delegation of three or four) offering a synthesis of comments at the end.

While efforts were made to place individual contributions in dialogue with one another – including a graphic artist to visualize the collective testimony in real time – this "turn-taking" ended up leading to a more formal atmosphere than the small-group-guided storytelling used in Ben Guérir. A cultural factor at play in these subsequent sessions may have been the perception that the CSMD, as *mandataires de Sa Majesté*, were representatives of the state paying a special visit to their town; such a visit, to many local residents, required a certain formality and respect. To their credit, the CSMD members made special efforts to create a peer dynamic with their fellow citizens; they spoke only briefly at the beginning, sat on the same level in the room (as opposed to on an elevated stage), and left the majority of time for citizen testimonials with flexible time limits given for each participant. Each session concluded with a synthesis by the presiding CSMD members of what they had learned from the session, and members always stayed afterward for photographs and one-on-one chats.

In the 14 months of its mandate, and despite the onset of the COVID-19 crisis, the CSMD received over 10,000 written pages of contributions from 6,600 individuals and 165 organizations. Through organized consultation activities (in-person and virtual), Commission members interacted directly with 9,700 individuals. These activities included 5 *rencontres citoyennes* ("citizen encounters"), with participants chosen along geographic and demographic representivity; 30 field visits, 20 of which incorporated *séances d'écoutes citoyennes* ("citizen listening sessions"); 70 *auditions institutionnelles* ("institutional hearings"), whose participants included political parties, unions, professional associations, and regional administrative bodies; 113 *ateliers d'expert* ("expert workshops"), including researchers and domain experts; 25 open online conferences; an online platform with 50,000 unique visitors; and a social media campaign reaching an estimated 3.2 million citizens. The breadth, detail, and diversity of contributions were each unprecedented in the modern history of Morocco.

The process of synthesizing these inputs into a final report was overseen by the 35 members of the CSMD with support from a staff of 15. "As we drew all these inputs together," observed one CSMD member, "we kept finding points of convergence. For example, in all these different contexts we heard the word *khogra*, meaning 'disregarded' – we realized that a transversal challenge was citizens needing to feel seen and heard by their government." A second member insisted that the citizens' stories had a major impact on their deliberations:

> In our plenary sessions we often quoted directly from what we had heard, 'Don't you remember what that guy in the village said?' Those visits played a major role – I would go as far as to say that this report wasn't really written by the 35 of us, technocrats in an office, but with the people in a very deep sense.

A second member echoed this point, adding,

> For all the technical challenges of this report, what I really retain from the experience are the times I was touched emotionally, not just intellectually. The young people of our country, their maturity of reasoning and expression – during the virtual hearings with high school students, sometimes I had to turn off my camera because of the tears in my eyes.

From these contributions, two areas of concern emerged above all. First, citizens expressed frustration with what they perceived as *la panne de l'ascenseur social*, a sharp decline in social and economic mobility, especially for the young and those living far from the principal urban centers. Second, citizens expressed grave disappointment in the performance of public

officials. Of special concern were the failures of the education system, the insufficiencies of the social safety net, slow-moving bureaucracies, and the continued prevalence of corruption and rent-seeking among those in power. Alongside these frustrations, however, citizens presented hundreds of examples of local projects and initiatives (referred to in CSMD parlance as *émergences*, or "emerging ideas") that had shown promise in transmitting job skills, protecting public health, advancing gender equality, and protecting natural resources, among other public concerns. Above all, Moroccan citizens expressed pride in their country, hope in its unrealized potential, and a keen appetite to participate in public life. As one young woman put it, "If citizens are not engaged, if they are not involved in public debates and decisions, all change will be in vain."

The keyword of the New Model of Development (NMD), validated by King Mohammed VI in June 2021 and the north star of the newly elected government, is "participation." The experience of the CSMD's consultations showed the power of diverse perspectives in tackling complex problems, as well as the untapped desire of citizens to share ideas, feedback, and specialized knowledge. The NMD's recommendations to the new government are centered on human well-being and powered by civic participation, especially at the local level. New channels of participatory democracy are outlined, including participatory budgeting for municipalities, crowdsourced plans for regional and communal development, and new online platforms for feedback on public services.

Developing and scaling these participatory channels, in the CSMD's view, will require a massive change of mindset within public institutions and among citizens as well. Morocco has recently elected a new government, a coalition of moderates led by Prime Minister Aziz Akhannouch.[19] CSMD President Chakib Benmoussa has been appointed as Morocco's new Minister of Education, and has launched a "campaign of citizen participation" to define regional action plans based on the educational goals of the New Development Model.[20] Will the nation's new leaders take active steps to transform a "culture of conformity" within their institutions into a "culture of leadership, initiative and performance"? Will citizen expertise be sincerely valued and thoughtfully integrated into public decisions? Will sufficient resources be invested in building new competencies, platforms, and processes? And, most importantly, will citizen participation processes lead to greater empowerment of citizens and more democratic decision-making at all levels of government, or will they be used just to create symbolic participation, while traditional structures of power remain unchanged? These are the questions that will determine whether Morocco's new model of development, so painstakingly created, will achieve its promise. The spirit and diligence of these 35 commissioners, joined with the intelligence and passion of the thousands of citizens who participated in these consultations, give reason to hope.

What science tells us

What does storytelling have to do with conceiving a new model of national development? The design of the first *séance d'écoute* in Ben Guérir was strongly influenced by the pedagogy of Prof. Marshall Ganz of Harvard's Kennedy School of Government (Ganz, 2011). Leadership, according to Prof. Ganz, is the ability to mobilize others to achieve a common purpose under conditions of uncertainty. Public narrative, in turn, is a practice of leadership that helps a community translate its values into action. "Values," he explains, "are experienced emotionally…Narrative is the discursive means we use to access values that equip us with the courage to make choices under conditions of uncertainty, to exercise agency."

The practice of public narrative consists in identifying and sharing stories that link individual experiences into a common identity, and uses that identity as a basis for purposeful action. These three archetypal stories – the "story of self," "story of us," and "story of now" – have been practiced under many names by movements for national renewal or social change. Ganz himself has taken part in several such movements: as a young man, he went to the segregated Southern states of the US as part of a campaign to register African-American voters; as a young adult, he worked with civil rights icons Dolores Huerta and Cesar Chavez to organize migrant farm workers in California; and in 2008, his methods of leadership and public narrative were adopted by Barack Obama's campaign for the US presidency in 2008, a campaign which succeeded in mobilizing 2.2 million volunteers, the most in American history.[21]

Recent studies in psychology and neuroscience have revealed new insights into storytelling and its profound effects on the human brain. Tesler et al. (2018) found that the combination of presenting important information in story format and giving members time to reflect upon their strategies had a positive effect on the similarity of the team's mental models, meaning that they were more likely to develop a shared understanding of a given problem. Psychologist Jerome Bruner (1987) has argued that as a complement to analytical forms of reasoning, stories help us form "cognitive maps" of the world by coding certain experiences, objects, and symbols as good or bad for us, fearful or safe, hopeful or cautionary. The role of neurochemicals such as dopamine, serotonin, and oxytocin in producing these effects is an expanding area of research, with serotonin in particular correlating to higher levels of collective pride and self-esteem (Weisfeld, 1997; Sinek, 2014; Storr, 2020). In the context of family psychology, Kellas et al. (2020) found that storytelling functions as a means for making sense of and reframing difficulty. In their study, an intervention based on guided storytelling led to "an overarching sense of solidarity among parents, facilitated feeling understood, contributed to deeper (self) awareness, and facilitated reassurance, reframing, curiosity, and validation." Articulating a personal story, Kellas (2017) found in a related study, "can have lasting effects on those involved, often in the form of values, impressions, fears, lessons, and/or beliefs." The research she cites on the content and process of family storytelling suggests links to mental, physical, and relational health, which in turn suggests how story-based interventions can increase sense-making, cohesion, and well-being.

Stories may also have played a key role in the evolution of human societies. In *Hierarchy in the Forest* (1999), anthropologist Christopher Boehm posits that sometime between 100,000 and 200,000 years ago, fluctuations in global climate may have increased competitive pressures on human societies, potentially rewarding new strategies of social organization. At this moment in our evolution, human language had developed to the point where we could refer to past events and describe future possibilities, features that make our language unique in the animal world. Though these cognitive innovations may have initially served to coordinate for survival-related tasks – e.g., "I saw a herd of buffalo around the river yesterday; let's get spears and go back tomorrow morning" – the ability to refer to past and future also may have been the key step in creating moral norms, that is, an explicit set of rules and values guiding group behavior. As societies grew in size and complexity, stories of "why we do things this way" – in the form of myths, folktales, and ancestor stories – may have formed a critical social solvent long before written laws and constitutions (Boyd, 2010). Communicating in the form of the circle, where each participant can make eye contact with any other, may also have been a critical condition for the "shared intentionality" needed for groups to solve problems together (Tomasello, 2019). Stories, in these accounts, can thus be

seen as a fundamental mechanism of collective intelligence in the human species – maybe *the* fundamental mechanism.

Ganz (2011) posits that the emotions unleashed in telling our stories provide an enormous stock of useful information,

> partly physiological, as when our respiration changes or our body temperature alters; partly cognitive because we can describe what we feel as fear, love, desire, or joy; and partly behavioral, as when we are moved to advance or to flee, to stand up or to sit down.

Leonard and Sensiper (1998) suggest that these signals are ways in which tacit knowledge that was locked in the head of an individual becomes a resource for the intelligence of the group. So too can a perceived inequality in status be a strong inhibitor to sharing, especially when exacerbated by different frameworks for assessing information. An introductory speech on education, for example, that presented the issue in the framework of budgets and attendance rates, could have discouraged the sharing of stories that focused on first-person experiences inside the classroom.

The CSMD was making a calculated bet in adopting the form of guided storytelling in its first-ever listening session with Moroccan citizens. Their past experiences suggested that young people were among the least represented voices in national debates, and that this exclusion – whether intended or not – resulted both in less intelligent policies and a climate of distrust. The language of storytelling, facilitated in circles and then the subject of full-group reflection, offered a new dynamic to allow tacit knowledge on the current state of Morocco to emerge.

The conviction expressed by the CSMD was double: through the eyes of a diverse group of young people, they could reframe their understanding of the country's most complex issues; and by the act of listening, and empowering them to speak, they were affirming that young people would be essential in leading the transformations their country sorely needed. As Ganz argues, the tacit knowledge that emerges through stories can help a group reframe its most complex problems and increase the wealth of possible solutions. The personal and shared values that emerge, in turn, become "sources of the emotional information that can produce action" (Ganz, 2011). The young participants in the Ben Guérir *séance d'écoute* understood the message that had been sent to them by this unusually powerful encounter. "In this commission, you will have the responsibility of putting a strategy on the table," one young woman concluded. "But who will be there to put it into action? Who will operation-alize this new model? You will need young people, competent, honest, and free!"

Do's and don'ts

"When our country became independent in 1956," explains one CSMD member, a historian, "the current King's grandfather, Mohammed V, declared that independence was the lesser battle, and that the greater battle would be developing Morocco. Similarly, creating our report was simple compared to the change management we will need now." Indeed, to realize the ambitions expressed in Morocco's New Model of Development, a challenging and exciting process of transformation lies ahead.

In this process, we offer five key learnings from the CSMD's work to harness collective intelligence in Morocco:

1. Leaders must make a compelling case for change. Citizens will participate only if the leaders who call for their participation have a baseline level of credibility and define a need that is perceived as urgent by the citizens themselves. In a series of public addresses leading up to the creation of the CSMD, King Mohammed VI defined a clear narrative for the nation as to why current models of governance were insufficient and why a participatory approach was needed to set a new direction. A certain level of skepticism will always be warranted, but without a strong narrative for change, citizens will not be as likely to give new approaches a chance.

2. Public commitments at the start will set the tone. Chakib Benmoussa, as head of the CSMD, realized that he could not guarantee specific policy impacts that would result from the input gathered by the Commission. Such a commitment would undoubtedly have strengthened the motivation of citizens to participate, and the robustness of the policy outcomes. But critical elements of the process were under the CSMD's control: transparency, unfiltered input, a listening posture, and proximity to all of Morocco's territories. These commitments were made strongly at the beginning and reiterated during each of the CSMD's activities, lending coherence and credibility to the process overall.

3. Guided storytelling can bring tacit knowledge to the surface. For the pilot *séance d'écoute* in Ben Guérir, the organizers made a calculated bet that by disrupting the expectations of participants – visibly reversing the power dynamics between young people and eminent guests – a new body of publicly useful information could emerge. The power of narrative methods in surfacing tacit knowledge gives a powerful lever to public authorities that seek to explore the complexities of a public problem. And letting citizens share their views in the language of personal experience, in a direct and unfiltered dialogue with public officials, may be an essential way to rebuild trust as well.

4. To reach diverse audiences, open multiple channels and see what works. Taking into account Morocco's digital and territorial divides, the CSMD opened a wide range of in-person and online channels for citizen input. This variety posed an enormous organizational challenge for CSMD staff, but ultimately helped them adjust quickly during the onset of COVID-19. Regular self-analysis and objective measures are critical: monthly plenary sessions and weekly reviews within the CSMD staff helped identify gaps in participation patterns and plan new workshops or calls for contribution to fill those gaps.

5. Government and academia can complement one another's strengths. In this case, real-world application of collective intelligence science – from concepts like cognitive diversity to methods like guided storytelling – was made possible by an open-minded government partner hungry for good ideas. To make this work, however, researchers should also keep an open mind and be ready for some promising ideas to prove unfeasible given time and budget constraints. Finally, respect for the autonomy of scientific research and analysis was a critical factor in the success of this partnership, and offers a good precedent for such partnerships to deepen in the future.

We give the final word to a young resident of Fès, who participated in the *rencontre citoyenne* organized for her city:

> Citizen participation must not only be stating our opinions; it must take into account all the interactions at work in the final decision. The citizen should be included in public decisions; without this, it will be impossible for him to embrace them.

Notes

1 The names of the young people in this story have been changed to protect their identity, but their stories were transcribed and translated into English as carefully as possible.
2 The 35 members were asked to serve on the Commission by personal request of King Mohammed VI with the consent of Morocco's parliament. See www.lepoint.fr/afrique/maroc-la-bataille-contre-les-inegalites-peut-commencer-18-12-2019-2353790_3826.php.
3 World Bank figures, see https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=MA.
4 Moroccan High Planning Commission figures, 2019: www.hcp.ma/Note-d-information-du-Haut-Commissariat-au-Plan-a-l-occasion-de-la-journee-internationale-de-la-femme-du-8-mars-2020_a2466.html.
5 World Bank, "Morocco Country Private Sector Diagnostic 2019," available at http://documents1.worldbank.org/curat-ed/en/228331567687617816/pdf/Creating-Markets-in-Morocco-a-Second-Generation-of-Reforms-Boosting-Private-Sec-tor-Growth-Job-Creation-and-Skills-Upgrading.pdf.
6 See https://climateactiontracker.org/countries/morocco/2019-09-19/.
7 See www.initiativesfleuves.org/actualites/maroc-penurie-deau-sintensifie/.
8 The Réforme.ma site saw over 130,000 unique visitors in three months; see www.rfi.fr/fr/afrique/20110421-ma- roc-site-internet-participer-reforme-constitution.
9 See www.maroc.ma/fr/actualites/elections-legislatives-2016; https://telquel.ma/2016/10/10/abstention-bipolarisation-makhzen-les-elections-legislatives-vues-letranger_1518436.
10 See www.opengovpartnership.org/members/morocco/.
11 Full speech available at http://www.pncl.gov.ma/fr/Discours/TTDiscours/Ann%C3%A9e2017/Pages/Discours-trone-.aspx.
12 Full speech text is available at www.pncl.gov.ma/fr/Discours/TTDiscours/Ann%C3%A9e2017/Pages/Discours-%C3%A0-l%E2%80%99ouverture-de-la-premi%C3%A8re-session-de-la-2-%C3%A8me-ann%C3%A9e-l%C3%A9gisla- tive-de-la-10-%C3%A8me-l%C3%A9gislature.aspx.
13 Full speech text is available at www.moroccoworldnews.com/2019/08/280746/king-mohammed-vi-revolution-of- the-king-and-the-people/.
14 See www.eiu.com/Handlers/WhitepaperHandler.ashx?fi=Democracy-Index-2019.pdf&mode=wp&campaignid=democracyindex2019. Along with Tunisia and Israel, Morocco was the only nation in the Middle East and North Africa region to be classified as a "hybrid regime" or "flawed democracy"; the remaining 17 nations were all classified as authoritarian systems.
15 See "Début des travaux de la Commission spéciale sur le modèle de développement," Medias24, 16 December 2019.
16 The UM6P School of Collective Intelligence team partnered with the CSMD from December 2019 to November 2020, during which time the CSMD paid UM6P to provide trainings and coaching sessions on consultative methods. These interventions were strictly scientific and non-partisan. The present case study was researched and written independently following the end of the CSMD's mandate. The conclusions herein are solely those of the authors based on their own research and analysis.
17 For a more comprehensive overview, see Paulson (2021).
18 Approximately 1500 euros.
19 See www.france24.com/en/live-news/20210910-morocco-s-king-names-businessman-aziz-akhannouch-to-lead-government.
20 See www.mapexpress.ma/actualite/societe-et-regions/marrakech-safi-lancement-phase-pilote-consultations-nationales-elargies-lamelioration-qualite-lecole-publique/.
21 It was in the context of the US presidential campaigns in 2004 and 2008 that Lex Paulson met and was trained by Prof. Ganz.

References

Boehm, C. (1999). *Hierarchy in the Forest*. Harvard University Press.
Boyd, B. (2010). *On the origin of stories: Evolution, cognition, and fiction*. Harvard University Press.
Bruner, J. (1987). Life as narrative. *Social Research*, 11–32.

Ganz, M. (2011). Public narrative, collective action, and power. In S. Odugbemi & T. Lee (Eds.), *Accountability through public opinion: From inertia to public action* (pp. 273–289). World Bank Publications.

Graham, J., Haidt, J., Koleva, S., Motyl, M., Iyer, R., Wojcik, S. P., & Ditto, P. H. (2013). Moral foundations theory: The pragmatic validity of moral pluralism. In P. Devine & A. Plant (Eds.) *Advances in experimental social psychology* (Vol. 47, pp. 55–130). Academic Press.

Holtgraves, T. (1997). Styles of language use: Individual and cultural variability in conversational indirectness. *Journal of Personality and Social Psychology*, *73*(3), 624.

Hong, L., & Page, S. E. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences*, *101*(46), 16385–16389.

Kellas, J. K. (2017). Communicated narrative sense-making theory: Linking storytelling and well-being. In *Engaging theories in family communication* (pp. 62–74). Routledge.

Kellas, J. K., Morgan, T., Taladay, C., Minton, M., Forte, J., & Husmann, E. (2020). Narrative connection: Applying CNSM theory's translational storytelling heuristic. *Journal of Family Communication*, *20*(4), 360–376.

Leonard, D., & Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review,* 40(3), 112–132.

Page, S. (2017). *The diversity bonus*. Princeton University Press.

Paulson, L. (2021). *A Moroccan model of collective intelligence: The Commission spéciale sur le modèle de devéloppement*. Policy Center for the New South. Available at www.policycenter.ma/publicati ons/moroccan-model-collective-intelligence-commission-sp%C3%A9ciale-sur-le-mod% C3%A8le-de.

Sinek, S. (2014). *Leaders eat last: Why some teams pull together and others don't*. Penguin.

Smith, D., Schlaepfer, P., Major, K., Dyble, M., Page, A. E., Thompson, J., … & Migliano, A. B. (2017). Cooperation and the evolution of hunter-gatherer storytelling. *Nature Communications*, *8*(1), 1–9.

Storr, W. (2020). *The science of storytelling: Why stories make us human and how to tell them better*. Abrams.

Tannen, D. (1981). Indirectness in discourse: Ethnicity as conversational style. *Discourse Processes*, *4*(3), 221–238.

Tesler, R., Mohammed, S., Hamilton, K., Mancuso, V., & McNeese, M. (2018). Mirror, mirror: Guided storytelling and team reflexivity's influence on team mental models. *Small Group Research*, *49*(3), 267–305.

Tomasello, M. (2019). Becoming human. In *Becoming Human*. Harvard University Press.

Weisfeld, G. E. (1997). Discrete emotions theory with specific reference to pride and shame. In N. L. Segal, G. E. Weisfeld, & C. C. Weisfeld (Eds.), *Uniting psychology and biology: Integrative perspectives on human development* (pp. 419–443). American Psychological Association.

Taylor & Francis
Taylor & Francis Group
http://taylorandfrancis.com

Reinventing public administration: New modes of collaboration

Introduction

Stephen Boucher

"We have repeatedly observed the natural and social failures of thin, formulaic simplifications imposed through the agency of state power," observes Yale political scientist James Scott toward the end of his book, *Seeing Like a State* (1998).[1] It is a fact that, even with the best of intentions, trying to satisfy other people's needs and "improve the human condition" is a complex matter and one where errors can be very real and costly to both people and the environment. The stories in this chapter illustrate how the study and practice of public administration is now evolving into new directions to meet this challenge.

While historically the main research areas of political science have concentrated on many aspects of politics, using a host of approaches, whether looking at the foundations of power, general laws of public institutions, how political crises emerge, how public actors interact, or studying their behavior and psychology, they have tended to focus less on how to achieve good policy results. The field of "public administration", likewise, studies how to implement policy and administer programs, but has struggled to determine how to successfully rule for the benefit of all, as exemplified by James Scott's account. Yet public administration studies have produced a considerable amount of knowledge as to how to successfully manage human resources, organize departments, collect and study data, allocate resources, and examine and evaluate the available options to implement the goals of laws and elected officials. Yet, as James Scott points out again, "any large social process or event will inevitably be far more complex than the schemata we can devise, prospectively or retrospectively, to map it" (Scott, 1998). So how can societies resolve the challenge that they are becoming ever larger, more complex and interconnected, and yet cannot (so far) count on public administration to design consistently effective solutions? Can one in fact design processes that provide such solutions?

Academics and civil servants alike are now seeking new ways to tap into the wisdom of the crowds, to elicit and cultivate the practical know-how of civil servants and citizens developed in their varying contexts, to base policies on better evidence, to challenge the hegemony of experts and certain scientific disciplines on government, and to test out and assess policies in a more agile and decentralized fashion than past thinkers of public admin- istration envisaged. Generally, there is a willingness to foster innovative thinking, whether it allows the emergence of better solutions within the public sector (this we will refer to as

public sector innovation) or whether it supports solutions developed within society more generally (which we'll refer to as social innovation). Taking a step back, this section's stories provide a perspective on public administration's recognition of some of its key challenges and on the new directions for study and practice being explored.

Starting point: Recognizing new challenges

Behind each of the cases in this chapter is the recognition that the typical way of conceiving or delivering a public service may no longer suffice.

In "Challenging received wisdom and spreading innovation: Lessons from the Youth Justice Board," the **UK** government acknowledged the previous failures of youth delinquency policies, admitted that it didn't have a clear understanding of the causal factors of delinquency, and therefore that this politically hot issue required new approaches that went beyond putting thousands of minors in prison.

In "Hearing the marginalized – the *jan sunwai* in **India**," public authorities understood – due to civil society pressure – that the excluded need specific formats to express their grievances against civil servants that can be unreceptive.

In "Creating collaborative young communities through school participatory budgeting," we see how the authorities of a small town school in the **Czech Republic** saw the opportunity to change governance methods to inculcate values of democracy and active citizenship, as opposed to the previously more passive role that students took in their school.

In "Dreaming, remembering, scaling and innovating boldly: How a small French town initiated a journey toward zero unemployment," we have on the one hand a civil society group that saw a social need, devised a solution for it, and convinced policymakers to implement it, and, on the other hand, national public authorities in **France** that understood the value of creating a framework for experimentation in order to let 1,000 (200 in this case) flowers bloom.

In "Public challenges to kindle innovation: How one telegram forever changed public policy in **Australia**," we learn how the country's authorities realized that they didn't have the skills nor financial resources to develop an airborne connection with Great Britain and that it needed to let others figure this out.

In "Creating a 'voice' of collective change through simple mobile phones," authorities in **India** saw the need for new forms of public awareness campaigns to reach and convince more people through a voice-based participatory media platform designed for people with limited financial means, no access to the internet, and who are, for some of them, illiterate.

Finally, in "Collective intelligence and digital participatory platforms", we learn how a thriving group of activists and elected officials in the municipality of **Barcelona** built the Decidim civic tech platform and a whole community of practice around it in order not only to stimulate new ideas, but also to create a greater sense of togetherness.

These cases illustrate only a handful of the obstacles to collective intelligence in public administration. Without being in the minds of the public servants behind the initiatives described in the forthcoming cases, one can hypothesize that they were aware that the best managed public bodies can become victims of the competency trap. This notion, coming from the field of organizational learning, tells us that as organizations tend to become more competent and specialized, they rely on routines, repeat rules, recipes, conventions, beliefs, and thereby kill experimentation and creativity (March, 1991). The dominant logic theory, well known in strategic management, also suggests that higher leadership echelons over time build mental models that hinder them from exploration. In the field of strategic

management, C. K. Prahalad and Richard A. Bettis described the concept of dominant logic in 1986. Prahalad and Bettis suggested that the way top managers deal with the increasing diversity of strategic decisions in an organization depends on the cognitive orientation of top managers. Dominant logic consists of the mental maps developed through experience in the team.

Such dynamics as the competency trap and dominant logic can of course not be ruled out in public sector organizations. There is even evidence that pursuing best practices and benchmarking – the practice of researching what are the approaches and solutions that set the standard in terms of performance in a given field – is a recipe for conventional, average, if not mediocre results. Shane Snow (2018) argues that best practices "allow us to take the lazy way out instead of pushing ourselves to be creative."[2] So even when teams of civil servants try to learn from others, this may not be enough to avoid poor decisions.

The civil servants behind the cases reviewed may also have been aware of the limitations of what developers refer to as the "Big Design Up Front" (BDUF) approach. BDUF is a software development approach in which the program's design is to be completed and perfected before that program's implementation is started. As the name suggests, it involves having a clear idea of what the final result should look like and having the confidence – some would say the *hubris* – of being able to devise a grand strategy getting to that end goal. As told by James Scott, the history of public administration is full of examples of grand schemes gone awry.

Other public officials, we can surmise, may have seen the need for greater dissent and diversity in perspectives to avoid the pitfalls of groupthink. Others yet may have been conscious of the phenomenon known as "creeping normality" – otherwise poetically known as "death by a thousand cuts" – which describes how a major change can be accepted as a normal situation if it happens slowly, through increments of change. The change could otherwise be regarded as objectionable if it took place in a single step or over a short period. The phrase "creeping normality" was coined by Jared Diamond in his 2005 book, *Collapse: How Societies Choose to Fail or Succeed*. He had previously alluded to this theory while attempting to explain why in the course of long-term environmental degradation, Easter Island natives would, seemingly irrationally, chop down the last tree.

In response to such challenges – and many other obstacles preventing good decision-making – one can identify through these seven stories a number of insights, as well as indications of the new lines of thinking that are emerging in the art and science of public administration.

New directions

Collective intelligence can be fostered both in close-knit or loose communities, as well as across elite circles and lay citizens

It is often assumed that simplicity and close-knit communities are more conducive to democracy than complex, large, loose groups. Both Rousseau and Montesquieu argued that small, homogeneous groups were the ideal space for democracy to flourish. Yet the stories in this section suggest otherwise. Certainly, a highly participatory process in a Czech high school or the local efforts of activists fighting long-term unemployment at municipal level show how CI can thrive in smaller groups. However, the example of the Mobile Vaani shows that a simple aggregation and information exchange tool can foster weak ties, which can be sufficient to generate new dynamics.

Similarly, it is worth stressing how the stories in this section involve very different types of contributors, from illiterate citizens marginalized by society - in the two Indian cases – to educated and connected individuals – in the case of the Australian flight challenge or the Decidim civic tech community. Governments and civil society groups seeking to foster CI may find inspiration here to create both vertical (bottom up and top down) and horizontal (peer-to-peer) channels for information and collaboration, at all levels of government and society.

Technologies can be accessible

With the development of new, sophisticated technologies, some readers might be concerned that CI aficionados – and tech developers – will try to sell us costly tools and software. The stories in this section tell us how technologies can be more or less sophisticated. In the case of the Mobile Vaani, technology was in fact made deliberately easy to use to allow people with different levels of literacy to join the conversation. Sometimes, "technologies" may also be methodologies that have been thoroughly tested, documented, and shared, as is the case here with participatory budgeting. Another example of such a low-tech "technology", which readers may be interested in exploring, is Appreciative Inquiry (see Cooperrider 2008 for more on AI). What all cases have in common, rather than a certain type of method or tool, is the importance of drawing upon people's intrinsic motivations.

Fostering social and policy innovation and exploration as central to public administration's mandate

Faced with mounting challenges, a number of advocates of new forms of public administration, such as the OECD, argue that

> innovation should be a core activity of the public sector: it helps public services to improve performance and increase public value; respond to the expectations of citizens and adapt to the needs of users; and increase service efficiency and minimize costs.
>
> *(OECD, 2014)*

The French administration similarly noted in 2015 that "Public innovation is an emerging dynamic within the public sector. This movement is made up of concrete initiatives aimed both at improving relations with users and the internal functioning of administrations. These actions are carried out by public actors (state services, public operators, communities, hospitals) throughout the country, and in all types of administrations. They are based both on new methods of designing public policies (design, prototyping of public services, co-design with stakeholders, listening to users, etc.) and new objectives (improvement of the quality of service, support for change, development of digital administration)."

With this in mind, figuring out how to foster better decision making and innovation at all levels of administration is crucial to the continual development and improvement of society. Research shows that frontline employees accumulate knowledge of strategic and financial value for organizations (Hallin, 2009; Hallin et al., 2017). Yet, most major innovations are initiated at the top of organizations. That is, public managers must increasingly cultivate a diversity of staff, while paying attention to the needs and expectations of users and frontline

staff, and promoting formal creativity techniques as valuable tools to cultivate public bodies' ability to innovate.

As the stories in this chapter illustrate, this may not be sufficient, however, and more is happening in interaction with public administration's operational environment. Since the early 2000, public figures such as Christian Bason and Geoff Mulgan, initially through MindLab and Nesta, respectively, have been making this point, insisting, for instance, that a crucial factor in fostering innovation in public administration lies in managing risks and incubating new ideas with the essential need for prototypes, as well as the willingness to invest time and resources for their evaluation. Rewarding appropriately such risk taking and new ideas is also decisive. "In the public sector it is unlikely that organizations will expire if they do not develop new ideas. In the absence of the profit motive it is essential to provide other incentives for individuals and organizations, such as greater recognition of success amongst one's peers," assert Mulgan and Albury (2003).

Christian Bason, as former head of MindLab, is one of the leading voices in public sector innovation. He posits in *Leading Public Sector Innovation: Co-Creating for a Better Society* (2010) that governments have reached a critical juncture. Faced with pressing transnational problems they cannot solve alone – such as climate change and the refugee crisis – their best hope he argues is to **collaborate with innovators** to find solutions. In practice, he suggests, this means integrating design principles into policymaking, investing in citizen engagement and working closely with the private sector to address complex problems.

How to foster such innovation over the long run in the face of politics remains a challenge, as illustrated by the Youth Justice Board case. Eva Sørensen confirms that "Public innovation has risen to the top of the agenda among governments all over the Western world" (Sørensen, 2021).[3] However, she also notes that

> researchers have so far mainly theorized, studied and analyzed issues related to innovations in public services and public delivery. Few have paid attention to the fact that public service innovation takes place in a political context, and that innovations in polity, politics and policy are fundamental aspects of public innovation.

Building decentralized and agile systems

As an alternative to the BDUF approach, which can work when you have a good command of the context and of your goals, the agile approach was designed for complex, non-deterministic, nonlinear projects. It prioritizes being adaptive rather than predictive, and operatives through a series of small bets rather than a single – more or less well-calculated – wager. Such methodologies require a new way of thinking which has been described as emergent design, with minimal or no design at the start.[4] Such an approach is exemplified by Australia's airline challenge, the UK Youth Justice Board, and the French "zero unemployment" stories (among others in this handbook).

The potential merit of such methodologies is the ability to tackle complexity more effectively due to a bottom-up approach that is both more nimble and more decentralized. Complexity science, made possible by modern analytical and computational advances, is certainly changing the way we think about social systems and social theory. Unfortunately, argue David Colander and Roland Kupers in *Complexity and the Art of Public Policy,* governments' policy models have long been dominated by centralized command-and-control structures and simplistic narratives, either pro-market or in favor of government control. Colander and

Kupers describe how policymakers, economists, and society have become locked into the current policy mindset, and lay out fresh alternatives for addressing complexity by opening up public bodies' toolbox to disciplines other than conventional economics and to a more bottom-up policymaking approach. They call their recommended approach "activist laissez-faire" policies whereby innovative solutions are developed bottom-up, through new institutional structures such as for-benefit corporations, that channel individuals' ideas into solving societal problems. They argue that a central role for government in this complexity framework is to foster an environment within which diverse forms of social entrepreneurship can emerge and blossom (Kupers and Colander, 2016).

One can recognize the traces of such decentralized and agile approaches in the stories here about participatory budgeting, public challenges, local experiments turning into national legislation, as well of course as many in other case studies throughout this book. In some cases however, we also perceive the resistance of (some) public bodies that are finding it hard to let go of traditional modes of governing.

Tapping into crowd wisdom

In fostering innovation, many public bodies are also realizing the value of opening up to outside expertise through assemblies of experts or citizens. The examples of collective intelligence presented here are indeed best understood as "assemblies of multiple elements – different elements co-evolving with their environment" which, according to Mulgan (2018), "bring together many elements of collective intelligence into a single system. They show how the world could think on a truly global scale, tracking such things as outbreaks of disease or the state of the world's environments, and feeding back into action (...). "Most successful collective intelligences look much more like hybrids, assemblies of multiple elements," argues Mulgan (2018, p. 27).

As Geoff Mulgan points out (2018, p. 28),

> To work well, and serve a whole system, whether that's within a company or run as a public good, an assembly needs to combine many elements: rich sources of obervation and data; models that can make predictions; capacities to interpret and analyze; abilities to create and innovate in response to new problems and opportunities; a structured memory, including of what's worked in the past; and a link into action and learning that's aligned with how people really behave. The test of these elements, when linked up, is then whether they help a whole system think and act more effectively.

Mulgan also notes that

> Assemblies are in part technical designs, but they only become useful if they connect to action, which requires them to be sophisticated about behaviors, cultures, and organizational norms, all of which may be more taxing than the design of sensing systems and algorithms.
>
> *(2018, p. 29)*

Assemblies, under such an acception, encompass a variety of forms of organization, including but going beyond the citizen assembly model – a body formed from the citizens of a state to deliberate on issues of importance.

This line of thinking suggests the advent of what some call – and promote as – aggregative democracy. According to advocates, public representatives are seen in this approach "as merely a conduit for the transmission of the preferences and interests of constituents," who believe that "all legitimacy must be anchored in a popular vote" (Heath, 2016). For the best outcomes, it is argued that aggregation should be considered together with deliberation:

> A model of collective decision making in which aggregation and deliberation are treated simultaneously. Individuals debate in a public forum and potentially revise their judgements in light of deliberation. Once this process is exhausted, a rule is applied to aggregate post-deliberation judgements in order to make a social choice. Restricting attention to these alternatives, we identify conditions under which a democracy is 'truth-revealing'. This condition says that the deliberation path and the aggregation rule always lead to the correct social choice being made, irrespective of both the original profile of judgements and the size of the electorate.
>
> *(Perote-Peña and Piggins 2015, p. 93)*

Fostering learning

Assemblies are first and foremost learning communities. Learning and innovations spread due to communities of practice that bring together experienced practitioners, exchanging through formal and informal meetings, conversations, rituals, stories, myths, etc. Whether in the case of the Youth Justice Board, of Australia's challenge, of the French unemployment experiment or in other cases, public authorities sought to create the conditions for a community of practice (COP) to emerge. "A COP may be considered to be a community that is characterized by its participants' mutual interest and participation in a common practice" (as quoted by Introne and Goggins 2019, p. 206).

> Newcomers in a COP accumulate experience by working alongside more experienced members (a process referred to as legitimate peripheral participation), possibly becoming masters themselves who will guide subsequent newcomers. This process transforms the community's practice–based repertoire of knowledge, routines, and artifacts as newcomers potentially bring diverse perspectives and older members integrate, curate, and disseminate their accumulated repertoire.
>
> *(Introne and Goggins, 2019, p. 206)*

Evidence-based policymaking has thus emerged as a priority over recent years. "The attempt to ground policy-making in more reliable knowledge of 'what works' retains its relevance and importance," argues Sanderson (2002, p. 1). Indeed, "its importance is enhanced by the need for effective governance of complex social systems and it is argued that 'reflexive social learning' informed by policy and program evaluation constitutes an increasingly important basis for interactive governance." While some might fear a potential contradiction here between the inclination to open-up public administration to other forms of expertise, including citizen expertise, and the reliance on increasing amounts of detailed ex-ante and ex-post analysis, the "trick" appears to be in learning how to combine in a T-shaped approach both "horizontal" (generalistic) and "vertical" (specialized) types of expertise. As can be seen in the case studies in other parts of this handbook regarding COVID-19, the goal should be, argues Paul Cairney (2016, p. 119),

considering the legitimate role of elected policymakers, to pay careful attention to scientific evidence, and weigh it up against the preferences of other participants in the policy process, such as 'the public', the users of public services, and the organizations charged with implementing policy.

The danger, notes Ian Sanderson (2003, p. 339), is that

the notion of evidence-based policy-making places too much emphasis on the potential role of causal knowledge in improving policy effectiveness and insufficient emphasis on the normative, institutional and organizational context in which decisions and choices are made and action is taken.

The ambition should perhaps be to develop jointly learning public bodies as well as learning societies.

New agenda: Treating collective intelligence, creativity, and innovation as a commons

It can be argued that what the case studies in this section ultimately have in common is that the public bodies considered here treat collaboration, dialogue, collective intelligence, and innovation as a shared commons. The commons are the cultural and natural resources accessible to all members of a society, including natural materials such as air, water, and a habitable earth. These resources are held in common, not owned privately. Commons can also be understood as natural resources that groups of people (communities, user groups, etc.) manage for individual and collective benefit.[5]

A community's or a whole nation's collective intelligence can be regarded in this light as such a shared resource. A society's latent collective intelligence and creativity requires specific and deliberate governance mechanisms in order to be nurtured. Neglected, not considered as a commons, it faces all the obstacles listed previously and throughout this handbook. Carefully managed, it can prosper. However, the institutional changes implied by such a new perspective are not fully developed. "We now understand how institutions provide resources and opportunities that creative and innovative actors can use to alter institutional arrangements, albeit in incremental and evolutionary ways," notes John Campbell (2010, p. 109). However, he also stresses that "while it is important to understand what institutions do, to equate institutional change with a change in the functions they perform is a dangerous analytic precedent that is fraught with difficulties," as it requires incorporating the notions of struggle, conflict, and negotiation that are specific to the political world (2010, p. 88).

The case studies presented here provide evidence that small steps can lead to sometimes significant and durable change. However, as with other commons, preserving and enhancing our potential for better, smarter collective decision-making in the political and public administration realm will require sustained and well-informed efforts by policymakers.

"Government in a smartphone": Ukraine's Diia platform
By Lex Paulson

"Our vision was to make government an invisible servant of the people, and the best way to do this was through technology." Speaking from his office in Kyiv by Zoom, Alex Bornyakov, Ukraine's Deputy Minister for Digital Transformation, wears a careful and serious expression with a glimmer of pride.

Seven months into the invasion of his country, he is relating the story of how his ministry created a platform for real-time communication between millions of citizens and their government. "In 2019, at the time of our last election, I was finishing a degree in international relations at Columbia and following things very closely. I heard this outsider candidate, Volodymyr Zelenskyy, propose the idea 'to create government on a smartphone'. I had spent the early years of my career building IT systems, so this phrase really got my attention."

Bornyakov says that he didn't know exactly what that phrase would mean in practice – he's not sure Zelenskyy did either – but he and his friends in Ukraine's tech community were intrigued. "In Ukraine we have a very talented IT community, who grew up in a time of very limited public services and a lot of corruption and bureaucracy. The vision of that tech community was that by substituting automatic scripts for many government actions, we could make government more efficient, more transparent and less scary to people."

After his improbable victory in 2019, Zelenskyy named Mykhailo Fedorov, a 28-year-old digital entrepreneur, as digital lead for his presidential campaign. Shortly afterwards, Fedorov received Parliament's support and was designated to lead the newly established Ministry of Digital Transformation. Though young and idealistic, Federov and his ministry team – which Bornyakov was soon asked to join – had a hard-nosed theory of change: "We already had the vision statement, but we needed to turn it into ambitious but understandable goals, and fast. Minister Fedorov realized that the really necessary change was a new digital 'back end' for all of government. We took Estonia as an inspiration, their idea of a 'data bus' that allowed data from different services to talk to one another. But we also knew that if we said, 'A really big change is coming but we need three years,' no one in the government would wait for it." The goals set for the Digital Ministry were formidable ones : transfer 100% of public services into digital form, provide high-speed internet to 95% of municipalities, teach basic digital skills to 6 million Ukrainians, and increase Ukraine's IT sector to 10% of GDP, all by 2024. Fedorov's idea was to create a sequence of 'digital quick wins' to build momentum, while another part of his team did the heavy infrastructure work behind the scenes. This included creating a tax-free zone, "Diia.City", with e-residency for foreigners to conduct business in the country as well as attracting new investment for Ukraine's start-up ecosystem.

In September 2019 the Digital ministry team presented the concept of a web portal and application called "Diia" – a Ukrainian play on words meaning both "action" and, when the acronym is spelled out, "the State and me." Their mission was to put 100% of government services online, with 20% of services totally automated. The Head of Development of e-Services at the Ministry of Digital Transformation Slava Banik, explains how they began creating the platform. "Our goal was to take all those paper forms that no one understands, and make everything accessible, short and simple. We wanted to change the basic way citizens and the state communicate. So we started with the digital driver's license. Everyone knows what it's like to leave documents in another jacket… but almost no one forgets their cell phone."

By design, each citizen's Diia account would be easy to create – a verified bank account, followed by biometric information like a fingerprint – but difficult to forge. If a Ukrainian registered on the Diia platform was stopped by a policeman, for example, the app created a temporary QR code, valid for 3 minutes only, that would call up the license and insurance information in the policeman's own app. Thousands of Ukrainians immediately signed up, then millions. "After the initial success of the digital driver documents," Banik continues, "we were

ready to seek some additional political support from the President's office, and launch the next, even trickier 'quick win' – the passport." Within months, this quick win too was achieved, making Ukraine the first country in the world whose digital form of government identification was given equal validity as paper or plastic documents.

As the Diia team added service after service to the app, they kept close attention to concerns of data privacy and security. "Each government office or private vendor only has a specific access level when the citizen's data is shown to them – for example, a supermarket needing to check someone's age will see just that part, not your insurance information. And we enhanced the biometric functions, so that at a bank, for example, you can give a digital signature just by looking into your camera, confirming you're a real person instead of an image (we ask you to blink). Then the biometry of your face is compared to the photo in your passport and you fill in your PIN. No one has to print anything, it's a verified copy in the cloud." The range of services available through Diia widened, including the "eMalyatko" service for new parents, letting them register a child and receive 10 neo-natal services without visiting a single government office.

With over 18 million Ukrainians registered on the Diia application, Banik's team realized they now had a golden opportunity. "In late 2021 we were working on digitizing a lot of local government services, including the ability for citizens to create petitions on different issues. And we asked ourselves, 'If we are making it easy for citizens to ask questions to the state, why can't we do it the other way around… Why can't we figure out an easy way to ask citizens what they think?'"

From their extensive experience with social media, these young civil servants knew that the secret to gaining attention would be making each question personal, short, and jargon-free. "So we created a voting and polling function for Diia, where each poll would begin with a short video from the President or relevant minister explaining why the question was important and asking for your opinion, followed by a short poll. The concept was simple, but now we had a massive scale of citizens on the platform, and could see what people thought by age, region, and gender, all while protecting their anonymity."

Shortly after the Diia team launched the public poll function, Russia's brutal invasion began. Suddenly, Ukrainians had a new range of urgent needs. "For refugees fleeing the conflict," Bornyakov explains, "they had to leave in a hurry, so our team quickly developed a static version of the digital passport, so if their papers were destroyed they could still cross borders in a hurry." As businesses shut down all over the country, the government also needed to redirect cash assistance to citizens quickly. With the Diia app, "all someone needed to do was press a few buttons and they could enroll in cash assistance, sent directly to their verified bank account." The Diia team expanded a digital education feature to include 75 courses, for young people displaced by the war. Over 1.3 million signed up. And new crowdfunding features were launched to connect Ukrainians in need to donors around the world, including the UNITED24 and Army of Drones funding campaigns to support Ukrainian's armed forces and volunteers.

In wartime, too, it has been critical to tap into collective intelligence. "The crowdfunding feature was just one of a hundred ways in which Ukrainians are stepping up and helping save their country," Bornyakov recounts. "And in this fast-changing crisis, the public polling feature was extremely helpful. For example, who should be able to legally carry a firearm?" In response to this question proposed by the Ministry of Internal Affairs in the spring of 2022, 1.7 million citizens voted, with a majority (59%) agreeing that those who needed weapons for personal protection, and not just soldiers, should be legally entitled to have them.

The Diia polling feature has served other short-term goals as well. "On some issues," Banik continues, "posing a question to millions of citizens also serves an educational purpose, and attracts attention to certain issues. Next week, for example, we will launch the possibility of purchasing military bonds through the Diia platform, and we plan a series of polls to educate citizens about this and get their feedback."

What lessons can the world draw from Ukraine? One of the most improbable answers may be that Ukraine's government, despite a war and endemic governance challenges, has become one of the most digitally advanced in the world. More than 70 public services are available through the Diia website, and 20 public services and 14 digital documents are available in the Diia application. As of September 2022, 18 million Ukrainians, more than half of the adult population, are active users.

How did they achieve this? At least four factors appear critical. First, a special kind of political will that combined an outsider perspective with a savvy for turning the wheels of government. "Before becoming President," Slava Banik explains, "Zelenskyy was a typical citizen, so he followed politics the way citizens did, and knew what it was like to see government from their view." Zelenskyy took a simple, accessible idea – "government on a smartphone" – and then, secondly, staffed that idea with a vibrant young team. This Digital ministry team, as young as they were, had extensive international experience and were able to benchmark quickly: "At the beginning," Banik remembers, "we took a lot of inspiration from the Estonians. Now I think we may be ahead of them."

Thirdly, the Diia team put enormous energy into making their counterparts in other ministries comfortable with the transformation process they were leading. "Sometimes they would give us yes/no polls and explanations full of jargon. This is totally normal, and it's OK," Banik admits. "We just had to be patient and give them suggestions on rewriting the scripts, reframing the questions, using wording that will make the issue relevant for the average person." This patient and experimental attitude was something Banik and Bornyakov brought from the world of agile software development. "We also treat our user base as the best possible source of intelligence," he continues, "using the polling feature to ask them how we can improve the design of the platform itself."

Finally, this disruptive digital transformation was consciously built on a deep and distinct Ukrainian identity. Bornyakov explains, "The major reason why we have always been different from Russians is that Ukrainians have an entirely different relationship to the idea of freedom. Here people want to contribute, they want and *expect* to be part of decisions. We have a joke, 'wherever two Ukrainians gather, three more want to come manage them.' And Ukrainian women are equally important as our men in defining this spirit. We see this in our brilliant women MPs but also in all the everyday citizens, young and old, who are contributing to our resistance in this war. This is truly a collective fight, and Diia's mission is built on these values that make Ukraine worth fighting for."

Notes

1 *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* reviews a number of stories of good public intentions having gone terribly wrong, from monarchical France's plans to better manage its forestry, to compulsory villagization in Tanzania, among other cases.
2 In "The Problem with Best Practices", published Oct.15, 2015, www.fastcompany.com/3052222/ the–problem–with–best–practices, accessed January 4, 2021.
3 Eva Sørensen contributed for this handbook the case "Collective Political Intelligence as Driver of Effective, Innovative and Legitimate Policy-making: The Case of Political Task Committees in Gentofte".
4 On "emergent design" and related notions such as "practice wisdom" and "grounded theory", see Oktay (2012) and Andersen and Hallin (2017).
5 See the International Association for the Study of the Commons (IASC) for further references on the topic: https://iasc-commons.org/.

References

Andersen, T.J. and Hallin, C.A. (2017). *Global Strategic Responsiveness: Exploiting Frontline Information in the Adaptive Multinational Enterprise*. Abingdon: Routledge: 1618 pp. (Strategy Matters; Nr. 1)

Cairney, Paul (2016). *The Politics of Evidence-Based Policy Making*. Springer.

Campbell, L. John (2010). "Institutional reproduction and change." *The Oxford Handbook of Comparative Institutional Analysis*. Oxford University Press.

Cooperrider, D. et al. (2008). *Appreciative Inquiry Handbook for Leaders of Change*. Berrett-Koehler.

Diamond, J. M. (2005). *Collapse: How Societies Choose to Fail or Succeed*. New York: Viking.

Hallin, C.A. (2009). *Exploring the Strategic Impact of Service Employees' Tacit Knowledge: The Development of an Indicator for Forecasting Economic Performance of Hotel Companies*. PhD Thesis, The University of Stavanger. (open access). 145 pp.

Hallin, C.A., Andersen, T.J. and Tveterås, S. (2017). "Harnessing the Frontline Sensing of Capabilities for Decision Support." *Decision Support Systems*, 97: 104–112.

Heath, J. (2016). "The democracy deficit in Canada." Associate Professor, University of Toronto.

Introne, Joshua & Goggins, Sean. (2019). "Advice Reification, Learning, and Emergent Collective Intelligence in Online Health Support Communities." *Computers in Human Behavior*, 99. 10.1016/j.chb.2019.05.028

Knight, Jack, and James Johnson. (1994). "Aggregation and deliberation: On the possibility of democratic legitimacy." *Political Theory*, 22(2): 277–296.

Kupers, R., and Colander, David (2016). *Complexity and the Art of Public Policy: Solving Society's Problems from the Bottom Up*. Princeton University Press.

Lave, J., and Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press, Cambridge, UK.

OECD (2014). *Innovating the Public Sector: From Ideas to Impact*, available at www.oecd.org/innovating-the-public-sector/Background-report.pdf.

Oktay, Julianne S. (2012). *Grounded Theory*. Oxford University Press.

March, J. (1991). "Exploration and exploitation in organizational learning." *Organization Science*, 2(1) 71–87.

Mulgan, G. (2003). *Big Mind: How Collective Intelligence Can Change Our World*. Princeton University Press.

Mulgan, G., and David Albury (2003). "Innovation in the public sector." Strategy Unit, Cabinet Office 1.1: 40.

Perote-Peña, J., and Ashley Piggins (2015). "A model of deliberative and aggregative democracy." *Economics and Philosophy*, 31(1): 93–121.

Prahalad, C.K. and Bettis, R.A. (1986). "The dominant logic: A new linkage between diversity and performance." *Strategic Management Journal*, 7: 485–501. https://doi.org/10.1002/smj.4250070602

Sanderson, Ian. (2002). "Evaluation, policy learning and evidence-based policy making." *Public administration*, 80(1): 1–22.

Sanderson, Ian (2003). "Is it 'what works' that matters? Evaluation and evidence-based policy-making." *Research Papers in Education*, 18(4): 331–345.

Scott, J. (1998). *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University.

SGMAP (2015) Ensemble, accélérons! Accompagner les acteurs de l'innovation dans leur changement d'échelle, www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/rapport-ensemble-accelerons_2015.pdf.

Snow, S. (2018). *Dream Teams: Working Together Without Falling Apart*.

Sørensen, E. et al. (2021). *Political Innovations - Creative Transformations in Polity, Politics and Policy*. Routledge.

19

CHALLENGING RECEIVED WISDOM AND SPREADING INNOVATION

Lessons from the Youth Justice Board

Stephen Boucher and Jonathan Oates

The story

"Get them out of our hair!" "Lock them up!" We witnessed how public sentiment toward repeat young offenders in the UK at the end of the 1990s was a highly emotive issue. As New Labour was about to take power in 1997, the UK's criminal justice system and the treatment of young delinquents were in dire straits. The dominant method of repression was imprisonment, with some 3,500 young people under the age of 18 in prison resulting in a recidivism rate of over 90%. As young delinquents represented only a fraction of the prison population, prison services had a hard time addressing the situation and taking specific care of young delinquents. Instead, since the subject had become very sensitive, it seemed to us that parties were pressured to appear tough on crime, preventing any subtle consideration of possible alternatives. The then leader of the opposition Labour Party, Tony Blair, faced a dilemma: he believed that the public would not reward a party that appeared soft on crime but he also reasoned that simply imprisoning more and more young people was not a successful strategy. His way of squaring this circle was to adopt the mantra that the Labour Party would be "tough on crime, tough on the causes of crime."[1]

Norman Warner, who had gained a strong reputation as Director of Social Services for Kent County Council and was then chair of the City and East London Family Services Authority, and was in the following years to become the architect of a daring reform in this area, recalls:

> The public was concerned about the persistent offenders, mugging, burglaries, there was some violence. A lot of it though was property crime, graffiti, wrecking local communities. They'd tear down telephone boxes, do public damage, mill around in gangs, smoke weed, drink, that kind of behavior. Many of them were persistent. And if the police arrested them, they took no notice. The public response to the problem was totally inadequate.[2]

The political debate dominated the newspapers, and so, continues Norman Warner,

> All the parties had to have some ideas. One idea from the political right was: "Put them in jail, teach them hard lessons." Blair was persuaded that you didn't have to follow this hard position, but we had to have a policy with some tough edges. I and other enthusiasts invented a new youth justice system.

Labour decided to follow Warner's recommendations. What ensued was a unique combination of political acumen, bold measures and entrepreneurial spirit backed by institutional changes and support from the top, which forever changed the political dynamics around this thorny issue.

The policy mix featured a variety of what were novel approaches at the time, such as restorative justice,[3] community payback[4] and parenting classes designed to assuage the media, the government and citizens. Lord Warner – he was subsequently made a member of the House of Lords – recalls:

> We had to have some tough stuff in it. We were helped by technology: one of the ways was to use electronic tagging. This really started at the end of the 1990s. Thanks to technology, without putting people in prison, you could control them in the communities.

Restorative justice was introduced on the "softer" side. "When we started [this]," explains Lord Warner, "it was seen as a soft option, but the kids found that sitting in front of someone they'd burgled and understanding the grief that they'd caused was in some ways harder than jail." The government also introduced the idea of community payback.

On the organizational side, a Youth Justice Board was set up nationally to reduce youth offending at the same time as reducing the number of young people in prison. It had the responsibility to allocate the required human resources, responsibilities and budgets. To use Geoff Mulgan's framework, it provided several of the key functions for this department to act as a brain: Observation of the situation; sharing interpretation models; helping teams be creative to find novel solutions; gathering lessons to build the ecosystem's memory capacity; developing greater empathy for both victims and offenders; and drawing from experience to develop a wiser outlook on the challenges met.

The chairman of the Youth Justice Board sought to make the most of the new measures. "Experimenting and learning were central. Norman said to us: "We have failed so far, there is no one right way to do it, so we will try different approaches. I want to see a thousand flowers bloom." Norman Warner rewarded results. He invested in research to understand what worked, which helped people identify, for example, that children tended to create the most trouble in the summer, when they were idle, which focused attention on how to address this type of harmful activity through positive initiatives. To this day, the Youth Justice Board provides a Youth Justice Resource Hub on its website.

In addition to the Youth Justice Board, some 200 local Youth Offending Teams of several hundred people were thus deployed across the country. They worked – and still do over 20 years later – bringing together local police, social, sports, recreation and education services. Everywhere, the teams came together to think about how to prevent young people from getting in trouble in the first place, and if they did commit crimes, how to punish them other than by throwing them in jail. The key improvement here is not in specific meeting methodologies but in working across teams that previously didn't collaborate much.

This transversal approach was a success factor according to Lord Warner: "We had to put on our side the various people in the system, the policemen, the magistrates… we had to make sure they did not take a different approach, we would not have gone very far otherwise." Second, Lord Warner insists on the need to set ideology aside. "Prison works," right-wing leaders kept repeating, without, stresses Norman Warner, any data proving that this was the case. He therefore collected as much evidence as possible: "Answers had to be found to all these problems. And so the only way was to get all the departments to cooperate." But, he notes, "No one was responsible for the problem, so someone had to be in charge", which led to the creation of local teams making the different services work together, the Youth Offending Teams. However, and this is a distinctive feature highlighted by Lord Warner,

> we also needed a center, not to micromanage, but to act as a manager, to conduct scientific research, to invest in new approaches. If people had a good idea, we would test it and see if it worked and reward success with more resources.

Giving autonomy to local teams over their approaches and budgets, helping them work across silos, while ensuring a strong supporting role of national authorities turned out to be vital as new ideas were challenged. Teams were set up across the country, working with the police, social services, and sports, recreation and education services. They all came together to think: How do we prevent young people from getting into trouble? When young people get into trouble, how do we sanction without incarcerating? For those who get in prison, how do we ensure that the education and services inside the prison are good enough and connected so that they can help when they get out? The Prime Minister's steadfast support also proved decisive, according to Lord Warner: "We were able to deploy these measures because Blair continued to win for 10 years, we had a reputation of being something the Prime Minister continued to support."

Overall, the Youth Justice Board was a huge success. Ten years after its start, the juvenile prison population had dropped to less than 900 young people. The measures originally criticized are still in place. Nowadays, only the most difficult juvenile delinquents go to jail. Ten years after the start of the program, an Audit Commission report concluded that the new system was "a considerable improvement over the old system. Young offenders are more likely to receive intervention, the process is faster, magistrates are more satisfied, and offenders are more likely to make amends for their behavior" (Axford, 2005).

Yet, despite this success, the Youth Justice Board was threatened with abolition in 2011 because some in the new coalition government did not like the autonomy that the Board enjoyed. As then Chief of Staff to the Deputy Prime Minister, Jonny Oates helped ensure that these efforts were resisted, but he remains frustrated that the lessons that could have been learned by the success of the Youth Justice Board were not more widely applied in government. Lord Warner was never able to convince politicians to apply the approach pioneered by the Youth Justice Board and its Local Teams to Offenders between the ages of 18 and 21:

> Our prisons continue to be full of these youth. But no one is interested in picking up on the lessons learned from the other group despite the proof that you can overcome these problems and don't have to lock them up. But no one is prepared to risk their reputation.

Nor did the program encourage UK political and media observers to be more patient when confronted with other complex social and cultural policy challenges. Lord Warner recalls

how "David Cameron has supported a similar program for families in difficulty, but it has been severely criticized in the media, when it has been in place only four or five years." Lord Warner concludes: "If you don't give innovation enough time, it will fail."

What science tells us

Over the years, Norman Warner's team faced some of the most difficult challenges that analysts have identified in relation to policy reform. First, he was addressing what US commentators refer to as a "third rail issue," i.e., a topic that is so charged that politicians who approach it can get "electrocuted" in the media and in the polls (the metaphor comes from the high-voltage third rail in some electric railway systems) (Bieschke, 2009). Such issues can become "wedge issues," especially in two-party systems when party leaders opportunistically use them to split public opinion into adversarial camps. "Often gaining currency through the media, such issues may be considered to coarsen political discourse by exploiting factions" (Wiant, 2002).

In order to defuse criticism, Norman Warner benefited from the tutelage of his Prime Minister. He personally insisted on gathering hard data on the situation on the ground. Norman Warner created rewards for results, he invested a lot of research into what was going well, which helped people identify, for instance, that kids were most getting into trouble in the summer when they had little to do, so that helped identify how to displace that sort of activity. Evidence-based policymaking indeed not only helps policymakers focus their interventions appropriately, it also helps demonstrate how reforms have worked. The importance of grounding policymaking in more reliable knowledge of "what works" is not new. The idea goes back at least to Lasswell's call for a "policy science" designed to apply interdisciplinary research to policy problems (Lasswell, 1970). However, the idea "is enhanced by the need for effective governance of complex social systems and it is argued that "reflexive social learning" informed by policy and program evaluation constitutes an increasingly important basis for "interactive governance," argues Sanderson (2002, p. 1). Youth delinquency in this perspective is typical of complex, even wicked problems for which technical, top-down approaches tend to fail and where reflexive social learning is key.

By reorganizing teams and investing in research, Warner also helped stakeholders refresh their mindset, beliefs and routines, which can otherwise generate a "competency trap" that is detrimental for experimentation and creativity (March, 1991). This case study illustrates how one should be mindful of overconfidence in "evidence." As argued Brian Head (2008), even policymakers that seek to inform policymaking through evidence in fact "weave" three strands of information and values: systematic ("scientific") research, program management experience ("practice") and political judgment. "There is not one evidence-base but several bases," concludes Brian Head, "These disparate bodies of knowledge become multiple sets of evidence that inform and influence policy rather than determine it" (Head, 2008, p. 4).[5]

More generally, Warner and his team engaged in careful "stakeholder management," a term borrowed from the management literature. Organizational reforms sought to ensure that different stakeholders had a stake in the reforms enacted. In his seminal work *Strategic Management: A Stakeholder Approach*, Freeman (1984) defined the concept of "stakeholder" to include any individual or group who can affect the firm's performance or who is affected by the achievement of the organization's objectives (Buyyse and Verbeke, 2003, p. 458). As Warner points out,

> When we started on all this in the mid-1990s, no one owned the problem. When you're in social policy, when there's a social problem, everyone's interested, but no one owns it, so you have to find a way for people to own it. This led to the establishment of Youth Offending Teams.

Ownership requires accepting responsibility when something fails, and dedicating time and resources over a long period of time, he insists.

The fact that the local teams were encouraged to experiment and learn and received support to do so also encouraged transversal thinking, and, concurrently, working across teams helped generate a sense of togetherness. As Cannon and Chu note, transversal approaches "should prioritize engendering an epistemic community that promotes a relational awareness of historic and contemporary structures of oppression, facilitate innovative methodological approaches to research, and speak to more radical societal visions through mobilization and activism" (Cannon and Chu, 2021, p. 1). While "epistemic communities are networks—often transnational—of knowledge-based experts with an authoritative claim to policy relevant knowledge within their domain of expertise" (Haas, 2007), communities of practice (COP) foster learning and innovation by bringing together experienced practitioners, exchanging through formal and informal meetings, conversations, rituals, stories, myths, etc. "A COP may be considered to be a community that is characterized by its participants' mutual interest and participation in a common practice" (Wenger, 1998, p. 72).

Finally, the Youth Justice Board had the resources to identify, document, share and scale local innovations.[6] We address the notion of scaling in the case study about France's zero long-term unemployment experiment.

Do's and don'ts

"Innovation only starts if you have clarity about what the problem is," stresses Lord Warner. The Youth Justice Board's approach focused on all dimensions of the problem, and not just on the symptoms alone. Warner recalls: "When you profiled these kids, the family life was dysfunctional, a disproportionately large proportion were black, with an absence of male role models, the police didn't know what to do with them once they arrested them. Many of them had no jobs, some were highly disturbed, many were dyslexic, they couldn't read. There was a high focus in the ages 13–17, the vast number were nearly all boys. So the starting point was "what's the problem," understanding the drivers of youth delinquency, causes and effects and local particularities with an open mind.

"If you're going to create autonomous bodies, you have to be prepared to give autonomy," insists Warner. This means, he explains,

> taking money down to the regional level to people in the cities, trying to move more autonomy away from the centre to let local and regional people solve the difficult problems, with a degree of experimentation. What that will do is allow much more experimentation and innovation. Because it's highly unlikely that the people in Manchester will take the same decision as people in a rural community. What you will start to see is more innovation, stemming from a move to devolution sparked by constraints.

"Divide and empower" could be the motto in this case. Autonomy combined with sustained support from the political hierarchy allowed the experimentation to unfold in all directions. What worked was that Norman Warner had the latitude to make choices:

> For example, he made clear to the Prison Service that if they did not give satisfaction on education provision, he would commission prison places from the private sector instead. By handing the Youth Justice Board responsibility for the budget for juvenile places in prison, the government had provided a powerful lever for reform. The Board was empowered to make choices, to try things, and some didn't work, but the bottom line was that they could try and best practices could be shared.

However, one needs to be mindful of the danger of a "divide and scatter" dynamic.

Sadly, the benefits were not maximized, because, without a mechanism to promote successes in a non-partisan way, the lessons were not transposed to other policy areas and it was therefore insufficient to counter the perception of risk, for politicians of appearing weak if they applied the same approach to older delinquents.

Nevertheless, the case shows that, in a strident political environment, resources and inspirational leadership can help overcome polarization and oversimplification. A debate that was initially very polarized, converging toward increasingly simplistic and ineffective solutions, was transformed to give way to experimentation, then to acceptance – relative – by the various sides of the political chessboard. That required, stresses Lord Warner, resources to generate "leverage to get people to cooperate. To do that, you can set an agenda by using legislation that makes it very clear that parliament expects you to act in a certain way." It also required political backing and drive from the center, as well as a budget to reward best practices. Progress was clearly also made due to Norman Warner's inspirational leadership; he pushed the message and had the credibility and the communications skills to convince others.

Notes

1 A phrase coined by Tony Blair in an article in the *New Statesman*, January 29, 1993.
2 This and all following quotes by Norman Warner come from interviews carried out by Stephen Boucher in 2016.
3 Restorative justice is an approach to justice in which one of the responses is to organize meetings between victims and offenders in order for them to discuss who was harmed and how, and to agree on how the offender can repair the harm from the offense.
4 This is a form of punishment which requires offenders to pay back the community for the crimes they have committed.
5 For more about capitalizing knowledge, see the case in this handbook "Zero unemployment": A small French town shows how to dream, remember, scale and innovate boldly".
6 These are still accessible through the Youth Justice Resource Hub: https://yjresourcehub.uk/, accessed June 2021.

References

Axford, N. et al. (2005) *Forty years of research, policy and practice in children's services*. Sarasota: John Wiley & Sons.

Bieschke, K.J. and Mintz, L.B. (2009) 'Addressing concerns and taking on the third rail', *The Counseling Psychologist* 37(5), pp. 772–779.

Buyyse, K. and Verbeke, A. (2003) 'Proactive environmental strategies: A stakeholder management perspective', *Strategic Management Journal* 24(5), pp. 453–470.

Cannon, C.E.B. and Chu, E.K. (2021) 'Gender, sexuality, and feminist critiques in energy research: A review and call for transversal thinking', *Energy Research & Social Science* 75, pp. 1–11.

Freeman, R.E. (1984) *Strategic management: A stakeholder approach.* Boston, MA: Prisma.

Haas, P.M. (2007) 'Epistemic communities', in Bodansky, D., Brunée, J. and Hey, E. (Eds.), *The Oxford handbook of international environmental law.* New York: Oxford University Press, pp. 791–806.

Head, B.W. (2008) 'Three lenses of evidence-based policy', *Australian Journal of Public Administration* 67, pp. 1–11.

Lasswell, H.D. (1970) 'The emerging conception of the policy sciences', *Policy Sciences* 36(1), pp. 71–98.

March, J. (1991) 'Exploration and exploitation in organizational learning', *Organization Science* 2(1), pp. 71–87.

Post, J.E., Preston, L.E., and Sauter-Sachs, S. (2002) *Redefining the corporation: Stakeholder management and organizational wealth.* Stanford: Stanford University Press.

Sanderson, I. (2002) 'Evaluation, policy learning and evidence-based policy making', *Public Administration* 80(1), pp. 1–22.

Wenger, E. (1998) *Communities of practice: learning, meaning, and identity.* Cambridge: Cambridge University Press.

Wiant, F.M. (2002) 'Exploiting factional discourse: Wedge issues in contemporary American political campaigns', *Southern Journal of Communication* 67(3), pp. 276–289.

20

HEARING THE MARGINALIZED

The *jan sunwai* in India

Stéphanie Tawa Lama

Government officials don't come face-to-face with the horror, the anger, the frustration. So that's part of the *jan sunwai*, to bring things face-to-face.

(An activist)

The story

Rajasthan is one of the most beautiful – and poorest – states of India. This is where a group of activists, along with local villagers, have reinvented the *jan sunwai* or public hearing, a participatory device that proved to have exceptional transformative potential.

It all started in 1994, when it became clear that a public works scheme, meant to provide a minimum income to the poorest, was ridden with corruption: The supposed beneficiaries would not get their due, but how could they fight the state itself? The Mazdoor Kisan Shakti Sangathan (Workers' and Farmers' Power Organisation – MKSS), a civil society organization that had been involved in the struggle for the implementation of minimum wage legislation, decided to check the scheme's records, taking advantage of the notorious obsession of Indian bureaucracy with paperwork (Pande, 2014).

Armed with much perseverance, activists managed to obtain the records. They then organized a large meeting, inviting many villagers who had worked in the program, as well as local authorities, to participate. When the records were read aloud, villagers realized that these included many fictitious works and payments. For instance, a *sarpanch* (village's elected mayor) had put his family members on the records of the program, so that they would be paid even though they never came to work (Pande, 2014: 58). The confrontation of official records with their own experience revealed that massive embezzlement had taken place. This demonstrated that accessing public records was key to holding public authorities accountable (Jenkins and Goetz, 1999). Thus emerged the *jan sunwai*, a form of public hearing that allows ordinary citizens with limited access to power to express their grievances with public administration.

This first, heroic *jan sunwai* was followed by many others, as the MKSS took the lead of a nationwide campaign for the enactment of a right to information that brought together a large number of civil society organizations, as well as individual activists.[1] Obtaining systematic access to public documents was bound to be a challenge in a country where the bureaucracy inherited from its colonial past a tendency to insulate itself from the people. Yet, the

campaign proved to be extremely successful, since a Right to Information Act was enacted first in Rajasthan, and in 2005 at the all India level.

A less visible yet important consequence of the campaign was that it disseminated the methodology of the *jan sunwai* among the many progressive civil society organizations that took part in it. They started organizing their own *jan sunwais* around a large variety of issues, such as access to healthcare, the use of municipal budgets, or violence against Dalits – people belonging to the lowest castes in the Hindu social order, who used to be called "untouchables" before independence. Thus, the *jan sunwai* became a mode of mobilization used all over India – although it underwent many local adaptations.

What exactly is a *jan sunwai*, and what makes it so interesting? In essence, it is a meeting which can last from a few hours to a few days and that brings together, face to face, the people in charge of implementing a public scheme, and the people who are supposed to benefit from the same. Their dialogue is organized by facilitators, usually one or more civil society organizations. It is moderated by a small group of experts (academics, lawyers, retired judges, senior activists, sympathetic to the cause being discussed that day) called the panel or the jury. Facilitators are in charge of the preparation of the meeting, which can take several months. Indeed the *jan sunwai* is the culmination of a long process whereby they collect and document cases of violation of people's rights; they identify emblematic cases and train the concerned families to speak in public. They also invite relevant public authorities, constitute a panel of moderators, and put in place the logistics necessary for a large public meeting. On the D day, the moderators' role will consist of conducting the dialogue between authorities and those people who will expose their case.

Typically, on the day of the public hearing, the locals come together and sit under a large tent or in a public building. Facing them, on a dais, will be the "panel" – 4 to 7 "eminent people" who will play a crucial role during discussions, as explained below. A special space is reserved for bureaucrats between the public and the panel. The meeting will start with a kind of festive introduction, typically involving local activists singing a song, performing a dance or a little skit. Such elements of popular culture are crucial to create an atmosphere of confidence, hope, and even pride among the people, before the actual testimonies begin.

The atmosphere then becomes much more solemn, even tense at times, as cases are presented in succession. Each time, an aggrieved person will briefly narrate how he/she was denied his/her right: her child was denied admission to school, they never received their scholarship, etc. This requires overcoming one's fear and anger. A confrontation ensues with the concerned bureaucrat (for instance, a school principal, or a teacher) who has to clarify his/her action and who typically tries to justify it. The panel of moderators then intervene to clarify facts, explain what should have been done, and request corrective action. At the end of the meeting, moderators briefly recapitulate their recommendations, and sometimes a small press conference is organized.

Half community meeting, half court hearing

The *jan sunwai* is thus a hybrid type of meeting: Its scenography makes it look like half community meeting, half court hearing. It is at the same time a mode of mobilization and a forum for grievance redressal. Much of its strength lies in its ability to connect the individual and the collective: The succession of cases presented during the *jan sunwai* demonstrates the systemic nature of a problem that used to be experienced individually.

Jan sunwais help people realize that as Indian citizens, they have rights and entitlements. It is the responsibility of state authorities to protect such rights and deliver on such

entitlements. In the Indian context, marked by the "deep hostility of the government bureaucracy towards the poor" (Dreze, 2002, p. 818), public hearings are therefore a strong tool to demand accountability (Goetz and Jenkins, 2005). Their didactic dimension, combined with their emotional intensity, makes them particularly effective for communicating the idea of citizenship.

In the words of an activist:

> Once you're empowered with information on your own rights it's no longer charity that (you're) looking at… the moment (they) understand that it's actually (their) right, that really changes the way people feel, the struggle they're ready to undergo to get their entitlement and also the way the government interacts with (them).
>
> *(Interview, Delhi, 03/01/2013)*

Indeed *jan sunwais* enable the most marginalized to claim what is their right in front of representatives of the state. And because this is a public meeting, with moderators who carefully clarify how each case is emblematic of thousands of others,[2] it has been considered as a major example of communication for social change (Thomas, 2017).

What science tells us

As a community meeting – i.e., in development studies, a meeting of the local community (residents of slum, or women of a village, or farmers of a village, etc.) – *jan sunwais* are usually organized by a local nongovernmental organization (NGO) in order to discuss some issue and share information, thus educating one another, as well as to build confidence and plan some action. Their essential hybridity – as half community meeting, half court hearing – gives way to specific emotional dynamics that makes it a very efficient instrument of mobilization.

Emotions have a communicative function. They are especially important in a context where interactions happen between different social groups (Young, 2000). They are indeed a crucial tool to mediate in the confrontation between administrators and the administered. Moreover, the public of *jan sunwais* are actually often a "counterpublic" (Warner, 2002), insofar as it consists of subalterns whose discourse takes a form that is unusual in large meetings, namely, personal testimonies.[3]

All collective rituals produce some "emotional energy" (Jasper, 2011, p. 3). I would argue that such emotional energy is particularly visible and effective in *jan sunwais* as a result of the elaborate "emotion work" (Hochschild, 1979) that characterizes this form of mobilization. Hochschild defines emotion work as "trying to change in degree or quality an emotion or feeling" and explains that there are "two broad types: evocation or suppression" (Hochschild, 1979, p. 561). *Jan sunwais* illustrate how the organizers attempt to channel emotions such as fear, resentment, and anger, which might hamper the discussion, while stoking emotions such as confidence, courage and hope, which are likely to stimulate the exchange.

The *jan sunwai* as a whole can be considered as a sensitizing device (Traïni, 2009), that is, a device that educates, persuades, and develops empathy. In public hearings, social issues have a body and a face, they find a human incarnation in the victim who comes and testifies. This is crucial to the capacity of public hearings to sensitize their audience – the public, jury members, administrative officers and, through the media, public opinion. Indeed, this is a double-edged sensitizing device. On the one hand, it mobilizes the people by inciting

hope and pride: As the succession of cases demonstrates the systemic nature of the problem, it highlights the need for collective action in order to go beyond citizens' usual individual negotiation with the state. On the other hand, the *jan sunwai* also mobilizes, or remobilizes the moderators, by inciting empathy and indignation. The succession of cases (re)produces a "moral shock" (Jasper, 1999) that will incite them to use their lobbying resources in those power circles to which they have access (Tawa Lama-Rewal, 2015).

Thus, an expert and activist explained: "The problem with middle-class activism is the way you cushion the government and other middle-class functionaries... government officials don't come face-to-face with the horror, the anger, the frustration. So that's part of the *jan sunwai*, to bring things face-to-face" (Interview, Delhi, March 06, 2012).

The emotion work done by facilitators and moderators during a *jan sunwai* is meant to produce a change in the feeling rules (Hochschild, 1979) that govern interactions between marginalized populations and the state. "Feeling rules" are the ways we have been taught to feel, the emotions that we have learnt to consider as appropriate in different situations. By offering a clear and powerful demonstration that citizens have rights, that state functionaries have responsibilities, and that they are accountable to civil society, the *jan sunwai* strongly suggests that when addressing bureaucrats, citizens should feel not awe but self-respect. Emotions are central to the effectiveness of this performance of democratic citizenship. Such emotional dynamics are what makes the *jan sunwai* (at its best) more transformative than many participatory devices. It is thus an example of empowering participation (Fung and Wright, 2003).

Concretely, interviews with organizers suggest that, on average, only about 20% of the individual cases discussed during a *jan sunwai* are "solved" as a consequence of the *sunwai* (and the follow-up work).[4] But a larger impact is observed in the fact that the *sunwai* educates people about their rights and stimulates their collective mobilization, and alerts bureaucrats to the risk of facing public humiliation in case they are requested to participate in a *jan sunwai*. This second aspect has actually produced two kinds of behavior: in some cases, bureaucrats have changed their attitude toward marginalized citizens; for instance, one of the consequences of a *jan sunwai* organized on the right to education in Delhi was that school principals had to let parents enter in the schools, which led to the formation of active "school management committees." In other cases, they have tried to prevent the organization of future *jan sunwais*.

Do's & don'ts

On the basis of my research on public hearings (33 semi-directed interviews with organizers, moderators, bureaucrats, and lay participants in public hearings; the direct observation of three hearings and the analysis of a series of video captures; an analysis of the academic and gray literature), it is clear that a successful *jan sunwai* requires extended preparations before the day of the public hearing. Facilitators must enjoy the trust of local people, so they should have been working in the area for some time. They will need to have the knowledge of people's problems with one particular issue or scheme; evaluate what cases constitute violations of rights related to this issue/scheme; identify individuals who will be able to speak without flinching not only in front of a crowd, but also in front of powerful people; and prepare these persons, convince them that their testimony will be more useful than risky, and teach them how to tell their story in the most effective way (i.e., by being short and to the point, mentioning only those facts that matter to the discussion, and controlling their emotions).

Facilitators have to build a favorable emotional atmosphere at the beginning of the *sunwai*, to keep away fear, anger, and also boredom. This is where songs, dances, or skits can play an important role: These elements of popular culture will convey the issue at stake in simple, lively terms.

A *jan sunwai* is really effective only when bureaucrats of a certain level are present – that is, they should have authority over the staff involved in implementing the policy at stake. In order to ensure their attendance, facilitators must associate with a public authority that can be a local magistrate, or a specialized institution.

It will resonate better if the media show up. Thus, I was told that the panel must have some "star quality," for instance, by including some prominent activist, lawyer, or academic likely to attract the attention of journalists.

Finally, it is essential that facilitators follow up on the promises made by representatives of the state during the *sunwai*, and communicate to the public on action actually taken. Typically, such communication, which happens in the community meetings organized by facilitators in their area of intervention, will generate credibility not only for the facilitators but also for the *jan sunwai* as a process.

A *jan sunwai* will lose relevance if it falls into one of these traps

1. It can be hijacked by politicians who will use it as a platform to promote themselves. Yet facilitators must also be aware that when politicians are kept at bay, the *jan sunwai* may wrongly communicate the idea that bureaucrats alone are responsible for policies.
2. It is essential that the *jan sunwai* remains a forum where public actors can be confronted directly. It should retain a confrontational nature, otherwise it will become a simple exercise in airing grievances and thus lose much of its interest.
3. Institutionalization can be considered as success – and it has happened to some extent. Under the name of social audit, holding a *jan sunwai* has become mandatory in some of the most progressive legislation adopted in the past 20 years in India (laws that guarantee a right to work, to education, and to food). Most recently, a small state in the North East of India has adopted a law that in effect makes social audits a mandatory element of all schemes of social welfare. But institutionalization carries the risk of leading to ritualization, thus depriving *jan sunwais* from their subversive power.

Notes

1 In one village, a worker and a work supervisor had a rare chance to access the work record; they saw that it contained irregularities, took it and refused to give it back until all wages were duly paid.
2 As explained above, part of the organizers' mission is to select cases that are typical of a very large number of rights violations.
3 In large public meetings in India, personal testimonies are usually not seen.
4 One should note here that the *jan sunwai* is very resource intensive. It requires many working hours, by highly dedicated and skilled activists. Also, solving individual cases is not the primary objective of the *jan sunwai*, which aims more broadly at mobilizing people around their rights.

References

Dreze, J. (2002) 'On Research and Action', *Economic and Political Weekly* 37(9), pp. 817–819. www.jstor.org/stable/4411799

Fung, A. and Olin Wright, E. (Ed.) (2003) *Deepening Democracy. Institutional Innovations in Empowered Participatory Governance.* London: Verso.

Goetz, A.M. and Jenkins, R. (2005) R*einventing Accountability: Making Democracy Work for Human Development.* London: Palgrave Macmillan.

Hochschild, A.R. (1979) 'Emotion Work, Feeling Rules, and Social Structure', *American Journal of Sociology* 85(3), pp. 551–575.

Jasper, J.M. (1999) *The Art of Moral Protest: Culture, Biography, and Creativity in Social Movements.* Chicago, London: University of Chicago Press.

Jasper, J.M. (2011) 'Emotions and Social Movements: Twenty Years of Theory and Research', *Annual Review of Sociology* 37(1), pp. 285–303.

Jenkins, R. and Goetz, A.M. (1999) 'Accounts and Accountability: Theoretical Implications of the Right-to-Information Movement in India', *Third World Quarterly* 20(3), pp. 603–622.

Pande, Suchi. (2014) 'The right to know, the right to live: Grassroots struggle for information and work in India'. PhD thesis. University of Sussex.

Tawa Lama-Rewal, S. (2015) 'Les audiences publiques en Inde. Mobilisation de la rue et enrôlement des experts', in Traïni C. (Ed.) *Emotions et expertises. Les modes de coordination des actions collectives.* Rennes: Presses universitaires de Rennes, pp. 115–126.

Thomas, P. N. (2017) 'Contentious Actions and Communication for Social Change: The Public Hearing (Jan Sunwai) as Process', *Journal of Communication* 67(5), pp. 719–732.

Traïni, C. (2009) *Emotions... Mobilisation!* Paris: Presses de Sciences Po.

Warner, M. (2002) 'Publics and Counterpublics', *Public Culture* 14(1), pp. 49–90. www.muse.jhu.edu/article/26277

Young, I.M. (2000) *Inclusion and Democracy.* New York: Oxford University Press.

21

CREATING COLLABORATIVE YOUNG COMMUNITIES THROUGH SCHOOL PARTICIPATORY BUDGETING

Ankitha Cheerakathil

The story

The K. V. Rais High School in Hlinsko – a town of about 10,000 inhabitants in the Pardubice region of the Czech Republic – served as the grounds for an unusual experiment called School Participatory Budgeting (School PB) in 2016 around school students. The objective was to utilize the creativity and enthusiasm of young people to bring about positive changes in democratic governance.

Czech citizens are already familiar with City Participatory Budgeting (City PB) as a collective intelligence methodology for participatory urban governance. This is a process where citizens are given the power to decide on a portion of the city's budget, thus making the city's governance structure more participative and inclusive of the collective inputs of ordinary citizens. The methodology of City PB has its roots in Porto Alegre in Brazil, and the process occurs in many cities all over the world (Gret & Sintomer, 2005).

The question that School PB aimed to answer was the following: can the same methodology of collective intelligence in the form of City PB be used to improve the governance system of a public school?

Much like City PB, in this case the School PB was also organized from the bottom–up through the Global Education Initiative (GEI), a civic project of alumni of the K.V. Rais High School. GEI was founded to encourage private companies to allocate Corporate Social Responsibility (CSR) funds for improving school education. In 2016, they partnered with Institute H21 (a Czech thinktank working on innovative voting systems for deliberative policymaking) to implement the idea of School PB, with funding for the process facilitated by GEI.

The exercise followed a strict methodology of implementation. "We have designed the methodology of School Participatory Budgeting to resemble the Participatory Budgeting process of New York City," explains Helga Hrabincová, Project Manager with Institute H21. "The three basic phases of ideation, campaigning and voting from the NYC City PB process are included in this School PB process. We aim to inculcate important values of democracy and active citizenship in these young participants."

During the first stage, the organizing team consisting of students created a schedule for the School PB process and familiarized the whole school with its rules. Detailed information about the project was displayed on the news board located in front of the student canteen, which was the most frequented space in the school.

In the second stage, the organizing team coordinated meetings of students to identify and propose projects to be implemented in the school. A series of meetings was then organized with the school management so that the compiled list of proposed projects could be evaluated by a committee comprising the School PB organizers and the school's faculty. This evaluation was conducted according to the rules agreed upon and communicated to all students during the first stage.

The team then facilitated students in campaigning for their ideas. This was accomplished by arranging a space to advertise the approved projects, organizing an exhibition of the projects, and writing a press release about the School PB process for local newspapers.

To introduce a component of technology to the voting process, the School PB online application developed by Institute H21 was used. It followed the rules of the Janeček Method (JM) of multiple positive votes.[1] The JM was developed by Institute H21 with the intention of finding the widest possible common consensus in a decision-making process, and it enables voters to express their preferences more concisely.

The student voters were allowed to use two positive votes that could be distributed among the final list of proposed projects (only one vote could be allotted to a project at a time). The final outcome of the School PB process witnessed the representatives of GEI awarding student representatives of the winning project "recycling bins"' with a cheque amounting to $1,000 for purchasing eight recycling bins and installing them within the school. In the last stage, the team facilitated the implementation of the winning project, which was completed in July 2019.

The representatives of GEI and the school administration were impressed with the practical proposal that students finally chose as their preferred option within the School PB process. The school's director was so pleased with the conduct of the students and the productive outcome of School PB that he pledged to co-finance the School PB process for the next academic year.

School PB goes beyond narrow school curriculums to define what it means for a young person to be part of a community. This is done by treating the school as a microcosm of society and pulling students out of their passive roles within their schools. The notion that they have the opportunity and the responsibility to change their environment collectively is imparted.

What science tells us

There have been new learnings recently from the perspective of management theory on the need for student participation in the decision-making process of educational institutions. Examining the literature in organizational theory on shared governance suggests the need for greater involvement of students in matters pertaining to their educational institutions (Menon 2005). School PB promotes the spirit of participatory democracy, which is an important principle related to collective intelligence in governance. Decentralized, participatory governance plays a key role in the study of collective intelligence by political scientists. These very same principles can be utilized in improving school governance especially in the case of public schools where taxpayers' financial resources are utilized.

The theory that cognitive diversity in democracies leads to better and more consensual outcomes in governance structure (Landemore, 2013) is put into practice through School PB, where all inputs and suggestions from students for improving the school community are taken into consideration alongside the inputs of the school administration. Landemore argues that systematically including the diverse opinions and varied skill sets of all stakeholders within a community can lead to more acceptable and just outcomes in a democratic decision-making process.

Inclusive democratic practices can be adopted at the level of a student community, exposing them to the reality of decentralized governance (Boland, 2005). The importance of the student population in matters pertaining to the decision-making process of educational institutions has been reiterated, since students are the direct beneficiaries of the same. Additionally, as is the case with city participatory budgeting, involvement of students in decision-making within an educational institution allows for the easier implementation and acceptance of decisions pertaining to the community.

In addition, Arnstein (1969) describes the Ladder of Citizen Participation to explain how empowered public institutions and officials deny or give power to its direct beneficiaries. The context is reminiscent of the conservative functioning of public schools in terms of accountability in their administrative budgets. Redistributing power tangibly to the direct beneficiaries of public institutions – in this case, students belonging to a public school – would accomplish the goals set forth in Arnstein's seminal arguments on citizen participation in democratic processes.

Do's and don'ts

There are a number of practical considerations to be factored in while implementing School PB successfully:

- The academic calendars of the students involved need to be considered before planning the PB schedule, so that students are not preoccupied with exams when important phases of the project are occurring.
- Communication regarding the project needs to be done by the organizational student team in cooperation with the school management.
- The information has to be repeated to students by means of various communication channels. This is to ensure that the project remains as inclusive as possible.
- The organizing team needs to assess whether students have to fulfill certain age criteria to be part of the process, or whether students as young as 12 years of age may also be allowed to contribute to the PB process – both in terms of ideation and voting. These decisions can vary from school to school depending on how often (or not) students of the institution are encouraged to participate consistently in activities that go beyond their static academic curriculum. In certain cases, training workshops with exercises that stimulate critical thinking and independent work can be conducted with students prior to the start of the project.
- Additionally, it should be ensured by the school management that the winning project of the exercise is implemented within a realistic time frame. Students need to be shown that their time and effort in contributing to a participatory process within the democratic framework of their school community will yield positive results after all.
- At all times, the organizing team as well as the school management needs to reinforce the principle that students who participate in the process will actively contribute to the

improvement of their school community. This principle needs to be communicated con–sistently and often to all students, because this is the underlying objective of the exercise in and of itself.

Such a lesson will lead students to start their journey of becoming responsible citizens of a democracy with the motivation and the training to act collaboratively with the rest of society.

Note

1 More information about the objectives of the D21 – Janeček method is available on the Institute H21: www.ih21.org/en/d21-janecek–method.

References

Abers, Rebecca (1998). From Clientelism to Cooperation: Local Government, Participatory Policy, and Civic Organizing in Porto Alegrem Brazil. *Politics & Society*, 26(4): 511–537, doi:10.1177/0032329298026004004

Arnstein, Sherry R. (1969). A Ladder of Citizen Participation. *Journal of the American Planning Association*, 35(4): 216–224.

Boland, A. Josephine (2005). Student Participation in Shared Governance: A Means of Advancing Democratic Values? *Tertiary Education and Management*, 11:199–217. Springer 2005, doi:10.1007/s11233-005-5099-3

Cabannes, Yves (2004). Participatory Budgeting: A Significant Contribution to Participatory Democracy. *Environment and Urbanization*, 16:27–46, doi:10.1177/095624780401600104.

Cheema, G., & Rondinelli, D. (Eds.) (2007). *Decentralizing Governance: Emerging Concepts and Practices*. Brookings Institution Press.

Gret, M., & Sintomer, Y. (2005). *The Porto Alegre Experiment: Learning Lessons for Better Democracy.* Zed Books Ltd.

Karel Janeček (2012). D21 – Janeček Method. *Institute H21*, www.ih21.org/en/d21-janecekmethod. Accessed 27 November 2021.

Landemore, H. (2013). *Democratic Reason: Politics, Collective Intelligence, and the Rule of the Many.* Princeton University Press.

Menon, M. (2005). Students' Views Regarding Their Participation in University Governance: Implications for Distributed Leadership in Higher Education. *Tertiary Education and Management*, 11(2):167–182. https://doi.org/10.1080/13583883

Novy, Andreas & Leubolt, Bernhard (2005). Participatory Budgeting in Porto Alegre: Social Innovation and the Dialectical Relationship of State and Civil Society. *Urban Studies*, 42(11): 2023–2036, doi:10.1080/00420980500279828

DREAMING, REMEMBERING, SCALING, AND INNOVATING BOLDLY

How a small French town initiated a journey towards "Zero unemployment"

Stephen Boucher

"When you have no salary, you survive."

– A French citizen

The story

This is a story of experimentation, learning, activism, and memory that all led to a successful solution to long-term unemployment.

When one thinks of small towns in France, mild weather, blooming vineyards, and beautiful castles come to mind. Seiches-sur-le-Loir is one such place in the west of France, with a population of 3,000 people. Unfortunately, Seiches also harbored an ugly reality of long-term unemployment among its residents.

In 1995, 85 citizens of Seiches had been out of work for months. Some of them had been unemployed for years. Both men and women equally were victims of this situation. The local branch of the anti–poverty movement ATD-Quart Monde realized that they may never get back into the labor market.

The consequences of exclusion for these people were severe. ATD-Quart Monde had found that 26 among them had lost all hope of ever finding a work and had pressing family, housing, substance addiction, and financial issues to deal with. The remaining 59 persons were "ready to work, but felt considerable anxiety."[1] They were afraid that they'd end up like the others.

All of this changed when an entrepreneurial group of local campaigners, including the local activists of ATD-Quart Monde, suggested a bold solution to the Mayor. They decided to solve the issue of unemployment once and for all, and find a job for every single unemployed resident. For this, they turned to André Lainard, who had been the Mayor of

Seiches since 1989, with an innovative proposition. The idea was to match the talents and requirements of those looking for work with the needs of the city that could not be fulfilled by the existing staff. The volunteers of ATD-Quart Monde thus identified needs justifying the creation of 70 full-time jobs in areas that included gardening, sanitation of public areas, secretarial work, senior citizens' welfare, and renovations to public infrastructure. Their hunch was confirmed: "there is no shortage of work."[2]

The next issue was to find a way to remunerate those engaged in these potential new jobs. ATD-Quart Monde had the idea of starting an *entreprise à but d'emploi* (company designed to create employment). This company would recruit and pay the unemployed by channeling the social benefits received from the government. In this way they could employ the unemployed persons to improve their city and be trained, instead of being compensated for staying at home. These people would still be allowed to look for other work, and offer new skills to the job market.

ATD-Quart Monde explains:

> Exclusion starts with the creation of categories. Each time we draw up distinct sociological categories within the population, we start to choose those who will be helped as opposed to those for which there is no solution. In order to fight against this dynamic, it is essential to develop a versatile tool at the level of local territories, whose purpose is to host a small number of people (60 to 100 people maximum per unit), while including everyone who is concerned in that area. We must not start with the young, or women, or the elderly, or the disabled, we must welcome and make active *all* citizens who need help, in a given territory, because the right to be employed cannot, in our democracies, be a selective right.[3]

The jobs that are created based on this idea "are neither public jobs nor market jobs; it is an intermediate concept for a complementary economy" that is not in competition with already existing local enterprises.[4] Another interesting aspect of this idea is that while job-seekers normally answer vacancies issued by employers, according to this employment scheme, it is the companies that respond to the skills and requirements of each job-seeker.

It sounded straightforward. The Mayor agreed. The proposition was, however, declared illegal under national law: the idea's originality meant it was outside the legal framework. It was blocked by national authorities soon after its launch.

Undeterred, ATD-Quart Monde sought to promote the idea again in 2011. It produced a report in 2012 showing the positive impacts within the town of Seiches-sur-le-Loir of the initiative and lobbied members of parliament, a number of whom decided to champion the idea with President François Hollande. Thus, in 2016, more than 20 years after the idea first emerged, an experimental fund was created. A specific national law allowing for experimentation regarding public spending linked to unemployment was adopted. Ten medium-sized municipalities across the country were authorized to test the system. The movement labeled itself *Territoire Zéro Chômage de Longue Durée* (which roughly translates to "zero long-term unemployment for French territories").

In January 2017, the first *entreprises à but d'emploi* were set up. Altogether around 2,000 jobs were created. The following government, led by President Emmanuel Macron, extended the experiment to the rest of the country in 2019, when the evaluations proved positive. Of the ten territories selected in 2017, three succeeded in eradicating long-term unemployment and the other seven reduced the number of long-term unemployment by 50%.

To date, nearly 200 similar projects are in the pipeline. A dedicated central team provides support to local authorities to create their own *entreprise à but d'emploi*. Each new local initiative is expected to put an average of 100 people back in the job market. That team also helps national authorities assess progress and prepare for a new law to expand the program even further. And now, the government of neighboring Belgium has included the experimentation of the same solution as part of its 2030 employment strategy, with a €10 million budget over 2021–2026 to support it nationwide.[5] The overall macroeconomic return on investment is deemed highly positive.[6]

"When you have no salary, you survive," recounts Marie-France Pellegrin, who lives in central France and has found employment through the scheme. She adds: "Receiving a salary and getting a pay slip changes everything. It allows me to rectify the situation, to buy clothes, to go shopping and to start working on improving my house."[7]

Public authorities and actors on the ground joined forces to successfully overcome a technical hurdle – the nature of the legal vehicle needed to channel benefits differently – in order to spread a useful innovation across the country. This innovation serves a fundamental purpose, which is to end long-term unemployment and all its terrible consequences. To date, over 1,000 people who had known unemployment for over a year have reentered the job market, noted the MP behind the 2016 experiment, Laurent Grandguillaume, with satisfaction in 2020. When the experiment was scaled to 50 more territories at the end of 2020, 135 localities were interested in joining the program, an indication of its popularity. The goal now is to scale this to the whole country. And to ensure that it doesn't take 22 years again between the emergence of another good idea and its nationwide deployment.

What science tells us

How do ideas emerge and how do they spread in a group? It has been made clear that the hallmarks of collective intelligence applied to public action require inclusion and cognitive diversity, and that the democratic principles of deliberation and majoritarian decisions can foster collective wisdom (Landemore, 2012). It is unclear however what institutional setup nurtures and spreads innovation fastest, whether it emerges inside or outside of public authorities. To say it differently, what principles and mechanisms allow a community and a set of public institutions to evolve into networks that produce overall a complex adaptive system (CAS)? Kevin Dooley (1997) defined a CAS as a group of semi-autonomous agents who interact in interdependent ways to produce system-wide patterns, such that those patterns could influence the behavior of the agents. A CAS has three key characteristics: a number of heterogeneous agents; interaction between those agents; that interaction leads to what scientists call emergence, a concept that is central to collective intelligence: the whole becomes greater than the sum of the parts. In a similar fashion, an ant colony displays highly complex behaviors at a collective level that none of its individual members are capable of. Studies tell us that a healthy CAS allows the sharing of information among its members in a way that will lead to a better outcome for the group. "When information is diverse and aggregation and incentives are healthy, you get very good answers to problems. That's what nature is doing, and that's what we have to learn to do more effectively," urges investment strategist Michael Mauboussin (Sullivan, 2011).

The theory of CAS therefore looks at how change happens in organizations, borrowing from three types of management thinking: systems theory, population ecology, and information processing (for more about network theory in the public sector, see Keast et al., 2013).

While different forms of government have emerged or been proposed in recent years to foster greater efficiency of public authorities, it remains to be studied which is best positioned to come up with and spread novel solutions, at what level of governance, and what is the best division of labor between different stakeholders that will foster public sector innovation and will lead overall to a smarter Complex Adaptive System.[8] In other words, what is the best model for "institutional spread"?

Different analysts have proposed new models of governance that foster the identification and scaling of innovative ideas, no matter who's behind them, whether citizens, activists, civil servants, corporations, or academics. It is worth noting the following approaches:

- Orchestration: In orchestrated governance arrangements, policymakers refrain from engaging in hard regulation in order to facilitate the voluntary cooperation of multiple intermediaries who are brought together in networks to steer the issue through coordination and information-sharing. By "orchestrating" intermediaries – including NGOs – public authorities can shape and steer governance without engaging in direct regulation (Abbott & al., 2015).
- Agile governance: This regulatory approach, proposed by the World Economic Forum in 2016 (WEF, 2016), translates the agile principles of software development in a political setting. The idea is to make governance more reactive by adhering to four principles: outcomes over rules (implying experimentation, monitoring, and incremental change); responding to change over following a plan (implying flexibility and dynamic adaptation); participation over control (implying shared responsibility and enrolment of multiple stakeholders); and self-organization over centralization (implying delegation and empowerment of participants).
- The State as a platform: This is a conceptualization of a "smart and flexible State" acting as a platform by making resources or infrastructures available online to civil society and private actors and giving them freedom to develop goods and services thanks to such resources (Chevallier, 2018).
- Laissez-faire activism: Economists David Colander and Roland Kupers propose a new model of "bottom-up social policy" in which governments' role is focused on tackling complexity. Kupers explained to me that

> the term 'systems thinking' is related to the systems approach of Jay Wright Forrester at MIT, who developed his thinking in the 1960's. He was brilliant for his time, but there are some real down-sides to his approach. One of the unforeseen consequences is that it always leads to top-down solutions, because it doesn't have the theory of bottom up change. Today we talk of complex, adaptive systems, we need to consider how to catalyze bottom up change, how to create a policy culture that catalyzes change.[9]

> Kupers and Colander invite us to "create an ecostructure within which individuals' entrepreneurial actions are directed toward enhancing social welfare" (Colander and Kupers, 2014, p. 272).

Many more options are possible. As shared in the above chapter, "Smarter Together? Collective Intelligence and Change in Government," the UK Policy Lab has mapped some 56 approaches to government (Andrea, 2020). Far from the simplistic dichotomy of "more

vs. less state," we are invited to examine critically what role best allows the state to enable innovations to tackle problems entrenched in our societies.

This story also invites us to pay attention to the concept of scaling. How do you know in policymaking when an idea is good and deserves to become the norm and to be replicated on a massive scale? Is a particular piece of legislation the right decision? We often will not know the answer for years. Small experiments with controls are therefore a key tool in the public servant's toolbox, especially when the operating environment becomes more complex.

Innovation requires experimenting with different approaches, and therefore thrives especially when cultivated between teams or smaller communities. This is what the French authorities effectively permitted by organizing a gradual process of testing and evaluation. The French Parliament first approved an experiment – by unanimity, showing the level of interest in this experimentation – across ten cities in February 2016. It then enlarged it to 50 localities in November 2020. A decentralized approach offers several advantages: The actors know each other and can interact more easily; errors have lesser consequences; complexity is partially reduced; creativity will be more easily recognized and its promoters rewarded. But, in order to spread, as in this case and as in the case of the Youth Justice Board told in this handbook, it is crucial that local teams work not in isolation, but supported by a determined center with means to document the experiments, reward and share solutions. In the case of the "zero long-term unemployment territories," French national authorities provided the legal framework, resources to monitor, gather and share lessons learnt, and ensure that the core characteristics of the experiment were applied consistently across the country. Bringing innovation to scale requires a variety of methods for monitoring, deriving non–context-specific lessons, and disseminating those (Nesta, 2014; SGMAP, 2015).

Do's and don'ts

This case study suggests that the way an innovation is developed will influence how it spreads. Early involvement of promoters – in this case the ATD Quart Monde – increases commitment and ownership, helping nurture the development of the initiative. It invites us to focus on the role of adopters in adapting and spreading solutions. People own what they help create. The story also shows how the sharing of an idea will happen more through relationships than any other factor. Spreading innovations thus involves creating a "pull" for innovation by building communities to energize individuals and maintain momentum.

It also illustrates how what matters to the dissemination of an innovation is the value that it brings and what others value rather than what the inventors wish to spread. It is therefore crucial when introducing a social or policy innovation to ask oneself: What problem of local priority will it solve? What benefit will it offer?

Another practical lesson is that allowing a trial-and-error approach can generate energy for change, help build new knowledge, skills and the confidence to keep trying. This is crucial, as the more a policy change affects routines, the greater the spread challenge and the need to cultivate motivation.

The solution that is being experimented in France emerged in a small municipality. The practical takeaway from this case relates to how public authorities can scale local innovation. "By nature," notes the French modernization office, "social or public innovations are developed on the ground, in contact with users" (SGMAP, 2015). Yet, small is not always beautiful if it remains forever small. Fragmentation and a lack of communication channels

can prevent institutions from identifying and growing solutions, even though this may save time, reduce transaction and learning costs, avoid an inefficient sprinkling of scarce public funds, and create political momentum.

How best then to create "a real engineering approach to change scale"? The French office for the modernization of the public sector[10] and Nesta have learned the following key lessons from recent lab, incubator, and accelerator initiatives that should be kept in mind for those intent on "scaling what works", according to the now popular rallying cry for the public sector.

- **Innovators may often not be the best placed to spread innovation**. This is a job in itself. Public authorities can create a favorable environment by gathering evidence of impact, incubating new actors, funding them, creating networks, providing rewards, offering free time, training, opportunities for dialogue between departments, means to share information, and by combining evaluation with prizes.[11]
- **But "capitalizing on knowledge" is not enough**. Public authorities must proactively help the adoption of new ideas, notably by identifying initiatives with a proven track record and that constitute a possible answer elsewhere; by supporting project promoters wishing to disseminate their initiative; by linking "innovators" and "recipients" (through networks of innovators, labs, digital platforms such as the "zero long-term unemployment" website[12] and the Youth Justice Board's resource hub[13]); and by providing resources to transfer ideas.
- **Different approaches can be used to mix, match, and replicate innovations**. These are referred to according to the French Innovation Directorate and Michelle Moore (2015) as "scale deep" (which involves impacting on cultural roots, changing relationships, cultural values and beliefs, "hearts and minds"); "scale out" (when the innovation is replicated in a variety of settings); "scale up" (when it spreads from the local to higher governance levels); "scale across" (when it's shared openly to stimulate the cross-fertilization of ideas); "scale together" (when the innovation is shared to stimulate collaboration); and "scale by mixing" (when the aim is to combine different innovations to create new ones) (see Moore et al., 2015 for detailed strategies on how to implement these different scaling strategies, which can be combined for greater effect).
- Based on experience, **scaling is very hard, if not impossible** if any of the following questions is answered negatively: Does the initiator agree to grow her innovation? Does the potential impact of the project justify investing in its spin-off? Has the project been evaluated? Is the project based on a viable economic model? Do other sites present an environment favorable to the resumption of the project? Is it better to focus on consolidating the initial project? Are any adopters ready to implement the project elsewhere?

Notes

1 The full story is told here: "Demande d'expérimentation ATD Quart Monde: Territoires zéro chômeur de longue duré, Expérimentation à Seiches-sur-le-Loir en 1995", Patrick Valentin, May 12, 2014. www.atd-quartmonde.fr/wp-content/uploads/2013/11/2014-05-12-Annexe-4-Expérimentation-à-Seiches-sur-le-Loir-en-1995.pdf (accessed April 28, 2020).
2 Patrick Valentin, *ibidem*.
3 Patrick Valentin, *ibidem*.
4 www.tzcld.fr – (accessed April 28, 2020).

5 For further information, see the article "Résorber le chômage de longue durée grâce aux "territoires zéro chômeur", L'Echo, January 25, 2021. www.lecho.be/economie-politique/belgique/economie/resorber-le-chomage-de-longue-duree-grace-aux-territoires-zero-chomeur/10279594 (accessed January 26, 2021).

6 See the article "Le projet de "territoire zéro chômeur" tient la route financièrement", in L'Echo, Dec.15, 2021, www.lecho.be/economie-politique/belgique/federal/le-projet-de-territoire-zero-chomeur-tient-la-route-financierement/10353706.html (accessed December 15, 2021).

7 Website of the initiative: www.tzcld.fr/paroles-de/?id=442 (accessed April 28, 2020).

8 See the introduction for a definition of innovation and the key characteristics of innovative public policies.

9 Personal interview, July 27, 2016.

10 Formerly SGMAP (Secrétariat Général pour la Modernisation de l'Action Publique), today DITP (Direction Interministérielle de la Transformation Publique).

11 The UK's What Works centers are a reference in evidence-based policy-making. See www.gov..uk/guidance/what-works-network.

12 https://www.tzcld.fr/.

13 https://yjresourcehub.uk/.

References

Abbott, K.W., Genschel, P., Snidal, D., and Zangl, B. (Eds.), 2015, *International Organizations as Orchestrators*. Cambridge: Cambridge University Press.

Andrea, S., 2020, *Introducing a 'Government as a System' toolkit*, UK Policy Lab, https://openpolicy.blog.gov.uk/2020/03/06/introducing-a-government-as-a-system-toolkit/ (accessed April 28, 2020).

Chevallier, J., 2018, "The state as a platform strategy?", *Revue Française D'administration Publique*, 167(3), pp. 627–637.

Colander, D., and Kupers, R., 2014, *Complexity and the Art of Public Policy: Solving Society's Problems from the Bottom Up.* Princeton University Press.

Dooley, K., 1997, "A Complex Adaptive Systems Model of Organization Change", *Nonlinear Dynamics, Psychology, and Life Sciences*, 1(1).

Keast, R., Mandell, M.P., and Agranoff, R. (Eds.), 2013, *Network Theory in the Public Sector: Building New Theoretical Frameworks* (1st ed.). Routledge. https://doi.org/10.4324/9780203752562

Landemore, H., 2012, *Democratic Reason: Politics, Collective Intelligence, and the Rule of the Many.* Princeton University Press.

Moore, M.-L., and Darcy Riddell, Dana Vocisano, 2015, "Scaling Out, Scaling Up, Scaling Deep: Strategies of Non-profits in Advancing Systemic Social Innovation", *Journal of Corporate Citizenship*, (58), pp. 67–84.

Nesta, July 2014, *Making It Big. Strategies for Scaling Social Innovations*.

SGMAP, 2015, *Ensemble, accélérons! Accompagner les acteurs de l'innovation dans leur changement d'échelle.* www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/rapport-ensemble-accelerons_2015.pdf (accessed July 26, 2020).

Sullivan, T., (2011), "Embracing Complexity", *Harvard Business Review.* https://hbr.org/2011/09/embracing-complexity

World Economic Forum, 2016, "A call for agile governance principles", available at www3.weforum.org/docs/IP/2016/ICT/Agile_Governance_Summary.pdf.

23

PUBLIC CHALLENGES TO KINDLE INNOVATION

How one telegram forever changed public policy in Australia

Luis Lafosse

The story

One hundred and two years ago, a single flight launched Qantas Airlines and willed the entire Australian commercial aviation industry into being. The Great Air Race – connecting Britain and Australia by air in less than 30 days – resulted from one of the most successful public policies ever to promote innovation and economic development in Australia (State Library of South Australia, 2021). It was so simple, it fit into one telegram and a 30-second parliamentary announcement.

With today's mantra of "jobs, jobs, jobs" commanding the political conversation, and wicked problems and complex challenges permeating discussions on the future of government, it is worth revisiting that policy, and considering how public servants and policy designers can re-learn to solve our problems more simply.

In late 1918, soon after World War I ended, the Australian Prime Minister William Hughes gathered with global political leaders in Europe for the Paris Peace Conference. At that time, the aviation industry was still in its infancy. Hughes had the privilege of being among the first to experience the flight between London and Paris in a Royal Air Forces Handley Page. He rapidly became an aviation enthusiast.

In those days, the streets of London were full of soldiers awaiting demobilization. On a Christmas Day visit to wounded Australian veterans, Hughes met airmen who were impatiently waiting to be sent back to Australia. They told Hughes that they wanted to fly their own machines home. Hughes expressed reservations about the safety of such a trip, but he was impressed by their determination.

Hughes was aware of a £10,000 prize on offer at the time for an aircraft that could fly non-stop across the Atlantic Ocean. A similar idea that could connect Great Britain with Australia began to fly in his head. Within weeks, he had made contact with key political organizations and figures, including the British Air Minister, who supported the race wholeheartedly. On 18 February 1919, Hughes sent the historic telegram to his cabinet colleagues in Melbourne:

Several Australian aviators are desirous of attempting flight London to Australia in a Handley Page machine. They are all first class men and very keen… It would be a great advertisement for Australia and would concentrate the eyes of the world upon us if the flight were undertaken.

(Nasht, 2007)

No one knew how, exactly, to fly the 18,000 kilometers from Great Britain to Australia. The first international passenger service between London and Paris had yet to be inaugurated. Plane crashes were frequent. There weren't any landing strips along the route. The risk of fatal failure was high.

Despite this grim outlook, Acting Prime Minister William Watt made an official announcement on 19 March 1919 in the House of Representatives:

With a view to stimulating aerial activity, the Commonwealth Government has decided to offer £10,000 for the first successful flight to Australia from Great Britain, in a machine manned by Australians. The rules and conditions governing the contest are now being drawn up, and it is proposed that competitors be required to supply their own machines and to make all other necessary arrangements in connection to the flight.

(Semple, 2012, chapter 15)

This £10,000 prize was equivalent to over £500,000 today.

On 25 May 1919, two months later, the competition rules were announced. There was a 16-month window to undertake the flight, and entries were open to any Australian pilot and navigator completing the journey within 30 days. All the aircrafts had to be privately financed, and British made. Teams had to waive the right to claim for injuries or loss (Nasht, 2007). By 18 October 1919, eight teams had entered.

The reaction of the press in Australia was not optimistic. One of the most influential progressive newspapers, *The Age*, called it "a circus flight – a poorly disguised attempt at self-advertisement at the expense of the Australian public," and the conservative *The Argus* agreed, sarcastically claiming that the flight would prove so easy that there was no necessity to throw away good money on the project. One local paper, *The Corowa Free Press*, didn't hesitate to express its distaste: "they ought to carry as passengers on the experimental voyage as many Federal Members as possible and leave them somewhere else" (Nasht, 2007).

Despite this lukewarm reception, nine months after the official announcement, and after 27 days and 20 hours of flying time, the Vickers Vimy G-EAOU manned by Ross Smith, his brother Keith, and mechanics Wally Shiers and Jim Bennett, landed on the coast of Darwin. It was one of the greatest aviation achievements ever made, and just six months after the first flight across the Atlantic.

Australians are familiar with the names of winning pilots Sirs Ross and Keith Smith, but some lesser known pilots involved in the Great Air Race (GAR) have had just as significant an impact on the aviation sector. Pilots Paul McGinness and Hudson Fysh first met in the Australian Flying Corps in Palestine during the Great War. The pair had entered the GAR but were forced to withdraw when their financier died suddenly. Instead, the Australian Defence Department commissioned the pilots to survey suitable landing sites for the race in Queensland and the Northern Territory.

While undertaking that job, the pair realized how commercially valuable an aerial service could be to those remote communities. A chance encounter gave them the start they

needed, when they came across wealthy grazier Fergus McMaster, and helped him unstick his vehicle from a creek. McMaster was soon on board, offering strong business guidance and connections with other investors from the region. On 16 November 1920, 11 months after the first flight from Great Britain to Australia, they registered The Queensland and Northern Territory Aerial Services Ltd, Qantas, as a company (Percival, 1981). Today, with a fleet of 126 aircraft flying to 85 destinations, Qantas is the flag carrier of Australia and a major presence in the international travel sector, with revenue of A\$17.96 billion in 2019.[1]

The Great Air Race thus had positive effects for public good well beyond its original stated goals of defining a route from Australia to Great Britain. With a well-framed and daringly executed challenge, Australia's government triggered the development of an entirely new sector of its economy. The aviation sector, in turn, supported the connectivity of people and transport of goods that benefited the commercial performance of hundreds of other industries.

What science tells us

Ridley (2021) points out how "more often inventions and discoveries emerge by serendipity and the exchange of ideas, and are pushed, pulled, molded, transformed, and brought to life by people acting as individuals, firms, markets and, yes, sometimes public servants." Was the Great Air Race behind all these fortuitous encounters that resulted in the development of Australian commercial aviation?

If this is the case, how can these kinds of "collective intelligence assemblies," to borrow Mulgan's (2018) term, be fostered? What type of social and political conditions are needed to create and sustain them? Examining a range of public and private organizations, Mulgan (2018) identified four principal infrastructures that support collective intelligence:

- Common rules and standards;
- Artifacts or shared objects that embody and enable intelligence;
- Institutions that can concentrate the necessary resources for thinking;
- Networks of problem-solvers with diverse abilities ("societies of mind").

Though launched decades before the science of collective intelligence codified these principles, the Great Air Race nevertheless exemplifies each of Mulgan's four infrastructures. The Australian parliament concentrated the necessary resources, political will, and organizational coordination for the prize to exist; they set transparent rules and standards that were applied fairly to all participants; the exciting nature of the challenge and the financial reward attracted a diverse group of problem-solvers, the emerging community of Australian aviators; and the technology that embodied their intelligence was the airplane itself, with all its constraints and untested possibilities.

Scott Page (2017) has examined the more recent example of the "Netflix prize," in which multidisciplinary teams competed from 2006 to 2009 to create a new predictive algorithm for movie preferences that could beat Netflix's existing Cinematch algorithm by 10%. Among his many observations about the unique properties of diverse teams, Page notes that in the case of the Netflix prize, both the motivations and strategies of participants underwent radical changes over the course of the challenge. Initially attracted by the \$1 million prize, the Netflix prize challengers ended up investing far more time and human capital than would be justified by the prize money alone. Rather, the excitement of the challenge itself created a self-sustaining intrinsic motivation, while the competition with other teams for

prestige sustained their extrinsic motivation over and beyond the prize money. Furthermore, the "losers" of the Netflix challenge –including the Canadian "Pragmatic Theory" team, sixth-best in the initial rounds – ended up playing a crucial role in the final outcome, as they joined forces with the ultimate winners, BellKor, and provided them with an insight from behavioral science that pushed their algorithm over the top. Similarly, we see in the GAR how the "Qantas team" (a name we might retrospectively apply), though the losers of the initial challenge to reach London, triumphed in the greater challenge to reinvent Australian aviation.

Public challenges have shown themselves to be an increasingly powerful approach to stimulate innovation (Noveck et al., 2019). They shed light on the age-old debate about the appropriate level of involvement of the public sector in promoting innovation and economic development. As we have seen in the case of the GAR, the public sector often serves its own goals best not by prescribing or planning, but by inspiring and enabling others to rise to a public challenge.

At the time of the GAR, new technologies and innovative products were being developed by private initiatives with almost no public sector participation. "Any [public] policy objective aimed deliberately at promoting long-run economic growth would be hard to document in Britain before and during the Industrial Revolution", notes Mokyr (1999, as cited in Mingardi 2015). In such a technological shift, public challenges are an "acupuncture-type" methodology that prioritizes simplicity over complexity to ensure minimum government intervention. In addition, they help de-risk public investments in that the prize money is only awarded if and when the challenge is achieved.

Prof. Beth Noveck's (2019) team at the GovLab has studied public challenges from a range of cultures and sectors. The GovLab team posits that successful public challenges often share the following qualities: they define the challenge in clear and compelling terms; they communicate transparently about the rules and criteria at the beginning of the challenge; they market the challenge creatively through multiple channels to attract atypical participants; and they operate through a range of incentives that extend beyond monetary rewards. Director of the White House's Open Government Initiative from 2009 to 2011, during which her team created the open-innovation platform challenge.gov, Noveck herself has been a pioneer in this regard.

The National Endowment for Science, Technology and the Arts (Nesta), the UK's innovation agency, is a not-for-profit organization that has been revitalizing challenge prizes. Their *Challenge Prizes: A Practice Guide* (2019) is another valuable resource for those considering creating a prize-backed challenge. In addition to offering a step-by-step approach to the principal design choices of a prize-backed challenge, the Nesta guide seeks to dispel some current misconceptions, including that these challenges only work for high-tech fields, or that simply announcing a challenge is sufficient to attract participants. Among many other developments in the field, Nesta's integration of human-centered design (HCD) methods into public challenges is helping to make these challenges more attractive and inclusive of a wider range of audiences.

Could something like the Great Air Race happen again today? Something like it is already underway. Carbon Footprint Ltd. has launched the Freedom Flight Challenge: an award for the team that "completes a return flight with a zero carbon emission aircraft, capable of carrying 100 or more passengers, between London and New York and completes the return trip within 24 hours of starting out" (Freedom Flight Prize, 2021). The Freedom flight has only ten rules, there are already three contenders listed and, to date, 14 sponsors have committed support. And though the challenge was not created by public funds, several

of its brightest contenders have been the beneficiaries of research and development funding by public institutions. The challenge is expected to be achieved by 2029.

Do's and don'ts

From the example of the Great Air Race, and the more recent research of Nesta (2019) and the GovLab (2019), the following recommendations may be helpful for those considering a prize-backed challenge.

1. Choose a compelling problem. "Designing a successful prize," in Nesta's view, "involves balancing a goal that is challenging enough with incentives and support that motivate teams to ensure the best ideas grow, evolve and make it to the end." Nesta recommends focusing on problems in fields that are stagnant and have few players; problems that are neglected and could benefit from raising awareness; or urgent problems where additional attention is needed to accelerate progress. The GAR centered a problem that was immediately recognizable as relevant to a very large group – safe and efficient travel within the British Commonwealth – and harnessed excitement about aviation to bring fresh energy to this public need.

2. It's not only about the money. As in the example of the Netflix prize, Noveck et al. (2019) propose that intrinsic rewards are often more powerful than extrinsic ones. While the money goal may help with the initial marketing – the headlines are easy to write – sustaining interest over a longer period may require stoking motivation in other ways, like recognizing progress publicly and animating interactions among the participants in a friendly and constructive way. Noveck et al. (2019) note further that prizes do not have to be big. Rather, many organizations are having great success with small prizes designed to produce what are sometimes called "micro-innovations" – small creative shifts that are subtle but can add up to significant results. These micro-innovations "provide broad scale rewards to lots of people for contributing productively…They allow innovation to become a daily habit rather than an out-of-reach phenomenon for the select few who win big competitions."

3. How a challenge is framed will determine how it is solved. Problem statements should not imply a specific solution. For example, in a challenge related to public health it is better to focus on desired outcomes – a lower incidence of malaria, for example – than on improvements to the existing means ("build us a better net"). In other words, the problem must be framed in a neutral way that allows innovators to seek their own solutions, rather than the ones the government currently deems most likely to solve the challenge. The abovementioned Freedom Flight's problem definition serves as a clear example. By focusing on zero emissions, the number of passengers, and the time required, it enables creative thinking and is not prescriptive about any particular technology. The abstract definition of the problem also broadens the participation to different disciplines and fields that may have a fresh angle on the problem. As Page (2017) amply demonstrates, it is in the aggregation of diverse sources of expertise that the greatest collective intelligence emerges.

4. For especially complex challenges, think in stages. Noveck et al. (2019) suggest that a two-stage challenge may be appropriate for problems whose solutions are particularly expensive or time-consuming. A two-stage challenge would involve a first phase to propose good ideas and a second stage to propose an implementation plan for those ideas. "The advantage to a two-stage challenge," in GovLab's view, "is that it leads to workable, shovel-ready solutions."

Figure 23.1   Presentation of a cheque for 10,000 pounds to Ross Smith, by Prime Minister W.M. Hughes at a luncheon given by the Commonwealth Government at Federal Parliament, 27/2/1920. Walter Shiers, James Bennett, and Keith Smith are standing in the background.

Source: Picture credit: State Library of South Australia (PRG 18/7/73).

5. Consultation before, feedback after, and transparency throughout. Challenges that successfully mobilize a large community are generally informed by a robust consultation process. Governments in particular are increasingly required to account for their decisions, ground them on publicly available evidence, and demonstrate that they are devoid of vested interests. A good practice for those designing challenges, therefore, is to engage with the relevant communities regularly to consult on their plans and policies. Noveck et al. (2019) recommend that an upfront and transparent decision be made about how winners will be judged, according to what criteria and by whom – whether by experts, peers, or both. This should ideally include a commitment on how the winning idea will be capitalized upon by the public entity, and under what terms. The GovLab team additionally recommends using an online platform that provides data and tutorials to prospective participants and makes it easy to see and comment on others' submissions.

By ensuring a fair and transparent process, in summary, prize-backed challenges can enable liberal societies – where information flows and is freely shared – to coalesce around shared problems and create level fields for innovation to thrive (see Figure 23.1).

Note

1 See Qantas FY19 Annual Report, available at https://investor.qantas.com/FormBuilder/_Resou rce/_module/doLLG5ufYkCyEPjF1tpgyw/file/annual–reports/2019-Annual-Report-ASX.pdf.

References

Bürdek, B. E. (1994). *Diseño: historia, teoría y práctica del diseño industrial*. Gustavo Gili.

Freedom Flight Prize (2021). A prize to accelerate the development of zero carbon aviation. Retrieved May 7, 2021 from www.freedomflightprize.org.

Jones, C. J. (1970). *Design methods: Seeds of human futures*. Wiley-Interscience, published in association with UK's Council of Industrial Design.

Mingardi, A. (2015). "A critique of Mazzucato's entrepreneurial state", *Cato Journal*, 35(3), 603–625.

Mokyr, J. (1999). *The British Industrial Revolution: An Economic Perspective* (2nd ed.). Routledge. https://doi.org/10.4324/9780429494567

Mulgan, G. (2018). *Big mind: How collective intelligence can change our world*. Princeton University Press.

Nasht, S. (2007). The last explorer. Hubert Wilkins - Australian unknown hero. Hachette.

NESTA (2019). *Challenge prizes: A practical guide*. NESTA Challenges, National Endowment for Science, Technology and the Arts. Retrieved May 7, 2021 from www.nesta.org.uk/toolkit/challenge-prizes-a-practice-guide/

Nesta (2019). *Challenge prizes: A practical guide*. Available at https://media.nesta.org.uk/documents/Nesta_Challenges_Practice_Guide_2019.pdf

Noveck, B., Harvey, R., and Dinesh, A. (2019). *The open policymaking playbook*. The GovLab Series on Collective Intelligence and Governance. Available at https://thegovlab.org/static/files/publications/openpolicymaking-april29.pdf

Noveck, B. (2021). *Solving public problems: A practical guide to fix our government and change our world*. Yale University Press.

Page, S. (2017). *The diversity bonus: How great teams pay off in the knowledge economy*. Princeton University Press.

Percival, J. (1981). Fysh, Sir Wilmot Hudson (1895–1974), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University. Retrieved May 7, 2021 from https://adb.anu.edu.au/biography/fysh-sir-wilmot-hudson-6263/text10789

Ridley, M. (2021). *How innovation works*. Harper Collins.

Semple, C. (2012). *Airway to the East 1918–1920*. Casemate Publishers.

State Library of South Australia. (2021, June). Sir Ross Smith: Home. Retrieved May 7, 2021 from https://guides.slsa.sa.gov.au/sirrosssmith

24

CREATING A "VOICE" OF COLLECTIVE CHANGE THROUGH SIMPLE MOBILE PHONES

Aaditeshwar Seth

The story

"After witnessing the health problems and financial issues that women have gone through because they had an early marriage, I have decided that neither will I get married before I come of age, nor will I marry a girl under 18 years of age," declared Sunil, a 19-year-old boy. He hails from a district in the state of Jharkhand, India.

Sunil's vow, though inspiring, is a drop in the ocean that is India's societal challenge. Even a robust awareness campaign developed specifically on the issue of underage marriage cannot positively impact it overnight. However, a 26-year-old woman from the Topchanchi block in Jharkhand summarized it well: "Awareness campaigns on important societal issues must be conducted because no discussion would be initiated otherwise among members of a community. Such campaigns help people to understand the difference between good and bad practices." With this in mind, the initiative Mobile Vaani was launched by the social enterprise Gram Vaani.

Mobile Vaani is a voice-based participatory media platform that enables people to share and discuss issues with one another via voice messages, using simple mobile phones that do not require any Internet connectivity (Moitra et al., 2016). The way it works is quite simple. People can call a phone number that is provided by Mobile Vaani. The Mobile Vaani telephone servers automatically cut the call and call the person back, making the service free of cost for them. The caller is then able to listen to voice messages recorded by other community members, and also record his or her own message. In this manner, the voice-based system enables any community member, regardless of their literacy level, to ask questions and answer for one another, share local news, comment on policy discussions, and also share folk songs and poetry. Such Interactive Voice Response (IVR)-based interactive information sharing platforms are widely used in India or other regions where low literacy levels, unreliable Internet access, or unaffordability of smartphones are prevalent (Seth et al. 2020a).

The user experience of the Mobile Vaani system is designed to maximize ease of use, interactivity, and autonomy. There are dedicated channels for different community issues like health or agriculture, so that users can interact on the topics that most concern them.

Due to helpful feedback from users and volunteers, the user experience has been streamlined over the years by the Gram Vaani team. Now, when users receive the "call back" from Mobile Vaani, they automatically hear the first in a string of voice messages from other community members, curated by the Gram Vaani team. In between each message, they are given a short instruction message informing them which buttons to press to hear more messages on the topic, record their own message, or switch topics. As they listen to any message, they can also press a button to skip to the next message or leave a comment on this message.

In the current version of Mobile Vaani, the order of voice messages is manually curated by the Gram Vaani team, on the basis of our editorial guidelines. Chief among these is preserving a diversity of views. To promote the diversity of views that is vital for collective intelligence (Page, 2017), the order of messages is regularly updated to reflect different views and to include new voices. The Gram Vaani team is also working to develop an algorithm to handle this task automatically, respecting this key principle of "short-term diversity and long-term fairness."

Can such shared understanding created via participatory media platforms also lead to collective action and social change? Recent studies have traced both the importance and the limitations of social media in mobilizing in-person protests, such as in France, Iran, and Chile (Fuchs, 2014). A key dividing line in these debates has been the different patterns of use in platforms developed and owned by large corporations, and those developed by non-profit associations around community needs. As an exemplar of the latter, Mobile Vaani has certainly been used by activists in India to muster wider offline participation. A women's empowerment group used Mobile Vaani to campaign against an illegal liquor shop in their village. They used the platform to publicize the campaign and garner more participation, both in terms of increasing the number of street protestors and collecting voices and opinions that were stitched together into a letter submitted to the government. Not only was the liquor shop shut down, the district administration also launched an inspection of other liquor shops in the area (Moitra et al., 2016).

Since its launch in 2012, Mobile Vaani volunteers have used the platform to launch many similar campaigns such as to call for an inspection of the quality of mid-day meals served to school children under the government's nutrition programme, draw administrative attention to caste-based segregation that is still persistent in the seating of students in many schools, and push for regularity in the opening times of fair price shops for subsidized food for marginalized groups. In addition, Mobile Vaani has supported numerous campaigns on India's most sensitive and controversial social issues, including child marriage, domestic violence, efficient delivery of government services, nutrition for pregnant and new mothers, and financial inclusion, among others.

One of the most important features of these campaigns is the way in which the platform provides a space for a range of opinions to co-exist on potentially polarizing issues. For example, on the issue of early marriage, the platform brought diverse views into constructive dialogue: young couples shared the problems they faced when they were married early; parents revealed the financial and social pressures that led them to marry off their daughters early; and activists and social workers drew connections between individual stories and deep-rooted structures of patriarchy in Indian society.

Online debates on social issues can become toxic quickly, however. The text-based environment makes it easier to assume negative intentions of others or, worse, dehumanize opposing voices entirely. The medium of the voice platform, on the other hand, gives important non-textual information such as the tone of voice, thus helping community

members to more easily understand the issue at hand from different perspectives, and not just their own.

The communities who find one another on the Mobile Vaani platform did not emerge by accident. The voice-based discussions are also made possible by the active in-person outreach led by community volunteers. Users learn from interacting with the Mobile Vaani system themselves, but often it takes a volunteer to make them aware of the platform in the first place and explain why it may be interesting for them. Thus, the in-person support system and the user experience of the platform each serve as supports for the learning process.

Mobile Vaani campaigns have been especially useful in collecting data regarding violations of rights in the form of voice recordings and IVR surveys. These are forwarded by volunteers to administrative officials via IVR and other social media channels such as WhatsApp, Facebook, email, and the Mobile Vaani app, nudging them into action. Sometimes, coverage of these reports in the mass media also helps amplify the pressure for accountability. During a survey of more than 500 Mobile Vaani users, 84% of them acknowledged the strong offline support they received from volunteers in solving their problems, and 64% agreed that the public nature of recording grievances on Mobile Vaani led to collective pressure for accountability on officials.

The IVR survey of Mobile Vaani users also revealed that 67% of them agreed that Mobile Vaani is different from other mass media in giving an opportunity for anybody to voice themselves; 69% acknowledged the value of dialogue created on the platform to understand different viewpoints; 88% reported an increase in connecting back to their cultural roots; 85% reported an increase in political awareness; and 50% acknowledged having learned new ways to articulate their views (Moitra et al., 2019). This proves that Mobile Vaani has been instrumental in connecting people from different socioeconomic and cultural backgrounds who might otherwise not get a chance to exchange their concerns and opinions.

Thousands of users call the Mobile Vaani platform each day to listen to the campaigns, contribute their own views and experiences, and build a wider and richer understanding of the issues. The stories created by Mobile Vaani point toward the important role that participatory media can play in accelerating collective learning, especially in rural and low-income communities. Such platforms help to empower people so that they can collectively hold local administrators to full accountability.

We hope these examples of community change supported by the Mobile Vaani platform can serve as illustrations and possibilities. So too do we need more, and more culturally varied, studies on the most effective ways to translate online activism into offline action.

What science tells us

There are several scientific concepts that underlie the success of a collective intelligence methodology such as the one behind Mobile Vaani. The platform qualifies as a democratic innovation, a term coined by Graham Smith that has been used in recent years to encompass a range of new mechanisms that increase citizen participation (Smith, 2009; Geissel and Newton, 2012).

Mobile Vaani's campaigns center around social issues for which community leaders and members are empowered to take action. The user base of the platform also comprises ordinary citizens, increasing their participation in decision-making merely by allowing them to voice different perspectives and contexts around the concerned issue.

The open participation encouraged by Mobile Vaani also builds upon fundamental aspects that underpin human social networks. Links between people in a community are

known to be clustered, with tight clusters composed of people having commonalities with one another, such as friends from the same school or same neighborhood. Connections between disparate clusters are in turn formed by people who bridge multiple worlds (Travers and Milgram, 1969). People tend to form clusters with others who share a common trait or experience, a phenomenon called homophily (McPherson et al., 2001), while people who build ties across different clusters help in the flow of diverse information that otherwise may have remained trapped within homogeneous clusters (Granovetter, 1973). This is also stated as the famous "strength of weak ties" theory elaborated by Mark Granovetter. Granovetter demonstrated in a series of studies that young people seeking a job, for example, were much more likely to be hired based on information from a "weak tie" (an acquaintance or friend of a friend) rather than a "strong tie," meaning someone from their immediate circle of family and friends.

Information shared by weak ties has been shown to broaden the viewpoints available to any individual and contribute to greater information completeness across the community (Seth et al., 2015). On the other hand, information shared by strong ties or people similar to you, often in the same social network cluster as you, helps provide valuable context. This improves both the individual's understanding and explains the context of the concerned social issue. These phenomena have been particularly critical in creating open-source software tools such as Linux (Raymond, 1999) and in powering crowdsourced solutions to local problems (Shirky, 2008).

For example, on the issue of early marriage, participation by a diverse set of stakeholders brought forth many different perspectives and leveraged the weak ties created via Mobile Vaani volunteers, in this case between citizens and social workers or government officials, further ensured that new views were introduced to local communities. When community members further discussed these views, it led to greater contextualization of the issues which in turn helped people respond in greater depth. In resolving individual cases, we have seen examples where Mobile Vaani volunteers have discovered information and acted on it to prevent early marriage. The sharing of this information relies just as much on weak ties – those users who are brought on the platform by volunteers whom they may just have met – as on strong ties, such as users publicizing the platform to their close friends.

Finally, empirical studies are increasingly quantifying the drawbacks of text-only communication, and the benefits of voice-based channels. The seminal studies of nonverbal communication were those of Mehrabian (1967a and 1967b), whose tests indicated that as much as 55% of the meaning of a given speech act was understood via body language, 38% through tone of voice, and 7% from the actual words spoken.

More recent studies have pointed to major gaps in the amount of social information – that is, the intentions, values, and assumptions behind a given speech act – that is successfully transmitted by text instead of by voice (Kruger, 2005). One study has shown that emails or web-based posts intended to be clarifying or helpful were systematically understood as aggressive by their recipients (Gilovich, 1998). We suffer from an "illusion of transparency," in that we unconsciously assume that those reading our emails and posts must understand our good intentions, whereas they are more likely to view them as attacks. This inherent flaw in text-based communications can lead to defensive responses and spiraling exchanges of negativity between participants in a conversation, even those who know each other well. The benefits of voice-based platforms like Mobile Vaani have been borne out in our experience as well: a greater flow of social information means that participants are more likely to understand and respect one another, as well as learn more readily about the issue at hand.

Do's and don'ts

Building a platform on which diverse stakeholders can participate and air opposing views in respectful ways is a complex process. It needs to be done judiciously. All content on Mobile Vaani is thus carefully moderated. Editorial policies around user content are designed and implemented with care – including explaining the policies to any users whose messages have been rejected. From our continuous observation of the platform, these policies have helped foster norms of mutual respect among users, keeping Mobile Vaani safe from problems of misinformation, hate speech, and uncivil dialogue (Seth, 2020b).

Different Indian caste and class communities have now learned to use new technologies like Mobile Vaani. Consequently, biases in the user population have also emerged, throwing light on the exclusion of marginalized groups from lower caste or class communities. Concerted efforts in identifying and training volunteers from these marginalized groups have helped to steadily increase their participation on the platform (Seth, 2020b). This is essential to retain the inclusive nature of the platform.

In some contexts, it might be even better to have group-segregated platforms to diversify the user base. This may reduce the diversity of content, and possibly even lead to echo chambers (Sunstein, 2018). But the creation of safe spaces may be essential when setting up platforms for female users (especially adolescent girls). Being in a patriarchal society, they require assurance of the protection of their privacy, helping to prevent possible backlash from arising due to their participation on online platforms (Seth, 2020a).

The question remains as to whether users of online platforms can also be encouraged into participating offline. This is a direction that should be actively explored in order to understand what kind of social issues users are willing to put in additional effort for (apart from recording their experiences on the voice platform). While these are early days for an engagement strategy, initial insights highlight the relevance of offline networks – and the deliberate combination of weak and strong ties – for encouraging such participation. Wherever Mobile Vaani teams have been present physically to provide real-time assurance to users, community members have participated more intensively and frequently on the platform.

References

Chakraborty, D., Gupta, A., Gram Vaani Team, and Seth, A. (2019). 'Experiences from a mobile-based behaviour change campaign on maternal and child nutrition in rural India'. *Information and Communication Technologies and Development*, 2019.

Fuchs, C. (2014). *Social Media: A Critical Introduction*. Los Angeles, London: Sage.

Geissel, B., and Newton, K. Eds.). (2012). *Evaluating Democratic InnCons: Curing the Democratic Malaise?* London: Routledge.

Gilovich, T., Savitsky, K., and Medvec, V. H. (1998). 'The illusion of transparency: Biased assessments of others' ability to read one's emotional states'. *Journal of Personality and Social Psychology*, 75(2), 332–346.

Gram Vaani. (2020). *COVID-19 response services by Gram Vaani*. Available at: https://gramvaani.org/?p=3631.

Granovetter, M. (1973). 'The strength of weak ties'. *American Journal of Sociology*, 78(6).

Kruger, J., Epley, N., Parker, J., and Ng, Z. W. (2005). 'Egocentrism over e-mail: Can we communicate as well as we think?'. *Journal of Personality and Social Psychology*, 89(6), 925–936.

Mehrabian, A., and Wiener, M. (1967a). 'Decoding of inconsistent communications'. *Journal of Personality and Social Psychology*, 6(1), 109–114.

Mehrabian, A., and Ferris, S. R. (1967b). 'Inference of attitudes from nonverbal communication in two channels'. *Journal of Consulting Psychology*, 31(3), 248–252.

McPherson, M., Smith-Lovin, L., and Cook, J. (2001). 'Birds of a feather: Homophily in social networks'. *Annual Review of Sociology*, 27.

Moitra, A., Das, V., Kumar, A., Gram Vaani, and Seth, A. (2016). 'Design lessons from creating a mobile-based community media platform in rural India'. *Information and Communication Technologies and Development*, 2016.

Moitra, A., Kumar, A., and Seth, A. (2019). *An analysis of impact pathways arising from a mobile-based community media platform in rural India*. Unpublished manuscript.

Page, S. (2017). *The Diversity Bonus: How Great Teams Pay Off in the Knowledge Economy*. Princeton University Press.

Raymond, E. (1999). *The Cathedral and the Bazaar*. O'Reilly.

Ruthven, O. (2020). *Lockdown Chronicle: The Story of a Migrant Workers' Platform across India's Lockdown*. Available at: https://gramvaani.org/?p=3631.

Seth, A., Gupta, A., Moitra, A., Kumar, D., Chakraborty, D., Enoch, L., Ruthven, O., Panjal, P., Siddiqi, R.A., Singh, R., Chatterjee, S., Saini, S., Ahmad, S., and Sai Pratap, V. (2020a). 'Reflections from practical experiences of managing participatory media platforms for development'. *Information and Communication Technologies and Development*, 2020.

Seth, A. (2020b). 'The limits of design in ensuring responsible outcomes from technology'. *Information and Communication Technologies and Development*, 2020.

Seth, A., Zhang, J., and Cohen, R. (2015). 'A personalized credibility model for recommending messages in social participatory media environments'. *World Wide Web*, 18(1).

Shirky, C. (2008). *Here Comes Everybody: The Power of Organizing without Organizations*. Allen Lane.

Smith, G. (2009). *Democratic Innovations*. Cambridge University Press.

Sunstein, C. R. (2018). *#Republic*. Princeton University Press.

Travers, J., and Milgram, S. (1969). 'An experimental study of the small world problem'. *Sociometry*, 32(425).

UNFPA. (2012). *Marrying Too Young: End Child Marriage*. Available at: www.unfpa.org/sites/default/files/pub-pdf/MarryingTooYoung.pdf.

25

COLLECTIVE INTELLIGENCE AND DIGITAL PARTICIPATORY PLATFORMS

Learnings from Barcelona's Decidim

David Leal García, Antonio Calleja-López, and Juan Linares-Lanzman

The story

Democracy, collective intelligence, and digital technologies

This chapter explores the connection between policy co-production, collective intelligence, and digital technologies drawing on the Decidim experience. Decidim.org is a "free open-source platform that enables organizations and institutions to initiate participatory processes, such as deliberation, decision making, collaboration and co–design" (decidim.org). However, Decidim cannot be framed as merely a digital platform for political participation. It is rather an "*open and free infrastructure for participatory democracy and a project that strives to be a model for political transformation*" (Barandiaran, Calleja-López & Monterde, 2018). By channeling the collective intelligence of the many, Decidim seeks to better and more fairly include societal actors into policy co-production (Satorras, 2020) and society co-construction more broadly. It has a significant impact not only on the number of people who participate in collective intelligence processes, but also on the quality of citizen dialogue in digital societies. Decidim is an emergent model of a third generation type of digital network: a "political and technopolitical network" in which users are not viewed as mere "prosumers" but rather as political actors, and in which a collective will and identity is articulated, beyond the mere addition of individual tastes and preferences. (Barandiaran et al., 2018). It goes beyond informational networks, which revolve primarily around information (such as the world wide web in the 1990s), and beyond social networks (such as Facebook), which focus on social interactions and consumption between atomic individuals, frequently intervened or even manipulated by the platform (Zuboff, 2019). Decidim aims at constituting a political "we," through organized processes of inclusive deliberation. This specific mode of communication seems key to nurture collective intelligence and generate collective understandings, actions, and decisions that exceed the mere aggregation of the preferences, skills, and agency of individuals.

A brief story of Decidim: From its cradle in Barcelona to its global expansion

The brand "Decidim" was initially introduced as a label for Decidim.barcelona, the city council's participatory site, launched in the Spring of 2016.[1] The site resulted from the local government's will to generate broad citizen engagement around the drafting of the "Municipal Action Plan" (PAM, in Catalan), the strategic document that guides the city council's action during its mandate. This first experience was a sound success, drawing the participation of 1,741 organizations and 39,000 people, 24,000 of which participated *online* via Decidim.barcelona. 15,021 people participated via the 410 physical gatherings organized during the process, some of which included the Mayor herself and prominent policymakers. The process generated 247,000 visits to the digital platform and more than 200,000 digital interactions (including proposals as well as comments and votes on the proposals).

A set of 1,300 proposals put forward by the local government was widely debated and subsequently complemented by thousands of citizen and organization proposals. In total, 10.860 proposals were submitted around the axes of Good government, Global justice, Plural Economy, *Buen vivir*[2] and Ecological Transition. 76.6% of them were accepted, generating 5,523 results or approved actions. Every citizen could track what happened exactly to their proposals, in accordance with Decidim´s Social Contract principle of traceability. Whenever a citizen's proposal was rejected, he or she received a well-argued response from a local official through the platform, explaining the reasons for the rejection in a transparent manner. The most common reasons were that the proposal had already been implemented, or was beyond the jurisdiction of the municipality, or was technically unfeasible. Whenever a proposal was approved, any citizen could follow its implementation (in percentage) through a specific follow-up functionality[3] (Figure 25.1) (Ajuntament de Barcelona, 2019).

The success of the PAM process inspired and initiated a period of participatory innovation around local policymaking in Barcelona. Decidim became the go-to platform for the local government to learn more directly to what citizens need and think and to incorporate them into decision processes affecting their lives and the city's destiny. With every new successful experiment, new needs were identified and fresh opportunities for citizen participation emerged. There was initially some skepticism, but the platform soon gained cross-party support and generated a technology-enabled participatory culture. In the five year period after it was first put in place in 2016, the platform registered 120,000 active participants in Barcelona, which has 1.6 million inhabitants, with an accumulated 27,000 citizen proposals and 3,500 physical gatherings channeled through more than 70 participatory processes. 8–10% of Barcelona's population thus has had some level of engagement with the platform, whereas many digital platforms manage to engage 1–3% of their target population.

The early success of Decidim in Barcelona quickly drew interest from cities in Catalonia and other Spanish regions, such as Sabadell, Martorell, Pamplona, and regional governments such as Catalonia and Castilla La Mancha. As of 2022 the international network keeps growing with cities such as Helsinki, Veracruz, Mexico City, Toulouse, and New York using the platform. It has been used also in nationwide processes such as discussions of the French National Assembly, as well as supranational processes such as the Conference on the Future of Europe. In addition to innovation in the public sector, Decidim has been implemented successfully in the private and social sectors, with examples in the social economy, such as the cooperative of clean energy production Som Energia, or the Open University of Catalonia which used it for the participatory development of its five-year strategic plan.
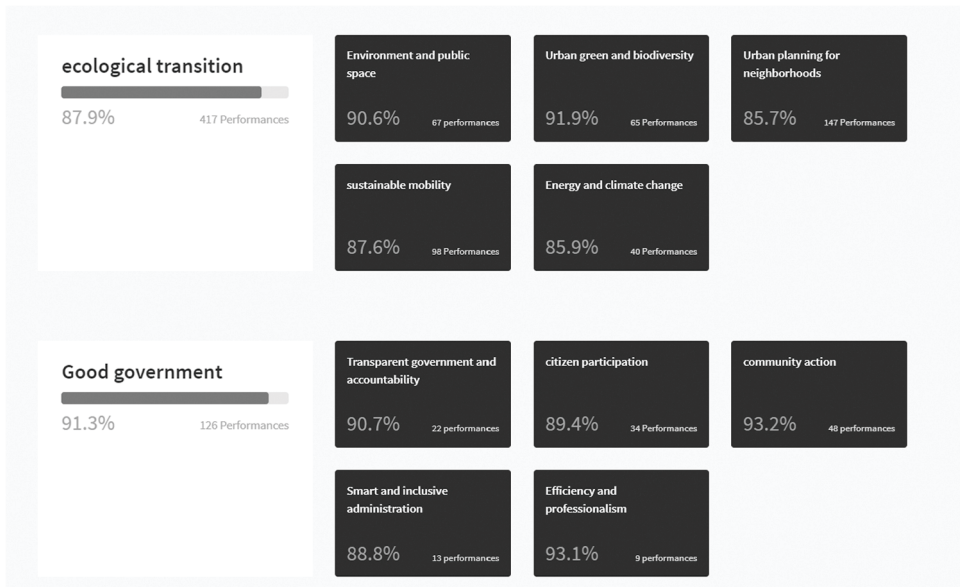
Figure 25.1 Screenshot from Decidim's Barcelona website, in the section of follow up of implementation of the 2016–2019 Municipal Action Plan.

Note: The Decidim accountability functionality allows the citizen to follow up on the level of actual implementation of the approved proposals, the 5 axes, and the overall plan.

Source: Decidim. (www.decidim.barcelona/processes/pam/f/8/?component_id=8&locale=es&participatory_process_slug=pam).

Many examples of application of collective intelligence to diverse areas of policy making can be found in Barcelona in the 2016–2021 time period. One of the processes supported by Decidim – the city's 2021 participatory budget – recorded nearly 39,500 participants, allocating a total of 30 million Euros (Aj. Barcelona. 2021). Over 2,000 proposals were presented by citizens, of which 822 were preselected by civil agents on the basis of solely technical criteria such as viability and applicability. The total amount was distributed between projects for the whole city and projects for the districts. The budget for the different districts was adjusted with criteria of equity, allocating resources inversely to the socioeconomic level of the different neighborhoods. The participatory budget resulted in the extension of the Superblock model[4] and of green areas for pedestrians across the city; in the adaptation of the surrounding areas of several schools, diminishing traffic and making them safer; in the creation of 24 urban gardens; and the extension of 21 bicycle lanes and 14 playground areas. Some of the approved projects addressed historical demands of local associations and the Mayor committed to implement the projects with the most votes which could not be funded within the available budget for that specific process. Among various applications, Decidim was also used to co-produce green urban policy, such as the Plan Natura 2021–2030;[5] to codesign the Barcelona Climate Plan aimed at "catalyzing a fair transition towards a decarbonised city resilient to the uneven and unavoidable impacts of climate change" (Satorras, 2020); and for the 2020–2023 Science Plan with the participation of researchers, scientists, university presidents, experts, and citizens to co-create the strategy to make Barcelona a global scientific hub.

The Conference on the Future of Europe: A continent-wide citizen conversation

Decidim has also been used to catalyze collective intelligence at national and supranational levels. The Conference on the Future of Europe [6] represents a milestone for digital democracy in Europe as a large-scale dialogue process to co-create a shared vision for the future of the Union. It was launched in April 2021 by the European Parliament, the Council, and the European Commission as a "*citizen-led series of debates and discussions that will enable people from across Europe to share their ideas and help shape a common European future*" (Conference on the Future of Europe, CoFoE, 2022). Decidim was chosen as the online multilingual deliberation platform allowing any citizen to publish ideas, to endorse or comment on them, in the 24 official EU languages. It is open to all. Anyone can set up and event, and organizers are provided with campaign material to help spread the word.

In less than a year, this has become the platform's consultation that has hosted the highest number of meetings (6,400) and one of the most active in terms of participation with more than 50,000 participants registered, 5 million visits to the website and 17,000 ideas generated. The conclusions of the process were captured in an extensive report [7] that presented 48 key recommendations addressed to the European authorities. Behind such numbers, ongoing research by our fellow Emanuele Cozzo has found some limits, such as the fact that participants are publishing contradictory answers for similar issues. This raises two problems: which of the proposals will be incorporated into the conference if they are incompatible? How will these decisions be taken? Mediation between proposals and social listening must be taken into account in the design of participatory processes in order to increase the quality of deliberation and political commitments.

Decidim and collective intelligence at the political, technological, and technopolitical levels

The practical workings of Decidim embody a vision based on collective intelligence and democratic innovation which permeates all aspects of the design of the platform, its work methods, and its ecosystem. Decidim's White Paper – a paper drafted by some of Decidim's co-founders, which outlines what the project is about, why it is relevant, and how it works in practice – explains how Decidim aims to enable collective intelligence at the *political*, *technological,* and *technopolitical* layers (see Barandiaran, Calleja-López & Monterde, 2018, from which we heavily draw in this section).

At the political level, an example is the website of Decidim.barcelona, where citizens can find dozens of active and past participatory processes covering a wide range of topics. [8] The specific design of each process may vary, but all have in common the enabling of direct communication between local institutions, citizens, and organizations, as well as among citizens themselves. There are thus bottom-up/top-down vertical (albeit bidirectional) channels of communication, as well as bottom-bottom, horizontal dynamics. This is aimed at facilitating collective intelligence processes in areas such as public policy.

From a technological perspective, Decidim works as a customizable and flexible matrix for participation. A majority of processes in Decidim.barcelona follow a similar methodological blueprint structured around four consecutive phases: "Information" (framing the process), "Debates" (generating and discussing proposals), "Evaluation and feedback" (deliberative selection of proposals), and "Implementation" (implementation of the resulting plan throughout the mandate). However, a much greater variability is afforded by the Decidim software.

On the front end side, the possibilities of process design are based on two key elements: the participatory spaces (Initiatives, Processes, Assemblies, and so on) and the components (comments, proposals, amendments, votes, results, debates, surveys, raffles, pages, blogs, newsletters, meetings, and so on). The participatory spaces constitute "the framework that defines how participation will be carried out." On the other hand, the components are defined as "*the participatory mechanisms that enable a series of operations and interactions among the platform's users.*" Due to the combination of these two elements, participatory experience through Decidim allows participants to perform different types of actions, such as browsing, creating, voting, supporting, commenting, endorsing, and many more. Crucially, Decidim also aims to seamlessly integrate online and face-to-face interactions rather than focusing on digital-only processes. Customizability favors such integration as well as the incorporation and catalyzation of collective intelligence, as administrators can more flexibly adapt the tool to community needs and increase the overall quality of their processes. Also, hybridization favors various modes of participation, potentially compensating the limits of either isolated digital-only or analog participation, thereby facilitating inclusiveness, deliberative quality, and the emergence of collective intelligence (Leal, pending publication).

On the back-end side of the software, the versatility and successful adaptation of Decidim to different needs is facilitated by its modular architecture. Rather than a "monolithic architecture" in which numerous elements are fixed and vertically integrated, generating structural dependencies and rigidities, a "modular architecture" gives relative autonomy to different parts of the platform and makes the addition and integration of features less costly (Pereira de Lucena & Blanco, 2016). This modularity, together with its free software policy, makes it easier for technical experts not only to intelligently adapt the platform but also to contribute their collective intelligence to the software.

Finally, Decidim's key feature in relation to collective intelligence is its community, which is specifically designed to incorporate people who are not technical experts into the governance of the project. This is the "technopolitical" dimension[9] of Decidim, which involves a community of innovators, hacktivists, citizen groups, civil servants and stakeholders, a growing body of academic research, an open space of experimentation in participatory practices, and an international learning hub. In 2018 this community took legal shape around the Decidim association, which has an assembly as its main decision-making organ. Through the community, a diverse and distributed collective intelligence helps to improve the project at numerous layers and levels, including, but also beyond, the software. This community is itself boosted by the use of the Decidim platform, deployed in meta.decidim.org, the community site, with more than 9,000 members worldwide.

To sum up, as a project, Decidim aims to nurture collective intelligence at the political level (institutions and policies), technological level (software), and technopolitical level (community). Furthermore, these levels feed back into each other, in what has been referred to as a "loop of technopolitical democratization" (ibid.) that increases "technopolitical autonomy" (Barandiaran, 2019). In this chapter, however, we will mostly attend to the political layer, with some comments on the technopolitical one.

The MetaDecidim community and its role in catalyzing collective intelligence

One of the defining aspects of the Decidim project has been the constitution of a quadruple helix community with a marked leadership of state and civil society actors in a public-communitary partnership. Already in 2016 a community composed by researchers, public

servants, and common citizens began to meet periodically in two types of processes: community meetings (then called SOM, an acronym that in Catalan means "we are," and which stood for "metadecidim operative sessions") and research meetings (called LABs, the laboratory of Decidim). While in the former type of session all aspects of the project, from communication or UX to back-end features, were discussed and decided upon with community members, in the second type of meeting, the center of attention was knowledge-intensive problems, as well as the vision and the role of Decidim in society. Lab debates were held openly by researchers and citizens in half research, half intervention-oriented sessions. The emerging community not only met face-to-face in Barcelona, but also had its digital space, the mentioned meta.decidim.org site, based on Decidim software, as a permanent space for exchanging and debating proposals and ideas around the project, from the technical to the political. Yearly meetings, today called Decidim Fest, have served as a space for the growing international community. After its legal constitution as an association in 2018, the Barcelona city council signed an agreement by which the new legal entity came to hold control over the Decidim brand and core repositories. Decidim exhibits a public-common (or public-communitary) software governance, in which public institutions provide funds for the project and the association holds control over it. In 2018 Decidim became an effective public-communitary project around a digital commons.

The potentiality of this model lies in its ambition to move not only beyond the usual proprietary software model of private and corporate intelligence but also beyond the free software model (which is open to collective intelligence but mostly involving experts) by outlining a democratic software model (Calleja-López, 2017). Under this governance model the collective intelligence of anyone and everyone (built upon various modes of expertise, experience, desire, etc.) is potentially incorporated into the design of the software. A recent example illustrates this: the Decidim Community (Metadecidim) decided on November 4, 2021 to radically rethink the current interface of the platform, as design and usability limitations had become obvious to members through their variegated uses. The rethinking process is being articulated through several open debates and meetings to be concluded by August 2022 with a concrete proposal for renewal. The process has so far received around 40 ideas. As an example, our Tecnopolitica team at IN3/UOC is promoting a debate around the deliberative features of the platform, which are, in turn, key to favoring collective intelligence in processes aided by Decidim.

In this example we can see how Decidim recursively becomes a mean and an object of democracy, deliberation, and collective intelligence. We can think of this as a form of recursive collective intelligence, which operates on itself and puts the conditions of its own functioning and improvement in successive layers, from software to public policy. This, in turn, is only one of the many aspects of the recursive citizenship in digital society that Decidim aspires to foster (Calleja-López, 2017). It suggests, ideally, a technopolitical spiral of collective intelligence and citizenship. This spiral makes it possible (in principle) that whenever a specific need in the development of Decidim is identified, anyone can come up with a new solution and share it with the rest of the network.

Recent changes in Decidim's Social Contract are another example of the types of improvements that the Metadecidim community has brought about in its ongoing processes of collective intelligence. The Social Contract was initially designed as a code for democratic guarantees and open collaboration that all members of the Decidim community and users of the platform are committed to follow (Decidim's Social Contract, 2022). It was not a mere statement, but also an effort to consolidate Decidim's vision into specific design and deployment principles aimed to ensure broader sociopolitical effects (Barandarian, Calleja-López

& Monterde, 2017). However, even though issues such as "participation washing" (i.e., deployments of the platforms contrary to the projects' culture and *ethos*) had been debated since the early days of the project, the Social Contract did not contemplate certain uses (or abuses) of Decidim. A debate around potential modifications of the Social Contract resulted from a claim by a Chilean community member, posted as a comment in meta.decidim.org at the end of 2019, regarding the use of the platform by the Chilean government, accused of human rights violations by international organizations. The comment led to the launch of a new space, called Decidim Politics, to discuss Decidim's principles, practices, and impacts worldwide. Among Decidim members, an open draft communication was created. At the end of the deliberation an official Decidim statement was issued to show its opposition to certain government uses of the platform (Decidim Blog, 2019).

What science tells us

To what extent may digital participatory platforms actually enhance collective intelligence for a better and more democratic governance? In today's complex and conflictual modern societies, can the creative use of information and communication technologies (ICTs) actually contribute to incorporating "democratic reason" and the distributed intelligence of the many (Landemore, 2011) into better decision-making? In the first two decades of the 21st century, local and state governments around the world have adopted digital platforms as part of their governance toolbox in order to increase citizen engagement in public decision-making (Van dijk & Hacker, 2000; Macintosh, 2004; Saebø et al., 2008; Medaglia, 2012). Technology has been regarded as a key enabler of the interaction and communication among large numbers of people, including public institutions, individual citizens, and organized groups, vastly exceeding the possibilities of traditional analog-only modes of interaction. Among the purported benefits of using ICTs for participation in innovative ways has been the engagement of "a wider audience to contribute to democratic debate, where contributions themselves are broader and deeper" (Macintosh, 2004). However, numerous limits and myths have also been diagnosed within these processes and the analyses around them (Hindman, 2008).

In the context of participation, this deployment of technologies (specially, digital technologies) has enabled new spaces of mediation between citizens and public bodies, as well as between citizens themselves, in processes such as the negotiation and implementation of public policies. The technologies used are sometimes labeled as "govtech" (short for "government" and "technology," a concept that broadly includes technologies used for the digitalization of government and its services) and, more particularly, "civic tech" (technologies specifically deployed in the context of civic participation, whose development is sometimes led by communities along with − or including − NGOs, private companies, volunteers, or even civil servants; Boehner & DiSalvo, 2016; Schrock 2019).[10]

In places like Barcelona, the Decidim ecosystem aims to go beyond these models by radicalizing and blending various technopolitical practices of "co-production" of policy, community, and technology, while situating collective intelligence at its heart. According to the official definition of the Barcelona municipality, policy and political co-production is a "*joint and shared way of working between the City Council and the social actors, regarding a specific action or policy of public interest and under municipal jurisdiction*" (C40, 2018b, p.16, as quoted in Satorras, 2020). Policy co-production presumes the involvement of both government and community participants in a converging and learning process, including knowledge sharing and discussion of alternative measures (van de Ven et al., 2016). Co-production processes are aimed at

creating an open, leveling field of interaction, dialogue or deliberation that includes government officials, citizens, and stakeholders where arguments can be exchanged, different ideas can be examined, and collective decisions can be produced. In a typical participatory process in Decidim, collective intelligence is facilitated in a sequential manner throughout the different stages via alternate moments of divergent thinking (opening the conversation to explore a wide variety of views, arguments, and options) and convergent thinking (selecting the best generated options and integrating them in a cohesive manner). Each phase builds up on the conversations and documentation produced in previous stages, which summarize the core agreements and common understandings achieved collectively.

When applied to politics, a variety of dimensions and potential effects can be underlined, one seems to be policy improvements resulting from the number of people involved (Landemore, 2011), or their cognitive diversity (Page, 2006), when they are mediated by the deliberative quality of the communicative interactions (Habermas, 1981). Academic research suggests that inclusive public deliberation, which is a defining methodological feature of collective intelligence processes, leads to an increase in the effectiveness and innovation of policy. Participation and, specifically, platforms such as Decidim have the potential to embed CI in all the stages of the policy production process: from the preliminary stages of setting the agenda and identifying the public challenge to the generation and evaluation of proposals; from the filtering and selection of options to the implementation, testing, and scaling of the solution(s) (See Boucher, chapter 3 in this Handbook).

The deliberative element means that citizens are invited not only to show their agreement or disagreement with the local government's proposals, but also to voice their own proposals in an equal level to those presented by the officials, to show support to the proposals put forward by other citizens, to generate new options, and to weigh the pros and cons of the different available options. In this way, public officials can better identify citizen's needs and diagnose problems which may be "outside of the radar"; gather new valuable ideas; spot certain "pain points" or actions in their original plans which could generate strong opposition and run early tests of the level of support of different action plans. The underlying hypothesis is that direct interlocution of public administrations with citizens leads to an increased legitimacy for political action derived from having had into account those most affected by their action and by having gathered a diversity of perspectives. The experiences with Decidim suggest that the policies resulting from this genre of consultative processes tend to be less controversial and enjoy broader levels of citizen acceptance. If we follow the hypotheses of the participatory and deliberative traditions, this increased legitimacy is related to the fact that any citizen has the opportunity to voice reasonable arguments to oppose certain policies, and that as a result of the deliberative process there is an increase in the quality of the resulting collective decisions.

There are different ways to understand collective intelligence, with varied implications for the conceptualization of co-production. In earlier works we have previously distinguished between a cognitivist, a computerist, and a technopolitical vision of collective intelligence, especially in digitally mediated environments (Toret and Calleja-López, 2014). A classic technopolitical and philosophical definition of collective intelligence can be found in Levy (1999) that etymologically interprets it as a "*reading*" and "*working together (inter legere), as a union point not only of ideas but also of people 'constructing society'*" (we could add the "choice" or "selection" meaning of *legere*). We believe that this view is heuristically more interesting than cognitivist approaches that focus on some of the possibilities of intelligence as a primarily individual faculty, emphasizing their cognitive aspects or — in its pragmatic versions — defining it as the "ability to solve problems" (Heylighen, 1999) which only points to a

single aspect of the "society construction" noted by Levy. We also prefer it to computerist views that speak mostly of computation systems that are deemed intelligent. Levy further defines it as

> an intelligence distributed everywhere, constantly valorized, coordinated in real time, which leads to an effective mobilization of competences. We aggregate to this definition this necessary idea: the ground and objective of collective intelligence is the mutual acknowledgement and enrichment of people, not the cult of fetishized or hypostatized communities.

Crucially we believe it necessary to follow Latour (1992, 1999, 2005), albeit critically (Hayles, 2021) in rethinking the "collective", thereby stressing the need for extending the notion to encompass actors other than humans. In digital societies collective intelligence cannot be cut off from its technological preconditions, which (politically) shape and are potentially shaped by it.

Do's and don'ts

The availability of a technological platform that connects many people does not guarantee *per se* the emergence of collective intelligence. While a growing number of studies have shown Decidim's potential, they have also pointed out some of its limits, both on the political side, related to its deployment, and in relation to its design and community. In the Catalan context, which has been thoroughly studied (Borge et al., 2019, 2022), Decidim has faced a number of challenges, such as the cost of adapting it to municipal processes, limited interest in social media, relatively low participation levels, the difficulty of processing inputs from the platform by humans (with unavoidable limits), and the instability of local governments. There are threats too, such as when citizens use the platform to register complaints about minor street problems rather than to make proposals or deliberate, or when civil society organizations refuse to play the game. The digital divide, the fact that many Decidim functionalities are unknown to both users and administrators and the limited outreach of information campaigns by public institutions, which effectively reach only a portion of the total target population, are also limits to the platform's impact. Most of these are exogenous rather than endogenous factors. However, some of them seem to be a result of its design, making it difficult to take advantage of its complex participatory architecture and to deliberate (thereby the redesign process mentioned above, activated by the community). Finally, the Decidim community itself faces crucial challenges, such as gender imbalance, typical of the tech sector. Such challenges are however being addressed (f.i.: via the DecidimFemDev program or by constituting a women-led coordinating committee) thereby showing the richness, and advances, of the platform and its community.

Based on the experience learned so far, we can stress that creating collective intelligence-based responses to public challenges is fostered by critical factors like the following:

1. **Cultivate and show a political will to listen to citizens and exert power in a more collaborative way.** According to Arnau Monterde, Head of Democratic Innovation of Barcelona's townhall and coordinator of Decidim.barcelona, the key for its success is the "*willingness of those in power to really listen to the citizens.*" Participatory democracy platforms do not lead to an increase in citizen participation unless those in power sincerely seek participation.

2. **Trust comes first: ensure high standards of (digital) rights**. In an age of digital surveillance in which data has become a key asset, who owns the digital platforms and what use is made of the collected data affects the users' rights, privacy, freedom of expression, and thereby the level of trust. Decidim has very high standards of digital rights, with advanced secure encrypted procedures and the limitation of data recollection to the bare minimum necessary to run the platform. It obviously does not share nor sell the collected data.

3. **Public–common governance leads to a public–common good orientation**: Decidim is highly open to community input and such nurturing of collective intelligence (and decision-making) feeds into a common-good orientation, from its open source nature to its feminist policies.

4. **Combine online and face-to-face dialogue**: The fostering of collective intelligence requires the facilitation of diverse spaces for citizen encounter. Processes should complement and combine rather than separate digital and analog processes, taking advantage of their possibilities to foster inclusive and quality participation.

5. **Participatory democracy starts at home: co-develop the technology.** Decidim is a software made in collaboration with its users. Thereby a lesson is to open up the development of technology to collective intelligence by involving users, communities, experts, citizens, and administrations in the development of the platform.

6. **A foundation and practice guided by democratic values: Decidim's "social contract."** The platform has a binding social contract, periodically improved, with a set of ethical and political values aimed to set high standards of democratic participation. This suggests to think beyond the code.

7. **Design processes flexibly to enable inclusive deliberation:** At the heart of collective intelligence is inclusive deliberation which allows all affected parties and a variety of perspectives to be heard and to contribute to better understanding. The lesson is to carefully include all voices and include facilitators that hold space for it.

Notes

1 The site was built upon Madrid´s "Consul" code. By early 2017, however, the software of the site had been entirely redesigned to render the platform more customizable, flexible, and adaptable to the local context, moving from a monolithic to a modular architecture (Lucena & Blanco, 2016), and giving birth to a brand new platform. For a detailed narration of the techno-political differences behind the separation, see Calleja-López (2017).

2 *Buen vivir* – "living well" – is a reference to the Quechua indigenous notion of *Sumak Kawsay*, which is the basis of a model of development centered around people as part of a larger social and natural environment. Bolivia (2007) and Ecuador (2008) enshrined *Buen vivir* in their constitutions as pillars of their legal systems.

3 https://decidim.org/modules/

4 The *Superilla* is a public space model implemented in Barcelona that transforms city roads into community green areas, prioritizing street-calming, citizen interaction, and sustainable mobility.

5 This was an urban naturalization and greening plan that the local government submitted via Decidim with the objective of adding 385 acres of green areas in 2023 with a long-term plan to protect and expand the city's biodiversity.

6 https://futureu.europa.eu/?locale=en

7 https://futureu.europa.eu/en/pages/reporting

8 From the *Climate Action Plan* that accelerated the ecological transition locally or the *Youth Forum*, oriented to empower the voice of young people in the city's governance to the *Plan to Combat Unwanted Loneliness* or the *2020–2023 Barcelona City of Science Plan*.

9 Within the literature of technopolitics (Winner, 1986; Hetch, 2009; Toret et al., 2015), probably one of the best definitions is Hecht's (2009: 56–57) that understands it as "the strategic practice of designing or using technology to constitute, embody, or enact political goals."

10 One may note here also the term "poltech" which refers more specifically to technologies employed to help parties and political movements in election campaigns.

References

Ajuntament de Barcelona. (2019). Informe 2016–2019: Decidim, la plataforma digital oberta i lliure per la participació i la innovació democràtica. Regidoria de Participació i Districtes.

Ajuntament de Barcelona. (2021). Els primers pressupostos participatius de Barcelona assoleixen una participació de prop de 39.500 persones. https://ajuntament.barcelona.cat/premsa/2021/06/21/els-primers-pressupostos-participatius-de-barcelona-assoleixen-una-participacio-de-prop-de-39-500-persones/.

Amnesty International. (2022). Amnesty demands investigations into high command of Chile's Carabineros'. Retrieved 17 February 2022, from www.amnesty.org/en/latest/news/2021/07/chile-exige-investigacion-general-director-carabineros-violaciones-ddhh-2/.

Aragón P. et al. (2017). Deliberative platform design: The case study of the online discussions in Decidim Barcelona. In: Ciampaglia G., Mashhadi A., & Yasseri T. (Eds.), *Social Informatics. SocInfo 2017.* Lecture Notes in Computer Science, vol. 10540. Springer, Cham. https://doi.org/10.1007/978-3-319-67256-4_22

Barandiaran, X. (2019). Tecnopolítica, municipalismo y radicalización democrática. In Roth, L., Monterde, A. & Calleja-López (Eds.), *Ciudades democraticas. La Revuelta Municipalista en el Ciclo post-15M.* Icaria Editorial.

Barandiaran, X., Calleja-López, A., & Monterde, A. (2018). Decidim: Political and technopolitical networks for participatory democracy. Decidim's project white paper.

Boehner, K., & DiSalvo, C. (2016, May). Data, design and civics: An exploratory study of civic tech. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 2970–2981).

Borge Bravo, R., Balcells Padullés, J., & Padró-Solanet Grau, A. (2019). La deliberació ciutadana online: avaluació de la deliberació en les noves plataformes participatives dels ajuntaments catalans i en les xarxes socials relacionades.

Borge, R., Balcells J., & Padró-Solanet, A. (2022, May). Democratic Disruption or Continuity? Analysis of the Decidim Platform in Catalan Municipalities. *American Behavioral Scientist.* doi:10.1177/00027642221092798

Calleja-López, A. (2017). *Since 15M: the technopolitical reassembling of democracy in Spain.*

Castells, M. (1996). *The rise of the network society. The information age: Economy, society, and culture.* Volume I. London, UK: Blackwell Clarke.

C40 (2018b). Cities leading the way: Seven climate action plans to deliver on the Paris. https://resourcecentre.c40.org/resources#cities-leading-the-way

Conference on the Future of Europe. (2022). Retrieved 11 February 2022, from https://multimedia.europarl.europa.eu/package/17609.

Decidim - Blog. (2019). Not with Decidim (support). Retrieved 17 February 2022, from https://decidim.org/blog/2019-12-20-not-with-decidim-support/.

Decidim Design Manifesto (1st draft). (2022). Retrieved 16 February 2022, from https://meta.decidim.org/processes/RedesignDecidim/f/1662/posts/235.

Decidim (2021, April 19). Proud to see this instance of the @EU_Commission for #TheFutureisyours! @decidim_org is a free/libre and open technology that requires political greatness to achieve a truly democratic deployment. We look forward to them being up to the task [Tweet]. Retrieved 11 February 2022 from https://twitter.com/decidim_org/status/1384068551888171010.

Decidim's Social Contract. (2022). Retrieved 17 February 2022, from https://docs.decidim.org/en/understand/social-contract/.

Diputació de Barcelona. (2018). Participació tecnopolítica local. Quaderns de Participació Ciutadana.

Habermas, J. (1984) [1981]. *Theory of Communicativa Action. Volume One: Reason and the Rationalization of Society.* McCarthy. Boston, Mass.: Beacon Press.

Hayles, N. K. (2021). Unthought. In *Unthought.* University of Chicago Press.

Hecht, G. (2009). *The radiance of France, new edition: Nuclear power and national identity after World War II.* MIT Press.

Heylighen, F. (1999). Collective Intelligence and its Implementation on the Web: algorithms to develop a collective mental map. *Computational & Mathematical Organization Theory*, *5*(3), 253-280.

Hindman, M. (2008). *The myth of digital democracy.* Princeton University Press.

Kantar Public. (2021). Multilingual Digital Platform of the Conference on the Future of Europe. Retrieved 11 February 2022, from https://futureu.europa.eu/rails/active_storage/blobs/eyJfcmF pbHMiOnsibWVzc2FnZSI6IkJBaHBBBdWlFIiwiZXhwIjpudWxsLCJwdXIiOiJibG9iX2lkIn19--3fe1bd5c838d6e007a595afd9beefa8b4df1fb3f/Kantar%20Third%20Interim%20Report%20fi nal%20version%20EN.pdf.

Landemore, H. (2011). *The mechanisms of collective intelligence in politics.* Cambridge, MA.

Landemore, H., & Moore, A. (2014). Democratic reason: Politics, collective intelligence and the rule of the many. *Contemporary Political Theory*, *13*, e12-e15.

Latour, B. (1992). Where are the missing masses? The sociology of a few mundane artifacts. *Shaping Technology/Building Society: Studies in Sociotechnical Change*, 1, 225–258.

Latour, B. (1999). *Pandora's hope: Essays on the reality of science studies.* Cambridge: Harvard University Press.

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. OUP Oxford.

Lee, J.-Y., & Jin, C.-H. (2019). How Collective Intelligence Fosters Incremental Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 5, 53. https://doi.org/10.3390/joitmc5030053

Leal, D. (2022). *Actos comunicativos y métodos de inteligencia colectiva: impacto en el liderazgo y la innovación en organizaciones y sistemas.* Universitat de Barcelona.

Levy, P. (1999). *Collective intelligence: Mankind's Emerging World in Cyberspace.*

Lindner, R., & Aichholzer, G. (2020). E-Democracy: Conceptual foundations and recent trends. In: Hennen L., van Keulen I., Korthagen I., Aichholzer G., Lindner R., & Nielsen R. (Eds.), *European E-democracy in practice. Studies in digital politics and governance.* Springer, Cham. https://doi.org/10.1007/978-3-030-27184-8_2

Macintosh, A. (2004, January). Characterizing e-participation in policy-making. In 37th Annual Hawaii International Conference on System Sciences, 2004. *Proceedings of the IEEE*, p. 10.

Medaglia, R. (2012). eParticipation research: Moving characterization forward (2006–2011). *Government Information Quarterly*, 29(3), 346–360.

Novak, J., Becker, M., Grey, F., & Mondardini, R. (2018). Citizen engagement and collective intelligence for participatory digital social innovation. In Hecker, S., Haklay, M., Bowser, A., Makuch, Z., Vogel, J. & Bonn, A. (Eds.), *Citizen science - Innovation in open science, society and policy* (pp. 124–145). London: UCL Press.

Page, Scott. (2006). *The difference. How the power of diversity creates better groups, firms, schools, and societies.* Princeton: Princeton University Press.

Pereira de Lucena, A., y Blanco-Gracia, A. (2016). "Propuesta de cambios en la Arquitectura de Consul". Retrieved from https://alabs.gitbooks.io/propuesta-de-cambios-en-la-arquitectura-de-consul/content/

Rose, Jeremy & Sæbø, Øystein. (2008). Establishing Political Deliberation Systems: Key Problems.. 16th European Conference on Information Systems, ECIS 2008. 2002–2013.

Satorras, M. (2020). Co-production of urban climate planning: Insights from the Barcelona Climate Plan.

Schrock, A. R. (2019). What is civic tech? Defining a practice of technical pluralism. In *The right to the smart city*. Emerald Publishing Limited.

Toret, J., & Calleja, A. (2014). D2.1. Collective intelligence framework. iDecentralised Citizens Engagement Technologies. https://dcentproject. eu/wp-content/uploads/2014/04 D, *2*.

Toret, J., Calleja-López, A., Marín-Miró, Aguilera, M., Aragón, O., Lumbreras, A. Monterde, A., & Barandiaran, X. (2015). *Tecnopolítica: la potencia de las multitudes conectadas. El sistema red 15M, un nuevo paradigma de la política distribuida.* Editorial UOC.

van Dijk, J. A., & Hacker, K. L. (Eds.). (2000). *Digital democracy: Issues of theory and practice. Digital Democracy*, 1–240.

van de Ven, H. M., Robbert P.H. Snep, Stijn Koole, Reinder Brolsma, Rutger van der Brugge, Joop Spijker, Toine Vergroesen (2016) Adaptation Planning Support Toolbox: Measurable perform-ance information based tools for co-creation of resilient, ecosystem-based urban plans with urban designers, decision-makers and stakeholders. *Environmental Science & Policy*, 66, 427–436.

Warren, M. E., & Gastil, J. (2015). Can deliberative mini publics address the cognitive challenges of democratic citizenship? *The Journal of Politics*, 77(2), 562–574.

Winner, L. (1986). *The whale and the reactor.* University of Chicago Press.

Wise, S. & Gegenhuber, T. (2012). Value co-creation through collective intelligence in the public sector: A review of US and European initiatives.

Yun (2019). Collective intelligence: An emerging world in open innovation. Toward a political theory of social innovation: collective intelligence and the co-creation of social goods.

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power.* Profile Books.

PART 5

Social innovation and bottom-up power
Introduction

Lex Paulson

"Only through training do we become able to respond well ... At the beginning [of our lives] one responds through emotions; at the end, one responds through propriety."
– *The Nature That Emerges from the Decree*, 4th-century-BCE Chinese text

Introduction

What does it mean to repair a broken society? From his study of history, the young man perceived that certain institutions – political, financial, and military – had once bound the citizens of his community together into a cohesive whole. People had cared about doing the right thing. But in his own time, bad men were regularly finding their way into high office, only to be replaced by even worse. Laws and norms were openly flouted, and idiotic decisions made. Society seemed to be coming apart in simple ways, too – in how people refused to look one another in the face, in the coldness and brutality with which they spoke. If we could fix how we related to one another in society, he reasoned, we might solve our political troubles as well.

The troubled young man by the name of Kong carried his frustrations into the civil service, where he had a middling career, and then into teaching, where he had perhaps the greatest career of anyone, ever. For the teachings of "Master Kong," known in English as Confucius, have now been read and re-read for 24 centuries, influencing not only the institutions of his native China but countless others as well. Harvard Prof. Michael Puett, a scholar of ancient philosophy, observes that Confucius is often wrongly perceived as a proponent of rigid obedience and interminable rituals. Instead, Puett argues, his notion of rituals (the *li*) should actually be seen as an indispensable lever of social change (Puett and Gross-Loh, 2016). How?

In early China, Puett explains, human beings were understood as a mass of contradictory elements – conflicting emotions, turbulent energies, chaotic spirits – all of which they worked to refine during their lives. The contradictory energies within each person lead, in turn, to the fragmented, messy encounters that take place in society. The value of the *li* for Confucius was their ability to alter our way of thinking – that is, to create a temporary space where the dynamics of human relationships could be suspended and re-examined. A father and son could be in bitter conflict, but during a ritual of ancestor worship, they would

temporarily trade roles; in this role reversal lay the chance to temporarily set aside, and per–haps reshape, the negative patterns in their everyday lives. As Puett explains,

> The power of the ritual lay in how patently *distinct* it was from the real world…Each living descendant was made to take on the perspective of the person with whom he often experienced the most tension in the world outside.

By opening a space to get "outside themselves," even for a few moments, participants in the *li* could gain new perspective on these troubled relationships and the emotions that had created them. Puett calls this Confucian concept the "as-if ritual," from his axiom that these rituals would have value even if the spirit world didn't exist: "We sacrifice to them *as if* they are there."

What social problems might we be able to solve without politicians? Psychologists have long observed the human tendency to get stuck in toxic patterns. Familiar behaviors are repeated again and again even though all parties know they only lead to more pain (Goldman, 2008; Kusy and Holloway, 2009; Motz, 2014). Sociologist Jonathan Haidt has observed how much worse these toxic patterns are made by online media; hiding behind screens and pseudonyms has allowed social media companies to monetize our worst behaviors, delivering us dopamine hits in the form of "likes" for our most extreme or emotion–laden posts (Twenge et al., 2020). Is it too late to reverse these trends? In his book on Chinese philosophy, Puett praises a student association on his own campus dedicated to the ritual of social dialogue: "Students are literally taught the rituals—crafted and artificial though they may seem—of conversation: how to pose questions, stop and listen, and speak in ways that open up a space for engagement and progression instead of defensiveness and rigidity." When we have learned to refine our responses in emotionally challenging moments, as Confucius encouraged his own students to do, we can start to respond to people in ways that we have cultivated, instead of in immediate reactions that exacerbate conflict. "We do this refining," Puett concludes, "through ritual."

Was Confucius right to believe that reimagining relationships at a small scale was the key to rejuvenating our politics? One answer can be found in the very earliest forms of human society. In 1944, the French anthropologist Claude Lévi–Strauss (1944) published an essay about politics among the Nambikwara people, a culture of farmers and foragers inhabiting an inhospitable stretch of savannah in northwest Brazil. Lévi–Strauss found that the role of political and moral leadership in this culture changed dramatically according to the seasons of the year. During the dry season the Nambikwara foraged in small bands, while during the rainy season, they came together in hilltop villages of several hundred people and lived off their gardens. Leaders in this society emerged during the "nomadic adventures" of the dry season, when courage and decisiveness were most needed; during these phases of the year, leaders gave orders, resolved disputes, and expected the obedience of the group. Then, in the rainy season, when food and water came in abundance, the ethical order was turned on its head; the same leaders who had barked orders a few months before could only employ gentle persuasion or risk being ignored or ostracized. In these less-stressful periods, leadership was demonstrated through personal example, by personally organizing the construction of group houses or caring for the sick and needy. The egalitarianism of the rainy season was inappro–priate to the dry times, the hierarchies of the dry season improper in the wet.

In their recent work *The Dawn of Everything*, David Graeber and David Wengrow argue that the Nambikwara, with their seasonal changes in political order, display a reflexivity and creativity that "developed nations" have all but lost:

Nambikwara chiefs were in every sense self-conscious political actors, shifting between two different social systems with calm sophistication, all the while balancing a sense of personal ambition with the common good… The fact that one structure applied in the rainy season and another in the dry allowed [these chiefs] to view their own social arrangements at one remove: to see them as not simply "given", in the natural order of things, but as something at least partially open to human intervention.

(Graeber and Wengrow, 2021)

These seasonal patterns, argue Graeber and Wengrow, may be where political creativity began. They cite recent studies of monumental burials and temporary settlements from the Paleolithic period and propose that tens of thousands of years ago, human societies were self-consciously experimenting with different social possibilities (Wengrow and Graeber, 2015). They conclude that the highly seasonal environments of the last Ice Age may have favored the ability of hunter-gatherers to alternate – consciously and deliberately – between contrasting modes of political organization, including a variety of hierarchical and egalitarian possibilities. "With such institutional flexibility," they write, "comes the capacity to step outside the boundaries of any given structure and reflect; to make and unmake the political worlds we live in."

Starting points

How can we "step outside the boundaries" of the world as it is presented, and propose new ways to solve public problems? Social innovation has been defined as "a complex process of the introduction of novel solutions to face social problems – ideas, products, services or models – that profoundly change the basic routines, beliefs or resource and authority flows of the social system in which they occur" (Westley and Antadze, 2010). The stories of this section of the handbook present a series of actors, most with no "official" status, who confront a public problem by conceiving it in a new way. For the institutional struggles against poverty and climate change are thwarted not just by the complexity of these problems, but by the path dependency of their own institutions and behaviors.

Path dependency describes the tendency of teams, organizations, or societies to employ the same strategies as those used in the past, regardless of whether better ones become available (Pierson, 2020). This can occur for economic or technological reasons (such as the gold standard in international finance or "QWERTY" keyboards on contemporary laptops), or for sociocultural ones. Parsons et al. (2019) note that as past problem-solving strategies are repeated, deeply held assumptions become part of institutional practices and are accepted as common knowledge, regardless of whether they are fit for the circumstances at hand. This can have disastrous effects. Parsons et al. examined a flood mitigation system established by European settlers in New Zealand in the early 1900s and found that it was increasingly overmatched by new housing development and the effects of a changing climate. They noted that the "resources management" mentality of the local European-oriented agencies, where choices are made in budgeting cycles among a set of predefined strategies, could be improved by learning from the indigenous Maori communities, who practice a relational approach to nature based on a more dynamic and context-sensitive understanding of causes and effects. The fundamental problem was not technical or economic but psychological: "To a man with a hammer," goes the saying, "everything looks like a nail."

The field of social innovation covers a vast range of challenges, from education and health to violence and discrimination to fighting pollution and climate change. What social innovators share is the commitment to take action on a public problem without relying either on the mechanisms of the state or of the free market, though freely adapting methods from each. To adapt a phrase from Kristina Bliksted, founder of an initiative to reduce discrimination in local hospitals and a protagonist of one of our cases, social innovators "use their freedom and begin where you do not have to ask either for permission or money."

What these projects and initiatives reveal is that creating collective intelligence often first requires a community to examine its own dysfunctional patterns and blind spots. For public administrations, these blind spots may be found in the tendency to resort to staffing and budgeting as the principal levers to solve a problem (Bach and Wegrich, 2019). And as we have seen in too many cases, from improving school performance in underprivileged areas to building state institutions in Haiti or Afghanistan, channeling money and people into dysfunctional systems can make those systems even worse (dos Santos Parra, 2019; Bizhan, 2018).[1]

As Parsons et al. point out, these institutional blind spots also play out in the mentalities and assumptions that bring different community members into conflict. And here is where the cognitive tools of Confucius or the Nambikwara chiefs can be most useful. Stakeholders to a social problem, especially one that has provoked the strongest emotions, may benefit from "stepping outside the boundaries" of the problem, with the assumptions and path dependencies it has engendered. "As–if" rituals as simple as sharing a friendly meal or a cup of tea may be one approach; adversaries in the conference room, for a few moments, can trade stories and jokes "as if" they were old friends. Through methods of dialogue, mediation, and design thinking – even, as we will see, in the flow of "THNX" tokens on the blockchain – facilitators aim to create the kind of space where collective intelligence can emerge. The virtual, "as if" spaces created in these cases offer a respite from patterns of conflict; relationships can be re-imagined, motivations and interests better understood, and root causes of social problems explored. In these temporary environments of trust and humility, the tacit knowledge that is critical for group innovation can rise to the surface (Polanyi, 1966; Leonard and Sensiper, 1998). Intelligence that has been embedded in the tacit levels of thought can be put to work to solving a common problem in a new way. This is the promise of social innovation.

This aspiration, that independent thinking can yield new solutions to hard public problems, comes with a special challenge. If the method or approach of a social innovator shows promise, how can it be scaled up without succumbing to the logic, and reproducing the blind spots, of the government or private sector? How can these innovators "partner" with businesses or ministries without becoming a "junior partner"? Or, alternatively, is it better that these innovations remain local and small scale? How, in short, can the collective intelligence at work in these social innovations serve the larger community?

New directions

In this section we encounter five different attempts to put collective intelligence to work at the community level. The first two come from **Canada**: an indigenous community in northeastern **Ontario** caught in a dispute over natural resources empowers its young people to lead a visioning exercise (Baum, "Conflict resolution and community change: 'An eagle watches over us'") and a network of ecologically minded cities creates an experiential story space in **Montreal** to help resolve community conflicts (Arthur, "To transform

the community, change the story: the Fab City Global Initiative"). In **Indonesia**, social innovators from across Asia are brought together to create a blockchain-powered economy of gratitude and expertise (Arrowsmith, "Pioneering Asia Pacific's first community-driven investment process through blockchain: Impact Collective"). In **Denmark**, a young volunteer advances the cause of health equity with a combination of daring and the wisdom of a network (Natorp, "Scaling personal initiatives into collective action: the citizen powerhouse of *Sager der Samler* in Aarhus, Denmark"). And in **Sweden**, a local protest against a hospital closure leads to a deeper and more complex dialogue, shedding light on deeper grievances and dynamics of power (Le Roux, "Smarter mediation, better dialogue: lessons from a Swedish protest for local healthcare").

A first insight that emerges from these cases is the critical importance of narrative and story to creating collective intelligence. In her case on the Fab City project in **Montreal**, Mary-Alice Arthur draws our attention to the recent studies in neuroscience that show how "mirror neurons" let us simulate the events of a story as if they were happening to ourselves. Some speculate that these cognitive circuits evolved to favor the kind of alignment of perspective across groups that was especially useful in surviving a crisis; it is into these ancient circuits that social innovators tap when building their movements (Boyd 2010; Gottschall 2012). Paul Natorp, through the experience of Kristina Bliksted in **Aarhus, Denmark**, shows how her path to leadership depended on her articulating her own story of exclusion from the health system, and linking her experience to a systematic problem. Similarly, the Sehat Kahani team supported by Impact Collective (**Indonesia**) wove together the personal stories of women in the Pakistani health care system to make a case for a new model of tele-health service delivered by an all-female medical team.

This articulation of individual and collective experience – what Prof. Marshall Ganz calls the "story of self" and "story of now" (Paulson and Fachane, "Tacit Knowledge Speaks the Language of Story: Morocco's *Commission spéciale pour le modèle de développement*") – can be a foundational moment in a campaign for social change. As exemplified in the case of the Teme-Augama Anishnabai community in **Ontario**, the notion of leadership that often proves most effective in these contexts is not based on hierarchy and control, but rather on the diffusion of responsibility across a network. In this case, it was the younger members of the community who facilitated the gathering of individual stories into a collective vision. Their leadership was shown not in the material resources they could command, but rather in the emotional and imaginative resources they could harness, and help others to deploy in the face of a complex challenge. "Leadership as a practice, not a status," to borrow Marshall Ganz's phrase.

A second insight pertains to how change is created at the tacit level of thought. Surface issues reveal deeper divides. When the protestors in **Sweden** were finally brought into a dialogue, the facilitators realized that the conflict over the maternity ward was a manifestation of a much deeper pattern of mistrust between the community and public authorities. Like the gas tax for the *gilet jaunes* (yellow vests) in 2018, or the price of bread to the Egyptian protests of 2011, the surface issue can unleash a wave of action that extends well beyond the proximate cause and leads to a much broader social reckoning. When emotions run highest, the value of "as-if" spaces becomes even more clear. Before they facilitated the community visioning exercise, David Baum and his facilitation team in **Ontario** took the young leaders of the Teme-Augama Anishnabai on a river trip. As they piled into their canoes and floated down the river, they literally "stepped outside the boundaries of the problem," helping them think through their own call to leadership, including taking their share of responsibility for dysfunctional patterns in the community. Once they had thought together on the river, these

young leaders were ready to create a similar "as-if" space for the community to reflect on its future.

A key element in these "as-if" spaces is a shared feeling of psychological safety, defined by management psychologist Amy Edmonson as "a shared belief held by members of a team that the team is safe for interpersonal risk taking" (Edmonson, 1999). In the language of facilitation, psychological safety is created by "setting a container" (Isaacs, 1999), that is to say, creating an environment where strong emotions can come to the surface in a non-threatening manner. The restaurant environment simulated at "La Chicanerie" in **Montreal** allowed members of the community to work through their differences in a safe, even playful way. Members of the Teme-Augama Anishnabai who were too angry to talk to the facilitation team agreed to share their story with a young member of their community; in this case it was the young leaders, not the skilled facilitators, who created the "container" necessary for the group's intelligence to emerge.

Another important facilitation practice is suspending judgment, that is, allowing the thoughts and feelings of the group to come to the surface without being criticized or defended. A primary blocker of tacit knowledge is the sense that one might be attacked for speaking one's mind (Polanyi, 1966); for all the useful intelligence of the group to go from tacit to explicit, all participants need to be comfortable to challenge taboos and speak uncomfortable truths. Suspending judgment, as Bernard Le Roux discovered in **Sweden**, is an extremely difficult practice. Precisely when the complexities of a problem make tacit knowledge the most needed, the emotions and contrary assumptions of the parties make that knowledge the most difficult to access. People get angry, power dynamics reassert themselves, and dialogue unravels into a volley of complaints.

It is at these moments where the value of networks comes to the fore. In the case of **Impact Collective (Indonesia)**, at moments when the teams hit a roadblock, expert advisors could intervene, sometimes offering a strategic insight, but just as often opening the door with the right person who could unblock the problem. Similarly, when Kristina Bliksted in **Aarhus, Denmark** was initially met with stiff resistance by hospital administrators ("Get away from our citizens!," in their words), the *Sager der Samler* network coached her through one-on-one coffees and gave trust-building tips that helped her get in the door. Creating a foundation of trust is a painstaking process, with a great deal of face-to-face contact and extensive listening. But as Bernard Le Roux related in the **Sweden** story, when this preparatory stage is rushed, key stakeholders can later assert their power and derail the process before collective intelligence has a chance to get working. As urgently as we feel the need to act, Le Roux advises, we must invest the necessary time in relationship-building for our actions to be effective.

A third and final insight relates to strategy. There is something refreshingly practical and unabashed about the citizen-leaders in these stories. In **Aarhus, Denmark**, Kristina Bliksted waited neither for permission nor for funding to begin acting on the problem of social exclusion in the healthcare system – she rolled up her sleeves and got to work. Her strategy was iterative and experimental; rather than spending months creating the perfect strategy on paper, she went into hospitals and clinics and started learning from patients directly, even at the cost of ruffling feathers. She ultimately made common cause with those medical professionals, but her task was likely made easier by having already gathered a following of volunteers and supporters inspired by her passion. Quick wins and quick fails, as the **Impact Collective (Indonesia)** team attest, are equally important to collective learning.

The strategic needs of a community project are also served by learning how to work with multiple styles of communication. In the case of the Teme-Augama Anishnabai in **Ontario**, David Baum's team added a graphic facilitator, as well as elements of music and

dance, to the visioning exercise. His story gives an inspiring model of the variety of ways the intelligence of a community can be seen and heard. Kristina Bliksted had to become fluent in the different registers of conversation present in her community, from the bureaucratese of the administrators to the ways in which Aarhus residents of all education levels talked about their health needs. And the **Impact Collective (Indonesia)** system of "THNX" tokens, powered by the blockchain, shows how new languages of value and shared meaning are forming online.

Finally, what about *Sager der Samler*'s precept of "staying at eye level"? Should social innovators stay as close to the ground-level view of the problem as possible? Or are they bound to "graduate" to a higher level of management as teams and budgets grow and new partnerships form? Here there is no easy answer, and different projects will surely follow different paths. A critical consideration is how best to scale local innovations. This can be the duty of public authorities when innovations are unable to spread on their own, as explored also in Section 3. Another recurrent theme of these stories is the counterpoint of networks and hierarchies. The power dynamics at play may present a hierarchy – from the generational hierarchies of the Teme-Augama Anishnabai to the administrative hierarchies of the health systems in Sollefteå and Aarhus. When the self-organized networks trying to improve these systems run up against the power of the hierarchies, sometimes the hierarchies prevail – as in **Sweden** – but sometimes, as in **Aarhus** or the other stories, these networks of knowledge and passion show their strength. The protagonists of these stories are at home in the intelligence-sharing "bazaar" that serves as counterpoint to the intelligence-conserving "cathedral," to borrow Eric Raymond's allegory for the open-source software movement (Raymond 1999). The cathedral may be the immediate source of power, but over time, it is the transmission of lessons learned by and through these networks that the intelligence of many projects – and all the successes and setbacks therein – coalesces into a collective wisdom that can move mountains.

Note

1 The private sector has its own blind spots, for example, in the solutionism of Silicon Valley, whose entrepreneurs are rewarded for creating mobile applications or start-ups that can achieve exponential growth and "make the world a better place." See www.franceculture.fr/conferences/factory/politique/make-world-better-place-y-t-il-vraiment-une-ideologie-de-la-silicon-valley.

References

Bach, T., & Wegrich, K. (Eds.). (2019). *The blind spots of public bureaucracy and the politics of non-coordination*. London: Palgrave Macmillan.

Bizhan, N. (2018). Aid and state-building, Part II: Afghanistan and Iraq. *Third World Quarterly*, *39*(5), 1014–1031.

Boyd, B. (2010). *On the origin of stories: Evolution, cognition, and fiction*. Harvard University Press.

dos Santos Parra, M. (2019). Minustah's legitimacy and the 'security-first' approach: Reassessing statebuilding and its violent features in the case of Haiti. *Journal of Intervention and Statebuilding*, *13*(4), 480–502.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*(2), 350–383.

Goldman, A. (2008). Company on the couch: Unveiling toxic behavior in dysfunctional organizations. *Journal of Management Inquiry*, *17*(3), 226–238.

Gottschall, J. (2012). *The storytelling animal: How stories make us human*. Houghton Mifflin Harcourt.

Graeber, D., & Wengrow, D. (2021). *The dawn of everything: A new history of humanity*. Penguin UK.

Isaacs, W. (1999). *Dialogue and the art of thinking together*. Broadway Business.

Kusy, M., & Holloway, E. (2009). *Toxic workplace!: Managing toxic personalities and their systems of power.* John Wiley & Sons.

Leonard, D., & Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, *40*(3), 112–132.

Lévi-Strauss, C. (1944). The social and psychological aspect of chieftainship in a primitive tribe: The Nambikuara of Northwestern Mato Grosso. *Transactions of the New York Academy of Sciences*, 7(1 Series II), 16–32.

Motz, A. (2014). *Toxic couples: The psychology of domestic violence*. Routledge.

Parsons, M., Nalau, J., Fisher, K., & Brown, C. (2019). Disrupting path dependency: Making room for Indigenous knowledge in river management. *Global Environmental Change*, *56*, 95–113.

Pierson, P. (2000). Increasing returns, path dependence, and the study of politics. *American Political Science Review*, *94*(2), 251–267.

Polanyi, M. (1966). *The Tacit Dimension*. Doubleday.

Puett, M. and Gross-Loh, C. (2016). *The path: What Chinese philosophers can teach us about the good life*. Simon & Schuster.

Raymond, E. (1999). The cathedral and the bazaar. *Knowledge, Technology & Policy*, *12*(3), 23–49.

Twenge, J. M., Haidt, J., Joiner, T. E., & Campbell, W. K. (2020). Underestimating digital media harm. *Nature Human Behaviour*, *4*(4), 346–348.

Wengrow, D., & Graeber, D. (2015). Farewell to the 'childhood of man': Ritual, seasonality, and the origins of inequality. *Journal of the Royal Anthropological Institute*, *21*(3), 597–619.

26

SMARTER MEDIATION, BETTER DIALOGUE

Lessons from a Swedish protest for local healthcare

Bernard Le Roux

The story

The activists wore yellow vests to protest the closure of the maternity ward of a hospital in Sollefteå, an inland town in the north of Sweden. The regional government, under pressure to lower a budget deficit, had decided to close the ward. Day and night, they occupied the foyer of this hospital. They sat peacefully and talked to hospital visitors, and often provided directions. But they were not liked by the regional government which refused to meet with them for three years. "We do not speak to people conducting illegal activity," they were told.

"It will pass. They will give up," the government reasoned. It didn't pass and they didn't give up. They stayed, they organized themselves further, and people traveled from afar to join them. They were visited by national politicians from the Swedish opposition who declared their support for the cause. The election changed the status quo, when the party that had ruled with a secure majority for decades lost support. The new premier managed to hold on to a majority but was forced to share power. He promised change and invited activists for a dialogue on this issue.

Dialogue is a word that is thrown about too easily. It is a word with different meanings for different people. The question arose: how would they go about this dialogue? That is when the Dialogues team intervened. They met with the regional government and discussed: Is a dialogue really possible? What would be the agenda? Less than three weeks later, a date was set and an invitation was sent for a meeting.

The dialogue in question would ideally witness the authorities listening to all possible perspectives and creating trust for the process, while all participants are assured of the neutrality of the Dialogues team. In reality, the situation had already fragmented. People on both sides had clear positions, expectations, and demands. Medical staff and doctors at the hospital in question were largely opposed to the budget cuts, while their colleagues elsewhere were divided in their opinions. Local residents and other rural inhabitants supported the protests, while urban residents were largely indifferent. Among the officials, the attitude towards an inclusive process was cautious. "How inclusive, and what would it mean for the way we do things?" were the concerns they raised to us.

As a preliminary step, the Dialogues team suggested that the perspectives, the actors and the conflict lines be clearly identified. Without this, it wouldn't be possible to design a process for a dialogue that would have any chance of success. They had only two weeks to do this, however.

The team arranged to meet with the yellow-vested protesters in the hospital cafeteria. Some sympathetic doctors and nurses were also part of this meeting. It became clear that this was more than just a protest against the closure of the maternity section. Surgery services had also been reduced, making it functionally impossible to re-open the maternity ward. Some of the protestors told us that young mothers were now forced to drive on icy roads to the large coastal city of Sundsvall if they wanted to give birth. One mother reportedly gave birth in the car on the way to the hospital. The wife of one of the activists died recently because she did not receive the proper care. Senior citizens were worried that the overall quality of care was deteriorating. There was sadness, concern, and deep anger.

"We rural inhabitants are disregarded by powerful doctors and politicians in the coastal cities," all the protesters agreed. The term "tree barons" was mentioned by them, which referred to the wealthy entrepreneurs who realized the value of wood one and a half centuries ago and bought inland farms at cheap prices. As a consequence, many of their rural neighbors had lost their livelihoods and now felt cheated. Through the dialogue process, layers of issues and strong emotions had come to the surface, emotions that had been deeply embedded in the collective memory of this rural community.

"A dialogue?" they asked incredulously. "After three years of being ignored! What for? We want our demands met." After some debate of what it would take for them to engage in dialogue with the regional premier, politicians, and officials, the answer came: "We'll come if the dialogue is for real. If the dialogue is honest, open and serious. If it will definitely lead to change." It was clear that "change" went beyond simply restoring the maternity ward.

The regional politicians responded that they would accept a dialogue but were unwilling to promise anything at the outset to the activists. There was skepticism all around. "We cannot let these lawbreakers decide matters," the regional government declared.

Questions still remained about what this dialogue was all about, and what it could feasibly accomplish. From the government's perspective, dialogue meant holding large open meetings with well-prepared presentations and a dedicated time for questions, perhaps even space for viewpoints to be noted on flip charts and colored sticky notes. The Dialogues team assured them that it would be more like a conversation, with limited representatives for each of the parties involved. Both sides agreed to this, provided that they were all presented with a clear agenda.

It was decided that the first meeting, taking place in a neutral venue between the seat of the regional government and the town of Sollefteå, would focus on the question: Can we have a dialogue with each other, and if so, how?

Everyone arrived for the first meeting and the atmosphere was tense. The "dialogue room" had chairs arranged in a large circle. Coffee and sandwiches were provided in the dining area. Before the meeting officially started, it was discovered that all participants – activists from three groups, officials, and politicians – had been sitting peacefully together at the same table in the dining area and talking about football. However, when they entered the room for the meeting to start, the tension re-surfaced. This was not football. For some, this was about life and death and about the unmet needs of their families.

When the meeting kicked off, the tone was formal. The premier broke the ice for everyone when he expressed understanding for the activists' concerns. But then an angry

accusation was made by a politician that the activists' Facebook page spread hatred and threats. After clarifications were made regarding which comments were offensive and who had made them, an agreement was reached that the tone of social media posts would be changed and messages would be moderated more carefully. The atmosphere continued to lighten as the meeting progressed. The first meeting lasted for three hours, and resulted in a definitive agreement to enter into dialogue. Rules of engagement and a date for the next meeting were set.

After two more meetings, people were generally at ease with each other. Some had made contact in between meetings. The tone on the social media channels at issue had improved significantly, and some important issues were clarified. The decision was thus made to enter into a longer dialogue about two priority issues decided upon by all the groups that were present in these meetings. The first was staffing and recruitment at the hospital, and the second was the return of the emergency surgical unit, a precondition for any maternity ward. As such, the dialogues did not set as their objective to resolve the question of re-introducing the maternity ward, but were steps along the way to this greater goal.

All of this sounds simple. After all, how hard can it be for a group of people to agree on an agenda; to decide what to speak about? Yet it took many face-to-face meetings and negotiations of all groups involved to finally prepare for a meeting regarding the actual issue that had started all this.

After initial successes, the regional government informed the facilitation team from Dialogues that they would now continue the dialogue about the healthcare system and the local hospital themselves. They did so, but on their terms. They invited stakeholders to share their views, and made decisions behind closed doors. By wielding their power to control the terms of discussion, they reintroduced the top-down paradigm that had sparked the conflict in the first place.

We have learned at least one very important lesson from this, a lesson that has led the Association of Local Authorities and Regions to think and advise differently about public dialogue processes involving complex societal problems: when dealing with authorities, spend as much, if not more, time ensuring that internal contradictions are raised and settled with the primary stakeholders – in this case, with the hospital administrators – before bringing others into the process. If a key stakeholder is opposed to the strategy of dialogue for political or ideological reasons, and perceives the inclusion of "illegal occupiers" as a threat to its own control, a promising new path forward can be stopped in its tracks.

Yes, we are smarter together. But ensuring that every stakeholder is truly on board is an essential precondition.

What science tells us

If collective intelligence is so natural to human beings, why do we often have such trouble thinking together? Methods of dialogue, writes Prof. William Isaacs (1999),

> are as old as the human race, and yet they are being reinvented in our time. They represent an art of not just talking together but of thinking together that seems to have been all but lost in our modern culture.

An influential thinker on the subject of dialogue, and a source of inspiration for Isaacs and his team at MIT, is the quantum physicist and philosopher David Bohm. Bohm (2004) explains that in order to function efficiently, large societies place their members into a range

of impersonal relationships: shopkeeper and customer, drivers and passengers, doctors and patients. From an economical point of view, this creates enormous advantages; but from a psychological view, there are costs when people come to instrumentalize each other. When conflicts arise within a group whose members do not really know or understand one another, they are often unable to communicate effectively, not only because there is no foundation of trust, but also because their assumptions and worldview may diverge in ways they do not even realize. Surface conflicts, as we found out in Sollefteå, are often merely the symptoms of much deeper traumas and resentments.

Dialogue is a practice that seeks to bring this tacit level of information – the hidden assumptions that have given rise to the conflict, as well as the collective knowledge that can resolve it – to the surface. With the help of a facilitator, people are invited to give a deeper account of their point of view and then reflect together on how the totality of these perspectives might give a new basis to understand and act on their common issue. Rather than a debate, which divides the group into winners and losers, if a dialogue works well – that is, if the tacit knowledge of the group rises to the surface and produces new insights – everybody wins. And though it can contain moments of analysis and deconstruction, especially bringing to the surface hidden causes, the principal cognitive mechanism of dialogue is suspension and recombination. In order to see the issue in a new way, the negative dynamics of the system – the incessant pattern of accuse and defend – must be temporarily suspended. Not suppressed or ignored, just suspended. As Bohm explains,

> The object of a dialogue is not to analyze things, or to win an argument, or to exchange opinions. Rather, it is to suspend your opinions and to look at the opinions – to listen to everybody's opinions, to suspend them, and to see what all that means. If we can see what all of our opinions mean, then we are *sharing a common content*, even if we don't agree entirely. It may turn out that the opinions are not really very important – they are all assumptions. And if we can see them all, we may then move creatively in a different direction.
>
> *(Bohm, 2004)*

If the group succeeds at temporarily suspending its judgments and really listening to one another, the partial truths available to each member of the system can be brought together to form a common understanding. Differences of interest and power are not ignored, but they are recognized and perhaps reframed into a more productive basis for moving forward. Different parties to the conflict are given space to form a common view of what lies beneath the surface tensions and, together, explore the potential for change that might lead to a more sustainable outcome.

Despite its apparent lack of a step-by-step structure, dialogue is a rigorous and difficult practice of group thinking. The skills of a facilitator, and the example set by him or her for the group, can play a critical role in the success or failure of a dialogue. Isaacs (1999) uses the metaphor of "building a container," which he defines as "a setting in which the intensities of human activity can safely emerge." In order to share sincerely what they know, each participant must feel that they will not be judged or attacked. To create this environment, at the very beginning of the dialogue facilitators can propose the principles that will guide the group exchange, and invite the group to validate and commit to these; throughout the exchange, facilitators can model the suspension of judgment by asking for dissenting views and gently correcting when judgmental comments are made; and facilitators "tend the fire" of a dialogue by holding group attention and balancing voices so that everyone is heard

and no one person dominates. With these practices and others, mediators or facilitators of dialogue aim to create a safe space "where that which needs to be said can be said" (Lewis, 2018), and an environment of psychological safety that has been posited as a key element of high-functioning organizations (Edmonson, 1999). In the best scenario, the conversation achieves a point of "flow" where the ideas of the group cease to be the sole property of the individuals voicing them, and the recombination and synergy of ideas creates the sentiment that *the group itself* is thinking through the problem (Csikszentmihalyi, 1991; Sawyer, 2017). .This can be an exciting and liberating moment for a group.

From our many years of experience of mediation and dialogue, we strongly recommend that for a community to enter into dialogue, all views need to be present. The notion of a diversity of views should not be confused with a list of principal stakeholders. Formal stakeholders do not necessarily have congruent views, nor do they guarantee a comprehensive view of the issue at hand. Each of the main parties to the issue may have blind spots. One needs to view the dialogue more than stakeholder meetings where larger issues are discussed. If parts of this "system of thought" (Bohm, 1994) are divided, these polarities need to be resolved before these parts enter into dialogue with each other. If this is not done, there is no way the collective can form a common understanding.

A productive public dialogue, therefore, extends beyond the exchanges in the room where a group has gathered, and includes the sum of the smaller conversations that are needed to prepare and sustain it. And in the case of Sollefteå, not taking the time to explore internal government contradictions resulted in the process being ended prematurely. In this case, there was no consensus on what the main issue was. For some it was how to end the protestors' occupation of the medical facilities. For others it was how to get the maternity ward to open. For some others it was about how to provide good healthcare for all rural inhabitants. There were issues of threats, hate speech, allegations of abuse of power, and more. There was the rural–urban conflict and a collective memory of being exploited and marginalized. There were mindsets, emotions, memories, and questions of identity. All of these merged together into a complex and befuddling stew.

From our experience, creating the trust necessary for real dialogue to take place requires convincing the participants that this is not just another window-dressing or a form of manipulation where authorities can claim to have consulted with or had dialogue with the citizens. The memory of such meetings in the past lie close to the surface for both citizens and the government officials. In this case, the Dialogues team spent hours meeting people where they lived and even more hours in telephone conversations at all hours of the day and week. Trust slowly developed around the dialogue, and the belief that this would be a fair and inclusive conversation came about among the participants. To "set a container" for dialogue requires an understanding of the complexity of the conflict and the reasons for the conflict in the first place.

A good deal of time was spent on the preparation for the conversation between the activists and the government. That's because a lack of preparation can make dialogue unsustainable. What we learned from the disappointing outcome of this dialogue was that the preparation in respect of the government administration and politicians had been insufficient; they congratulated and thanked the Dialogues team for the exercise, only to continue with business as usual once the pressure had been released. They went back to consultative processes with agendas that they controlled. Open dialogue was finished. This is also the reason why this case study does not have a happy ending: the opposition within the government regarding the dialogue with the activists was underestimated. "A society," Bohm writes, "is a link of relationships among people and institutions, so that we can live together.

But it only works if we have a culture – which implies that we share meaning; i.e., significance, purpose, and value. Otherwise it falls apart."

Do's and don'ts

Failure can be our best teachers. In this spirit, here are the "don'ts" that we would share with those seeking to create dialogue on difficult issues:

- **Don't rush the preparation work**. Understand that every complex issue, problem, or conflict will point to difficulties and contradictions within organizations, both formal and informal.
- **Don't underestimate the complexity of the problem at hand.** Very often, there are patterns within patterns, and vital connections or dependencies between issues that require many hours of conversation to discover.
- **Facilitation is not merely directing the conversational traffic.** It requires an awareness of micro-signals, the ability to identify tension and the ability to negotiate with participants – to convince them to enter the room, to stay with the tension, and to stay in the process till the end.
- **Don't miss power issues, however small the signals might be.** When some actors feel that dialogue threatens their power, they will fight to regain control with whatever means they have.
- **Don't ignore the voice of "no".** The critical, negative, resistant voice in a dialogue is a carrier of wisdom for the group. Ignoring or papering over resistance risks making the conversation shallow and, more importantly, risks increasing tension and conflict over time.

The "do's" from our experience are manifold. Many of the following best practices for facilitating dialogue are borrowed from Karen O'Brien's *You Matter More Than You Think* (2020), as well as the works of Bohm and Isaacs cited above.
   The key ones are:

- **Small shifts matter**. Getting to the point of "flow" in a conversation, the point where a group is really thinking together, takes time. A lack of positive body language, a shift in tone, a negative word … all of these can slow the process down.
- **Listening matters**. The listening process needs to be empathetic and without judgment, changing the quality of any conversation. It starts with the mediator and sets a tone in the overall process, influencing how others listen.
- **Preparation matters**. If the problems or conflicts at hand are complex and if the conflict has escalated dangerously, preparation becomes crucial. The more complex and destructive a conflict is, the more preparation is needed to create a safe container for the conversations that need to happen.
- **Attitudes matter**. The meta-skills of a mediator make all the difference. Without a nonjudgmental attitude, empathy, the ability to foster understanding and the belief that conflict leads to a positive incentive for transformation, the tools found in handbooks become useless.
- **Flexibility matters**. Complex societal problems do not behave in a mechanical, predictable way. Changes occur suddenly and new information surfaces out of the blue. Being agile and flexible helps one identify potential as it emerges.

References

Baruch Bush, R. A., & Folger, J. P. (2005). *The Promise of Mediation. The Transformative Approach to Conflict*. San Francisco: John Wiley & Sons.

Bohm, D. (2004). *On Dialogue*. Routledge, Taylor and Francis Group.

Bohm, D., & Jenks, C. (1994). *Thought as a System*. Psychology Press.

Csikszentmihalyi, M. (1991). *Flow*. København: Munksgaard.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*(2), 350–383.

Isaacs, W. (1999). *Dialogue and the Art of Thinking Together*. New York: Random House.

Lewis, M. (2018). *Inside the No: Five Steps to Decisions that Last*. Deep Democracy (Pty) Ltd.

O'Brien, K. (2020). *You Matter More Than You Think. Quantum Social Change in Response to a World Crisis*. CHANGE Press. www.youmattermorethanyouthink.com

Sawyer, K. (2017). *Group Genius: The Creative Power of Collaboration*. Basic Books.

27

CONFLICT RESOLUTION AND COMMUNITY CHANGE

David Baum

"Old dogs can't learn new tricks, but young ones can."

– Bear Island Community member

The story

Chief Roxanne Ayotte, the recently elected chief of an indigenous community, had just won the highest office in her community by running on a platform of "drain the swamp." Her opponent, the current chief, was also her uncle. This did not go over well in a small community, let alone the extended family dinners. What made it even more problematic? Her margin of victory – a *single* vote.

I had worked in conflict mediation in Northern Ireland, the Middle East, and Rwanda, and my colleague David Knudsen had lived in the area for over 40 years. We both had long relationships with the community as friends and neighbors. Chief Ayotte therefore asked both of us to help her resolve their seemingly intractable challenge.

The name of her Band was the Teme-Augama Anishnabai: "the people of the deep water".[1] Most of the community lived on a 3 km² island called Bear Island on a large lake called Temagami; the community's traditional territory covered 10,000 km².

The Band's challenges were not limited to a close-fought tribal election. Suicide rates among young people had risen in recent years. Unemployment rates remained stubbornly high. More and more community members had made the choice to move off the island in the hope of finding opportunity elsewhere.

Further, the Band was in the settlement phase of a major lawsuit against the Canadian government, who had years before annexed a large portion of lands traditionally occupied by their community. Having now brought the government to the negotiating table, the strategic question facing the Teme-Augama Anishnabai was what would be their position on this land. Since the land was rich in minerals, some thought that the most responsible demand would be to ask for the government's cooperation in developing the land to bring jobs and income to the community. Others were opposed to this idea, arguing that any new mines would threaten the lake ecosystem, and therefore their identity as a people.

Chief Ayotte's election was only the most recent chapter in the Band's history of dysfunctional conflict. Factions within the Band's leadership held long-standing grievances, some

going back generations with deep divisions among different families. Additionally, many community members were employed by the tribe in some capacity, so that any change in government created concerns of favoritism or job loss. This was especially true with a new chief, so narrowly elected. A one-vote victory over a family member? The community was literally split down the middle.

How could the collective intelligence of the community be harnessed to resolve these challenges? Inviting all voices to the table would not be difficult. Getting them to show up, listen to one another in a highly contentious environment – *that* was the challenge.

At the request of Chief Ayotte, we started off by conducting an assessment through interviews. During the first small-group meeting, we had a pretty good sense of what awaited us when 15 minutes into the opening, one woman without apparently any immediate provocation screamed profanities at another, threw her shoe at her head, and stormed out. By the end of the first day I was wondering what we had gotten ourselves into.

I quickly realized that the proposed solution – a conflict mediation process – was itself the problem. The intention of conflict resolution, by definition, is to resolve grievances that have emerged from past experience. But when even *raising* a difference results in anger, a new approach was clearly needed. Additionally, mediation demands a careful sequence of methods, something that after just the first day seemed dubious within our summer timeframe.

Conflict resolution methods are designed to reckon with these grievances and find durable ways to heal them. In more successful cases, such as South Africa or Colombia, facilitators can take years to help local populations develop their capacities to listen, to respond without defensiveness, and to build a new basis of trust and shared purpose.

Visioning exercises, on the other hand, are oriented to the future rather than the past. As described in Marvin Weisbord's landmark book, *Discovering Common Ground* (1993), a collective process that looks backward often ends up centering around differences, and healing these differences may be very important for the long-term health of the community. Vision exercises, on the other hand, tend to start from a different question – "Where are we in agreement?" – and adopts a "present forward" approach oriented to the future. Here we were influenced by the work of Marvin Weisbord and Sandra Janoff's *Future Search* model (Weisbord, 1993; Weisbord and Janoff, 1997), and Weisbord's landmark book on the subject, *Discovering Common Ground* (Weisbord, 1993). Inspired by the "Future Search" model developed by Weisbord and Sandra Janoff (Weisbord, 1993; Weisbord and Janoff, 1997), we decided to abandon a conflict-mediation strategy for the Teme-Augama Anishnabai, and instead propose a collective visioning exercise co-facilitated by the Band's younger generation. By applying two key ground rules of Weisbord and Janoff – "Seek common ground" and "Differences are acknowledged but not 'worked'" – we believed that the resulting conversations might create common ground and positive movement.

Though the historic intra-community differences were sure to emerge, our goal would be to pivot to "common viewpoints and agreements," thus mitigating personal tensions by creating a new more positive dynamic of ideas and aspirations within the group. Our experience as facilitators was that when people focus on their differences, they inevitably talk about the past and become frustrated or depressed. When they focus on common ground, however, the language shifts to the future and the resulting tone becomes one of optimism and hope.

What was still unclear was *how* we were going to get people into the conversation. Given that we were outsiders to this community, trust was a huge issue. The path forward occurred on the third day of interviews, when I asked a community member if the former chief would talk to us. "You? Oh no. Never!" I then asked, would he talk to a young person in the

community? There was a long pause followed by a half-hearted shrug that meant "maybe." In that moment we were given the seed of our strategy.

Our approach was to engage the community in a conversation *only* about its future driven by the members with the biggest stake: youth. Community unity, shared vision, and mutual understanding were the intended goals. In the end, the opportunity for young Band members to play a part in determining their future, in and of itself, seemed a good thing. The Band would talk to itself through its children.

A name for the project was chosen: *N'Daki Menan,* meaning "Our Generation, Our Future." And a project manager was designated from the community: a respected elder and medicine woman named Virginia McKenzie. In addition to organizing and overseeing each stage of the project, Mrs. McKenzie served as a critical evaluator and sounding board for all methods proposed by our facilitation team (the author and David Knudsen). Though "the Davids" were known and respected by Chief Ayotte and some members of the community, they did not have Mrs. McKenzie's deep knowledge of local context and the relationships and customs that could help or hinder the process. She was in effect the "on-the-ground pressure tester," seeing how participants responded to different methods and giving rapid feedback to the Davids on why a certain idea – such as a proposed meeting time or place – should be adjusted or abandoned entirely.

In the following weeks, working in close coordination with Chief Ayotte and her team, the *N'Daki Menan* project team led by Mrs. McKenzie did the following:

1) *Created an Adult Advisory Team:* The purpose of this team was to support the entire project's forward movement, ensure safety of the youth, provide guidance and direction, and help select the Youth Team members. Particular attention was paid to the diversity of past alignments and opinions, and individuals who had the potential to act as mentors.

2) *Launched the Youth Team:* The selection of these "young social scientists" was done by members of the Adult Advisory Team and the Tribal Council. Selection criteria included the individual's interest, availability, and skill levels. Ten Band members between 12 and 17 years of age were selected.

3) *Built the Youth Team:* Using a canoe trip as the initial step, the Youth Team took a week-long journey touring the lake on which they lived under the guidance of trained leaders. The team was built around themes of shared accomplishment and trust. The adventure ended with a welcoming ceremony in which almost the entire community in traditional costumes sang them back to their home after their journey. We built on themes of rites of passage, using stories and a large feast to officially launch the project.

4) *Interviewed the Community:* Over a one-month period, the Youth Team interviewed as many Band members as possible, both on and off the island. Each interview was centered on a single question – "What should we look like in 20 years?"– in which the interviewer asked follow-up questions to elaborate the interviewee's ideas and aspirations. Our interviewers noted the key themes, as well as key words and phrases, that recurred in each interview, as well as the age and gender of the interviewees. Without emphasizing any divisions, they noted if the community member appeared to "side" with one or another of the Band's leaders. In the end, approximately 180 people were engaged, representing roughly 80% of the community population.

5) *Analyzed the Findings:* The Adult and Youth Teams worked together to analyze the data and develop creative presentations and prepare for the community meeting. Emphasis was placed on neutral assessment of findings and building a fun and engaging presentation.

6) *Facilitated a Vision Conference:* A two-day event was held that presented findings, created dialogue on the implications and lessons learned, and deliberated on short-term actions to be adopted by the community. We chose to supplement the presentations of interview data with music, poetry, and dance, honoring both the cultural history of the tribe and its "young researchers." The Youth Team played to a packed house the first evening, street-dancing to a song by The Black-Eyed Peas and singing a traditional song.

At the beginning of our two-day conference, a participant shouted, "Look! A bald eagle!" Sure enough, 20 feet from our meeting lodge and 30 feet up in a pine tree sat a mature bird. It watched us without moving for most of the day, occasionally flying off, circling over-head and then returning to its perch. No one in the community could remember this ever happening before. The elders all agreed: in a community where connection to the natural environment was paramount, the eagle was a sign blessing the work underway.

Key Outcomes

By the end of the two-day Vision Conference, the community had chosen five elements to guide its future: "quality education," "increased self-sufficiency," "united commu-nity," "balanced land development," and "environmental sustainability through traditional practices." Ten years later, these same visionary elements continue to provide the roadmap for tribal planning and direction.

There were major benefits for the state of relationships in the community, as well as the development of new leadership capacity in the younger generation. At the conference, some members reported feeling closer than they had in years. The process also became a mech-anism for improving the issue for which we were originally called – the resolution of conflict within the community. In a relatively short period of time, the community was able to create both a new pattern of interaction *and* a shared vision they could call their own.

One tangible result of *N'Daki Menan* was that the values decided upon at the conference, and the momentum generated by the process as a whole, became the basis of a clear strategy and timeline for moving forward on negotiations regarding the land settlement question with the Canadian government. Moreover, in the words of Mrs. McKenzie, a number of the Youth Team's members had become "superstars," developing new connections to others' needs and new capacities to explain and communicate them. Ten years later, some members of the Youth Team have gone on to become leaders both within their community and the larger world, including one young woman who became an environmental activist, collab-orating with Jane Goodall. But the special challenges of tribal society remained in evidence; for example, another young leader who Mrs. McKenzie envisioned going on to university and graduate school became a teenage mother shortly after the project ended and did not continue her studies.

Finally, the process embedded a kind of "muscle memory" in its inhabitants that they drew upon in other moments of collective decision. In subsequent discussions over budget or maintaining infrastructure, for example, community members drew upon the lessons they had learned from *N'Daki Menan*: bring in young people early and often in moments of conflict, not only to solve the immediate problem at hand, but also to create together a com-pelling vision that can guide future decisions. Especially resonant to the community was the principle of the "third side," developed by anthropologist and negotiation expert William Ury, a concept examined in the section below.

In July 2020, Mrs. MacKenzie was elected as one of two council members in the tribal government of the Teme-Augama Anishnabai Band. Upon winning a place on the council, Ms. McKenzie said that it was time for grandmothers and women to come forward in leadership. "We need to bring balance back into our governance," she affirmed, "and witness more women taking up their place as water keepers for the future of *N'Daki Menan* and our future generations." When asked recently again why this process meant so much to her, why it was worth such an incredible effort to bring a fractious community together, Mrs. McKenzie had a simple reply: "When we empower our youth, we empower our future."

What science tells us

From our experience in this project, we propose that an important distinction can be drawn between collective intelligence and collective wisdom. If intelligence is the capacity to bring together knowledge and information to solve a given problem, wisdom is a more mature capacity that accumulates over time, both individually and collectively. Some philosophers and psychologists have converged on the idea that wisdom involves certain aspects of thinking – such as humility and the embrace of uncertainty and change – that enable application of past knowledge to emerging challenges, especially where moral imperatives appear to conflict (Grossman, 2017). This kind of complexity could be seen in the experience of the Teme-Augama Anishnabai, whose ambitions to greater autonomy through economic development were seemingly at odds with the duty not to harm their natural environment in any way.

Because any individual's perceptions of the problem depend on their own body of experience, as well as their unique talents and preferences, the most complex problems require pooling wisdom from multiple sources. As anthropologists have long noted, those with the greatest body of experience – the community's elders – end up playing a particularly important role in applying the accumulated wisdom of the community. Complex moral problems are precisely the kind of challenge where humility, the recognition of uncertainty, and a holistic analysis of the problem are most needed – in other words, its collective wisdom.

In this sense, we can see how the pooling of collective wisdom – the humble and open-ended application of past intelligence, often in the venerable language of ritual or story – creates the framework necessary for collective wisdom to operate on an especially complex problem. Harnessing the shared symbolic language of these traditional practices can have the effect of honoring in tone and design something valuable to the participants, even at the tacit level of thought (Leonard and Sensiper, 1998). Examples of these "wisdom processes" that we often encounter include working in circles, starting and ending with prayers, having elders speak first and last, and allowing significant unstructured time. If collective intelligence is the engine driving the resolution of a given problem, collective wisdom can be thought of as the oil allowing the best thinking of the community's past to emerge.

Those wishing to replicate the visioning approach of *N'Daki Menan* would do well to familiarize themselves with the work of Weisbord and Janoff (1993, 1997), especially their Future Search model. "A future search," write Weisbord and Janoff,

> is a large group planning meeting that brings a 'whole system' into the room to work on a task-focused agenda... In a future search, people have a chance to take ownership of their past, present, and future, confirm their mutual values, and commit to action plans grounded in reality.[2]

A positive effect of the future-oriented approach is that the questions posed can help engender the "ego-decentering" mindset that studies have shown to enable a higher level of reflection on personally meaningful issues (Grossman, 2017). Helpful to this objective of ego-decentering is anthropologist William Ury's principle of the "third side" (Ury, 2000), that is, creating communicative processes that attenuate bilateral conflict by multiplying the vantage points from which the problem is imagined. By encouraging participants in the conflict to narrate the problem from the perspective of third-party onlookers – or literally bringing those third parties into the room – a "third side" of the debate emerges, lowering tensions and creating space for alternative solutions. Ury's approach was inspired in large measure by the practices of the !Kung communities of the Kalahari (modern-day Botswana), whose participatory methods have sustained one of the most egalitarian systems of governance ever studied (Lee, 1979). In this instance, the young members of the Teme-Augama Anishnabai, as well as some community elders who lived off the island, were critical in forming the "third side" view that sustained the visioning exercise.

Does the future orientation of a visioning exercise require participants to bury all tensions held from the past? Not exactly. Rather than pretending that those simmering tensions no longer exist, Weisbord and Janoff (1997) recommend instead that the group merely be asked to place those points of conflict temporarily in the background. Experience has shown that foregrounding a group's aspirations for their future can have the effect of disrupting the back-and-forth dynamic of many bilateral conflicts. An image we employ in our work is that rather than two fists in opposition, the group becomes two hands rowing toward a common goal. Redirecting the group's energy in this fashion, even temporarily, can allow a new dynamic to take hold, and old problems to potentially be seen afresh.

Another key reference for our approach with the Teme-Augama Anishnabai is the cross-cultural anthropologist Angeles Arrien, who has written extensively on indigenous principles applied to modern practice (Arrien, 1993, 2013). Of the many useful insights from Arrien's work, the concept of non-linearity is particularly important. The most established systems of problem-solving in the modern West tend to follow a step-by-step logical sequence, exemplified in the scientific works of Descartes (1637) and Bacon (1620), and in the "scientific management" approach of F. W. Taylor (1911). Indigenous communities, on the other hand, often practice methods of collective thinking that engage the problem from multiple vantage points simultaneously, with freedom to shift or abandon lines of thought according to the shared intuitions of the group. Interestingly, non-linearity has become central to research into how digital neural networks can solve complex problems like facial recognition (Albawi et al., 2017).

A final guiding light was the Gandhian concept of means/ends consistency. Central to his ideal of *satyagraha* or nonviolent social change was the idea that the means used to bring about any change should be consistent with its desired ends. In the words of Gandhian scholar R.N. Iyer,

> Gandhi seems to stand almost alone among social and political thinkers in his firm rejection of the rigid dichotomy between ends and means and in his extreme moral preoccupation with the means to the extent that they rather than the ends provide the standard of reference.
>
> *(Iyer, 1967)*

Gandhi's principle of means/ends consistency was fundamental to our approach with the Teme-Augama Anishnabai. In a complex, time-limited project, the temptation is always to

centralize control and decision-making. During every stage and in every decision, however, we consistently asked, "What would be the *most empowering choice* we can make right now?" For example, it would not be typical in a visioning process to start work by putting young people on a canoe trip for two weeks, then ritually reintegrate them into the community and empower them to lead as the heroic storytellers. We could instead have given them a series of presentations on deliberative methods and made it a training exercise. Our point was to create a space for dialogue in which the community, not the facilitators, were the experts.

Do's and don'ts

Using youth to be the transmitter in which conflicted parties could talk to one another proved highly effective in our case. Our approach – empowering youth to be the mechanism for an entire community to talk to itself and make decisions for future generations – offered several important lessons:

1. ***Who* we selected for the work** was as important as the way it was done. Our initial design choice was to say to the Adult Advisory Team, "these are the qualities we're looking for in kids, you pick them." Some of the young people chosen ended up being among the brightest and most motivated individuals we had ever met. They were smart, passionate, and committed to the project's success. Some of the Adult Team, however, designated members of their extended family or the children of friends who were either too young, less than enthusiastic and/or seemed to participate either out of obligation or boredom. Interestingly this often fell along gender lines, with the men being the most challenging to work with. Conversely, the women were often spectacular contributors. In hindsight, the selection of *all* team members needed to be even more rigorous and considered, and the expectations made more explicit.

2. **Choosing the right project manager** and offering support through the process is critical. This role is a tough and vital one. Mrs. McKenzie bore the scrutiny of the community on top of the pressures of delivering on budget and to deadlines. Her job was not only to support the kids but also to ensure that communications with the community were frequent and transparent. The obvious implication is that one must ensure anyone in this role has adequate professional and personal support. In our case this included active mentorship, weekly check-in calls, troubleshooting problems together, and even taking burdens off of her shoulders when needed. A true partnership is needed.

3. As the philosophy of the model was self-empowerment and capacity building, the hardest part of the job as facilitators was **knowing when *not* to advise or help**. We constantly needed to remind ourselves that this was their work to do and their issues to resolve. They were looking for our expertise and our answers, so we were often challenged to find the balance between driving to an outcome and remaining experts on process *only*. In the historical context of the brutal trauma of European colonialism, coming in with the "answer," only to leave soon after would have led to a lack of ownership and collusion to already challenging cultural patterns.

4. When working with an aboriginal culture it is vital to **find ways to connect our facilitation model with local traditions and rituals**, which meant that nonlinear group processes were very helpful. For example, we started the project with a canoe trip over their traditional land. We brought forward traditional philosophical teachings such as "The Medicine Wheel." We used practices familiar with their culture like solitary time in the wilderness and dream interpretation, and encouraged each youth member to

push past their boundaries of comfort and familiarity – our goal was to build a tight and interdependent team.

We engaged as part of our facilitation team Mary Corrigan, a "graphic recorder" who drew pictures and words on large charts to visualize the conversations as they unfolded. This graphic recording was very well received, not just because it was a beautiful way to capture the flow of conversation but it also aligned with nonlinear methods traditionally used by the Band to address complex problems. We started all meetings with prayers and the smudging of sage (a traditional cleansing ritual). We paid attention to the role and place of elders in all endeavors, asking for their prayers before every conversation and making sure at all meal breaks that they were served in a formal, honored way.

These local traditions gave a framework within which the participants could deepen their connection to this work. We ended the entire conference in ceremonial fashion, using the structure of a time capsule as the method for community prayers and well-wishes. This capsule was filled with project materials, letters, and photographs and then ceremonially sealed and buried in a sacred site by the Band Office. The intention is to open the capsule in 2030. The image of neighbors holding hands (some of whom had held multi-generational grievances) and placing letters to their grandchildren was quite moving.

Such connection, within their cultural context, was especially effective in realizing the objectives of the project. In other words, it is easy to say one should connect and design a process aligned with a culture one is entering, but it takes great sensitivity, imagination, and effort to put this intention into practice. As expressed in a proverb of the Teme–Augama Anishnabai, "If we want corn, we don't plant tomatoes, we plant corn." If we want to harvest an empowered community, everything needs to align with that end in mind.

Notes

1 Note: Appropriate language describing nations and communities is sometimes a challenge. Terms like "native," "First Nations", "indigenous," "traditional" and "aboriginal" are neither universal nor interchangeable. The preferred term of the Teme–Augama Anishnabai is "aboriginal," which we will therefore use in this case study.
2 Weisbord has also set up SearchNet, a network of consultants learning to run "future search" conferences by donating their services to non-profits in their own communities. Network members work on issues such as the environment, homelessness, AIDS, education, and housing. Contact Workplace Revolution, (215) 951–0300. www.futuresearch.net/.

References

Albawi, S., Mohammed, T. A., & Al-Zawi, S. (2017). Understanding of a convolutional neural network. In *2017 international conference on engineering and technology (ICET)* (pp. 1–6): IEEE.
Arrien, A., 1993. *The four-fold way: Walking the paths of the warrior, teacher, healer, and visionary.* San Francisco: Harper San Francisco.
Arrien, A., 2013. *Living in gratitude: A journey that will change your life.* Boulder, CO: Sounds True.
Arrien. A. 2013. *Cornerstones of wisdom: The four-fold way: Angeles Arrien at TEDxFiDiWomen.* Available at: https://youtu.be/2kDRRBK95no (Accessed 4 September 2020).
Bacon, F. (1620). Novum Organum.
Descartes, R. (1637). Discourse on the Method of Rightly Conducting One's Reason and of Seeking Truth in the Sciences. (*Discours de la Méthode Pour bien conduire sa raison, et chercher la vérité dans les sciences*).
Grossmann I. (2017). Wisdom in Context. *Perspectives on Psychological Science*, 12(2):233–257. doi:10.1177/1745691616672066

Iyer, R.N. (1967). "Means and Ends in Politics", in G. Ramachandran & T.K. Mahadevan (Eds.), *Gandhi: His relevance for our times*. Gandhi Peace Foundation.

Lee, R.B. (1979). *The! Kung San: Men, women and work in a foraging society*. Cambridge University Press.

Leonard, D., & Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, 40(3), 112–132.

Levine, P., 2018. Gandhi on the primacy of means over ends. Peter Levine. Available at: https://peterlevine.ws/?p=19931 (Accessed September 4, 2020).

Taylor, F.W. 1911. *The principles of scientific management*. New York and London, Harper & Brothers.

Ury, W. (2000). *The third side: Why we fight and how we can stop*. Penguin.

Weisbord, M.R., 1993. *Discovering common ground how future search conferences bring people together to achieve breakthrough innovation, empowerment, shared vision, and collaborative action*. San Francisco, CA: Berrett–Koehler.

Weisbord, M.R., & Janoff, S. (1997). *Future search an action guide to finding common ground in organizations and communities*. San Francisco, CA: Berrett–Koehler.

28

TO TRANSFORM THE COMMUNITY, CHANGE THE STORY

The Fab City Global Initiative

Mary-Alice Arthur

The story

It is predicted that by 2054, 70% of us will live in cities. This scenario presents not only the challenges and stress of rapid urbanization and all this entails in our current paradigm, but also a system-changing opportunity. But only if we can change our narratives about what cities are and how they work.

Cities currently consume most of what the world produces. They create high-density human impact. But what if they could create everything they consumed? This question gave birth to the Fab City Global Initiative in 2014 when Barcelona's mayor challenged cities to produce what they consume by 2054. Fab City is now a network of 39 committed cities all over the globe.

Members of the network commit to specific principles to enable the urban transition toward locally productive and globally connected cities. These principles intend to create a living and resilient ecosystem.[1]

That all sounds wonderful, but how does it happen in practical terms, especially when the stories we hold about our communities – including what they mean and how they work – are so tied to the identity of person and place?

Percolab[2] is an embodied example of how working collaboratively might look. Founded in Montreal by conscious entrepreneur Samantha Slade in 2007, Percolab began life as an experiment about how transformational change can be embodied, practiced, and prototyped. Today it is a network of worker-owned cooperatives, itself a laboratory of participatory change for the past 15 years, with a focus on "creative, conscious, courageous, collaboration." They are actively working to embody the cosmovisional shifts required for the socio-ecological transition.

As a longtime supporter and collaborator in the Fab City movement, Percolab decided to create action research in shifting the narrative around relational space in cities. In line with the Fab City orientation on collective learning, their experiment took place for the three days of the 2021 Fab City Summit, held in Montreal, preceded by two days of prototyping

to make sure the processes they were using had been stripped down to their essence and able to be used effectively with citizens who had no prior experience of the methods.

Percolab's co-founder and social designer Samantha Slade says:

> We can't rethink cities without bringing back consciousness about the relational/social layer, which is how we think about value. Our current mechanistic narrative would say we have no time for relationships. But a Living Systems approach sees relationships as an embedded piece in the paradigm, and critical if we want to encourage local production to get off the ground. *La Chicanerie* is a lived experience to help anyone think about it – not abstractly, but real in their life.

La Chicanerie means in English "the squabble." It speaks to how loved ones and community are in a constant give and take. As a social experiment, Percolab wanted to put the focus squarely on the challenge of living together in a city – the myriad of arguments and misunderstandings that get in the way of a good relationship. Often these misunderstandings go underground, causing tears in the social fabric. Percolab decided to offer a physical space where these grievances could be aired and mended and used the metaphor of a restaurant, which plays on Montrealers' love of going out with family and friends. They asked themselves the question: What if you could go to a place with those you are in conflict with, choose from a menu of process options, and resolve the issue together?

They recreated their studio as a restaurant space, set up their portable *nacelle* (a wooden pod with two tiers of seating) into the street, and opened the doors. When people entered, they were met by a "waiter" (one of the Percolab facilitator team) and offered a menu. The menu offered a variety of smaller and larger "courses" (or choices). You could have a "snack" or a full-course meal.

Menu offerings included simple process techniques, each with a suggested timing. Once a menu item was chosen, the "waiter" returned with a simple step-by-step visual guide, modeled the process, and then asked: "Are you okay to take care of this at your table now?" The processes included guided listening exercises, potent questions, reflective writing, and more. The intention was to take healthy collaboration patterns and practices and make them accessible to anyone. This democratizes the process of moving from a situation that's caused agitation to finding peace with others.

People entered into the spirit of the space, working with their challenges together. Some found this easy, and others deeply emotional. Many spoke about how helpful these processes would be in their family situations and in the workplace. Others pointed to the positive impact on mental health that such processes could offer.

At the end of their stay in *La Chicanerie*, participants were asked to give feedback on what they appreciated, what they wanted to amplify, and what could be adjusted. They left cards with their wishes for the future. And they were asked to engage in a conversation about conscious economics, a practice that is part of the Percolab model, to find out what value they put on their experience.

People experienced beginning to step into their highest potential together. Percolab talks about these experiences as "droplets of kindness and consciousness," the relational dynamics we need more of in a Fab City but that often fall through the cracks.

As Samantha says:

> Sharing collaborative economies presuppose that the conditions are in place for people to get along. Our past hurt connects with the current event and then we get new hurt, miscommunication, projections, and that makes us pull out. We

are facing huge disruptive change in how we do things and a deeply profound transformation. The deeper the inner shaking, the stronger we need to be in the practices of how to be strong personally and together.

Percolab hopes eventually every neighborhood would have one of these spaces, embedded in the fabric of the city – a place where people talk about their needs both in depth and in a light and enjoyable way, still feeling "we've gone out for the evening." Their experimentation of the cityscape continues.

Stéphanie Bossé, Percolab's Organizational Innovator, says:

> People need to talk. They need to have a space to be listened to and validated. They need simple tools to help them engage in more difficult collaboration and to realize that meeting their emotional needs is important. Knowing that I can do something in my own capacity is incredibly valuable.
>
> This is about changing the story of being paralyzed by the size of the crisis in front of us. We are changing it by taking small steps, starting from within, about how we can do things. What's missing to help us go through this crisis is collaboration. Giving tools and building capacity is how we will change the future.

THE SCIENCE BEHIND

Why focus on story?

We are surrounded by stories. Every day the average human being in the Western world is deluged by a flood of stories that begins when they open their eyes and pick up the nearest device. Social media offers its version of the news of the world. Other people offer their worldviews. We receive constant input from family, friends, political figures, celebrities, and strangers too numerous to count.

It may appear that this is an external phenomenon, but it is fueled by the internal reality that the human being makes sense and meaning of the world through the lens of story (Gottschall 2012; Block 2018). Since stories and conversation are the human operating system, it also makes sense to use them as one of the fastest mediums for organizational, community and group connection and learning (Reinsborough and Canning 2017). With these applications, story can move from an influencer to a game changer.

For anyone in the business of making change or leading transformation – from the smallest policy changes to the largest societal movements – the key lies in realizing the true nature of paradigm shift lies within the realm of narrative (Chlopczyk and Erlach 2019). The stories we tell ourselves and each other form the basis of what we believe are possible. They give us energy either to collaborate or to fall into contention. From 25+ years of facilitating groups I've come to realize that conflict comes from *believing others are in the same story as we are* – and they are not – or in *believing others are in the same place in the story as we are* – and they are not.

It is important to understand that stories are a potent support in positive change making. At this point in history we seem to be mesmerized by stories of violence, fear, anger, and war. Stories can also be used to help us grow courage, collaboration, and connection. It all depends on what you are using your stories *for*.

From a story perspective, we are in the "wave of influence."[3] Leaders want to tell a better story to build trust in their leadership, the brand, or their vision of the future (Callahan 2016). We have seen what happens when two competing stories become so polarized that no

middle ground exists, as in the pandemic or in national elections. History has demonstrated the massive social cost to using storytelling as a manipulation or propaganda tool leading to war, genocide, ethnic cleansing, and the storming of public landmarks. We use specific language to create a mindset around events – such as using the language of terrorism around SARS – the severe acute respiratory syndrome – when it occurred in 2003[4]. But what we have yet to realize is the massive power of story as a tool for dialogue, connection, and collective sense and meaning making.

When collective intelligence becomes collective wisdom, we all make better choices on behalf of the whole.[5] Group work becomes a practice field for more resourceful decision-making. We begin to embody the story of, and the capacities for, co-creation that serves us all.

Being able to work with the stories already alive in the workplace or community is paramount to people feeling like they are heard, invited to contribute, and able to listen to others. From a community or societal point of view, this is absolutely pivotal now, as fear of "the other" and fragmentation grows (Isaacs 1999).

The stories being told pattern the space for similar stories to be shared. That means the more negative stories are told, the more negative stories are welcomed (Hübl 2019). A complaint culture tends to become a downward spiral, sucking the life force out of an organizational structure or community. Negative stories about marginalized groups continue to perpetuate the same treatment of those groups (Simmons 2021).

Scientists tell us one of the reasons stories are more impactful than facts is that they activate many more parts of the brain, including the motor, sensory, and frontal cortices (Storr 2019). Listening to stories creates important changes in neurochemistry that help us bond as humans. The brain releases dopamine – a feel-good chemical that helps us remember with greater accuracy and during the rising arc of a story – the hormone cortisol, which engenders an emotional reaction, even when we know the story is fiction. And finally, during character-driven stories, the brain releases oxytocin, the hormone responsible for community feeling and the sense of belonging. *Neural coupling is* the name for the way the brain can be stimulated to take on the ideas and experience within the story as its own (Gallese and Goldman 1998).

Sharing stories about what most matters to us does what I call *"depthing the field."* When we listen carefully to each other, witness each other, and harvest the gold from our lived experience together, it is like growing a collective root system. When we share a root system, we more easily share information, knowledge, and wisdom. We become a learning field. We find some common ground, and from there, the possibility for higher ground. As individuals and small groups make sense together, the collective wisdom of the field rises. Our collective story changes us and our possibilities together.

To negotiate the sharp edges of difference and division, we need to make spaces for finding the common ground that can lead to higher ground. Stories can help us to explore the edges and the heart of these conversations and can encourage us to stay together – in teams, groups, organizations, communities, and as a humanity – for long enough to find the simplicity on the other side of complexity.

Do's and don'ts

DO

- **Identify the current narrative.** Sometimes inviting someone from outside your system or practice group is a fast way to identify what might not be visible from inside the group. A trusted witness can say: *"I see you are doing this…. Why?"*

- **Become clear about the change you are seeking, or at least the first step of it.** What story would you rather be living in? Most often people know what they *don't want*, but don't know what they *do want*. If people are treating each other transactionally, then perhaps the story you'd like to encourage is a stronger connectedness, and therefore a more resourced and resourceful community.
- **Identify a metaphor that would be helpful in moving to the new story.** Percolab chose the idea of "restaurant" because everyone knows what to expect. *You will be greeted. You will sit together. You get a menu from which you can choose. People can choose different things from the menu. Your waiter is there to help you.* People already understand the frame. It creates psychological safety.
- **Make experiments.** There is more spaciousness in an experiment than in a fixed project. Look for the space to "try something." As in the Leonard Cohen song: "There's a crack in everything, that's where the light gets in." Find the crack to move into.
- **Help people enter the experiment with ease.** Little rituals – like receiving the menu – help people to enter the experiment more easily and also helps people remember the experience. They help us stay in service to a collective purpose, instead of falling into what is easy and comfortable for the individual.
- **Work as a team.** Transformation is complex and challenging work. As we have learned from the new sciences, *it takes a field to host a field*. If you want radical change to happen, first it must be embodied. As a team, practice what you hope to encourage in the world. A team has more capacity, resilience, and wisdom than an individual. Continue to strengthen team capacity and cohesion.

DON'T

- **Don't be tempted to control.** This is an experiment, a change in storyline. We don't know who's coming or what they need. Light structures make emergence possible. There will be a dance between chaos and order – that's how nature works. Plan well, and then let the experience unfold. Working with people who can host strong emergent space is very helpful.
- **Don't underestimate the capacity of citizens/participants to enter complexity.** They are the experts in their own territory, space, and experience. If we listen to them, we can identify new tools to enter and work with complexity.
- **Don't be afraid of emotion.** Our cultural way of thinking about emotions and the need to express them makes people shy. Emotional intelligence is much needed now. Don't underestimate the increase in mental health and connection when emotions can be expressed.
- **Don't unintentionally create a power–over structure.** Initiatives intended to build personal and systemic capacity are about sharing power and governance. They purposefully create a structure of equality so collaboration is enhanced. If organizers are there to listen, hold the space, and harvest, the wisdom of the group can be captured. This frame gives participants confidence and builds capacity.

Further lessons can be found in the references below, notably Arthur (2020), Isaacs (1999), Hutchens (2015a, b), Slade (2018), and Stor (2019).

Notes

1 For more, see https://fab.city/uploads/Manifesto.pdf.
2 www.percolab.com.

3 Arthur, M.A. (2019) "Six Perspectives on the Role of Story in Creating Flourishing Organizational Futures", *Transforming Organizations: Narrative and Story-Based Approaches,* pages 35–54, Springer.

4 My personal conversation with a professor of Storytelling & Metaphor on his research at the time.

5 Readers interested in this aspect will also want to read David Baum's case study in this hand-book: "The power of different perspectives for conflict resolution and community change: An eagle watches over us."

References

Arthur, M.A., 2020. *365 ALIVE! Find your voice. Claim your story. Live your brilliant life.* Columbus, OH: Firelight.

Block, P., 2018. *Community: The structure of belonging.* Oakland, California: Berrett Koehler.

Callahan, S., 2016. *Putting stories to work: Mastering business storytelling.* Melbourne, Australia: Pepperberg Press.

Chlopczyk, J., & Erlach, C. (Ed.). 2019. *Transforming organizations: Narrative and story-based approaches.* Cham, Switzerland: Springer.

Gallese, V., & Goldman, A., 1998. "Mirror neurons and the simulation theory of mind-reading." *Trends in Cognitive Sciences*, 2(12), 493–501.

Gottschall, J., 2012. *The storytelling animal: How stories make us human.* First Mariner Books.

Hübl, T., 2019. *Healing collective trauma: A process for integrating our intergenerational & cultural wounds.* Boulder, CO: Sounds True.

Hutchens, D., 2015a. *Circle of the 9 Muses: A storytelling field guide for innovators and meaning makers.* Hoboken, NJ: John Wiley & Sons.

Hutchens, D., 2015b. *Story Dash: Find, develop and activate your most valuable business stories… in just a few hours!.* Dallas, TX: Matt Holt Books.

Isaacs, W., 1999. *Dialogue and the art of thinking together.* Currency.

Reinsborough, P., & Canning, D., 2017. *Re:imagining change: How to use story-based strategy to win campaigns, build movements, and change the world.* Oakland, CA: PM Press.

Simmons, A., 2021. *Drinking from a different well: How women's stories change what power means in action.* Raleigh, NC: Collaborative Narrative Solutions.

Slade, S., 2018, *Going horizontal: Creating a non-hierarchical organisation, one practice at a time.* Oakland, CA: Berrett Koehler.

Storr, W., 2019. *The science of storytelling.* William Collins.

29

SCALING PERSONAL INITIATIVES INTO COLLECTIVE ACTION

The citizen powerhouse of *Sager der Samler* in Aarhus, Denmark

Paul Natorp

The story

When Kristina Louise Bliksted was young, her family went through difficult times, and she experienced how important it was for her family to get the health care they needed. As a student in Denmark, Kristina learned that inequality in health often results from a poor contact between vulnerable citizens and health professionals like doctors and nurses, even in a country that promised free health care for all. If you suffer from anxiety, if you do not speak the language, or if you are homeless, you may often feel talked down to, not taken seriously or just overwhelmed by the complexity of a highly specialized health service. And eventually you might give up on what it can offer you.[1]

Kristina Louise came up with the idea for an initiative called *Social Sundhed (“Social Health”)*. She believed that students like herself are highly motivated to improve a system which is failing for some, despite its overall effectiveness. She had the seed of a great idea but needed a way to develop it. This is where *Sager der Samler* (“*Causes that Connect*”) came into her life.

Sager der Samler is a local powerhouse for citizen initiatives. It creates collective action and social innovation by supporting a new wave of activism emerging among local citizens who feel marginalized by current political issues, malfunctioning systems, and social injustice. Due to the support of this network, the *Social Sundhed* initiative now has action groups in seven cities, hundreds of volunteers, and collaborations with health institutions around the country. As a whole, the *Social Sundhed* initiative has become a mechanism for improving the health care system on a national scale. Harnessing the collective intelligence of the *Sager der Samler* network over a period of seven years, Kristina Louise was able to turn her idea of *Social Sundhed* into a robust national campaign.

The DNA of *Sager der Samler* is defined through three principles:

1. Start in your own life situation where you have knowledge and legitimacy.
2. Stay at eye level and work *with* (not for) people to grow your own platform and impact.
3. Use your freedom and begin where you do not have to ask either for permission or money.

These principles led Kristina Louise to understand that "if we can't change the health care system, we can change ourselves who will work in it in the future." She designed her project to operate at two levels: by mobilizing students in the health sector to support individual citizens, and by creating an arena of exchange for students to learn how to build relationships with those patients who might feel vulnerable. The students offer themselves as bridgebuilders: they play the role of a resourceful relative and accompany citizens to their appointments with hospitals, doctors, and so forth. In the future they themselves will be doctors and nurses. The *Social Health* initiative allows them to learn from the patients who are living the problems they want to solve in their future jobs.

Sager der Samler is a community organized like a platform, which means that it facilitates the exchange of important resources to help initiatives like *Social Sundhed* get off the ground. *Sager der Samler* is mainly an "analog" platform. It's a physical place, community, and culture where resources are shared. Participants are asked: "What would you engage yourself in if you could?" The platform thus provides mutual support that produces courage, reputation, relationships, knowledge, and experience. The role of the platform is to scale initiatives up from a personal impulse, caused by frustration or a dream, into a viable initiative that is demonstrating a new way of addressing and potentially solving a problem on a policy scale.

Through the platform citizens like Kristina Louise get access to a shared space and work alongside other activists on a similar path. The place holds a strong culture for mutual exchange, and it uses informal gatherings like lunches and coffees to build relationships between citizens, civil servants, politicians, and professionals. To facilitate the exchange, sitting down over a cup of coffee is regarded as the most important tool for building relationships and developing the initiatives.

Members of the platform support each other by sharing their courage, network, and knowledge. As the network's activities in favor of vulnerable populations have become better known, *Sager der Samler* has built a reputation and social capital that is increasingly used to authorize citizen-led initiatives that are recognized by established public institutions. In the case of Kristina Louise, for instance, the original idea for her project came to her when she was a student. Though she received initial encouragement and recognition, she was told how social innovation ideas are neat but not worth much unless they come to life. So she came to *Sager der Samler.* Over a series of months she explored how she could initiate the project, spending time with organizations, working with some of the most vulnerable people in the city, and creating a presence. The first reception she got however was not exclusively positive. Medical professionals and health officials asked her and her associates to literally "get away from our citizens." *Sager der Samler* gave her the space to develop the courage to not give up. *Sager der Samler* used its reputation to create dialogue with those decision-makers and give Kristina Louise and her initiative the authority that she herself felt she was lacking. Over the years, different types of support were provided. Today, it is Kristina, her 17 employees, and the many volunteers involved who have become a resource for others.

But first of all, *Sager der Samler* offers citizens the opportunity to create a new identity as "everyday activists." The title was coined to characterize an entrepreneurial civic

action beyond volunteerism. Volunteerism is important in Denmark; 42% of the population on a regular basis give their time. But where volunteers mainly give their time doing good, everyday activists create change. They lead through action, model through example, and take a visionary role rooted in their own life. In Denmark, as in most other countries, we are lacking mechanisms to include the innovation capacity coming from ordinary citizens who work bottom up. By telling and retelling the stories of everyday activists like Kristina Louise, the platform offers an identity that connects citizens to their own agency and leadership. At the same time, it helps them establish the credibility and legitimacy to act. In a country where volunteering and taking ownership of local issues is encouraged socially, we have seen very practically how storytelling about everyday activism creates role models that help people to connect and be empowered to take new leadership roles in civil society.

Sager der Samler was founded in 2012 by a group of consultants, researchers, designers, and artists who sought to bridge the gap between disconnected professionals and hold a space for collective problem-solving around some of the larger and more systemic issues in society. It turned out that citizens who are frustrated with the current state of things and wish to act were also the ones with the capacity and the legitimacy to bridge that gap. But realizing systemic change also depended on the support of an intermediary that can both offer an enriched ecosystem for engagement and facilitate the building of trust between everyday activists, professionals, bureaucrats, and policymakers. In the example of *Social Sundhed*, the initial response to "get away from our citizens" became an opportunity to meet with health system managers, explain the vision behind the initiative and learn about how to coordinate actions with professionals who were already active in the field. As a facilitator, *Sager der Samler* contributed not only to solving the immediate problem, but also increased the overall trust and developed the leadership of Kristina Louise, the everyday activist.

Today, there are more than 20 initiatives like *Social Sundhed* on the *Sager der Samler* platform. One of them is *Vaskeriet* ("*The Laundry*") founded by Pia Stabell and Katrine Knudsen, who were frustrated about the exclusion of citizens with learning disabilities from society. *Vaskeriet* takes advantage of underused facilities in a housing association and radically rethinks how people with learning disabilities are integrated into a workplace and a community.[2] They do this by creating a workspace for people with learning disabilities in the heart of a community rather than in a protected environment. And since they didn't have any money for rent, they simply started using the laundry of the apartment block. As in the example of *Social Sundhed,* the role of *Sager der Samler* has been to support the two everyday activists with courage, reputation, network, knowledge, and through the role of intermediary bridging to relevant actors in the city administration.

The mayor of Aarhus, Jacob Bundsgaard, in an interview about *Vaskeriet* refers to it as "a clear example of civil disobedience that is a solution to a societal problem." His words highlight how Pia, Katrine, Kristina Louise, and other activists are reauthoring the role of the citizen through their initiatives. The mayor understands why some citizens authorize themselves to initiate new solutions, in a form of civil disobedience, not asking first for permission, for services that are needed and that the city is not yet offering. And only later do collaborations with established institutions take form, from a posture of mutual respect. Each of their stories adds to a narrative of citizens participating in the role as co-creators of society and not only consumers of it. Other cities, faced with this dilemma, have chosen to provide resources to legalize, fund, and encourage such initiatives, for instance, Athens with its Synathina platform.[3]

A clear strength in citizen-led initiatives is that they know they depend on the resources of the community they are working with. Therefore, they build capacity and leadership among their peers and change the narrative of service provision into a story of collective changemaking. Maybe that is also why they often succeed in situations where municipalities fail.

What science tells us

Sager der Samler is a learning system designed to turn local citizen engagement into a force for the renewal of society.

Learning happens as a social process in a community of practice (Wenger, 1998). Wenger defines a community of practice as groups of people with a common interest that learn how to do better by organizing regular interactions to exchange knowledge and develop their skills. *Sager der Samler* supports relationships that enable participants to learn from each other and develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short, a shared practice.

We experience the world and create meaning by participating and being engaged in it. In human societies, the identities that shape our understanding of this participation are formed through the discourses we share with those around us. The practice of *Sager der Samler* therefore has a consistent focus on creating narratives that bring the citizens on the platform in touch with their own agency (Ganz, 2011). This is why the character of the "everyday activist" is important. It is infused with agency compared to the traditional citizen caricature as a mere service-user, voter, or consumer. The everyday activist reminds us that democracy depends on our ability to think and act independently, harnessing our independent energies to a collective purpose.

As an organization, *Sager der Samler* is designed to create a stable environment within which new kinds of collaboration and citizen-led projects can emerge (Oström, 1990). The daily practices facilitate learning and connections between participants and their local context, for instance, the local community, civil society organizations, businesses, and public authorities. In general there is a constant emphasis on involvement and creating new connections. As we say in the organization: "a work process is a resource for learning and forming new relationships." It all seeks to create the conditions and incentives for the emergence of community power even within less-than-ideal circumstances.

By insisting on dialogue and collaboration, both when collaborating with other citizens and with authorities, we re-humanize each other (Freire, 1970). While dehumanizing others can happen easily – if involuntarily – by treating others as members of abstract categories, defined by roles and functions, sitting down with them, at eye level, to work on their problems, is profoundly humanizing. It's all back to the coffee cup again. This is crucial for creating a space where informal actors like citizens can collaborate with formal actors like institutions. When approaching collaborators we clearly state that a collaboration starts by forming a relationship through a shared experience of sitting down and listening to each other.

Sager der Samler challenges the common definitions of "co-creation" where the role of citizens is mostly limited to user, client, or customer (Nabatchi et al., 2017). Although co-creation and co-production usually refer to new public service delivery mechanisms that reinvigorate the role of citizens in their communities beyond simply voter and customer, neither the academic nor practical use of the term seems to take into account the situation

where it is citizens who take the initiative in the renewal of public services and where state professionals and authorities are involved along the way.

Do's and don'ts

When building a platform for civic action like *Sager der Samler*, what matters the most is an empowering narrative and a strong culture for mutual exchange.

The narrative of the platform should tie the initiatives of everyday activists into a greater purpose and create a context for citizens to participate as changemakers in a way that is appropriate for them. The founders of *Sager der Samler* invested time to create a consistent narrative about how the collective agency of citizens can become a driving force in co-creating social change. This means that when a new medical student joins the *Social Health* initiative, for example, she will see how her work of accompanying a person to the doctor is not just an individual act of kindness, but a contribution to a long-term change in the way the health care system operates.

The power of the narrative emerges through the active telling and retelling of stories in talks, social media, newspapers, on TV, in books and reports with concrete examples of how citizens have taken action in the face of a common social challenge. *Sager der Samler* even organized the *Rethink Activism Festival* in 2017, which featured a program of 250 events held by citizens and grassroots campaigners. The festival transformed an old industrial site into "a city within the city" with a festival town hall, school, factory, culture house, and health house, among other specially built public spaces. More than 10,000 people visited the festival and it attracted a lot of media attention, further strengthening the authority of citizens to reshape urban policy and practice.

Another very important aspect put in place by the *Sager der Samler* founders, and consciously sustained by community members, is a kind and welcoming culture that supports mutual exchange and respect.

Four key principles of participation are essential in the culture:

1. **Lower thresholds for participation** by cultivating a welcoming attitude and offering time and space for building trust and relationships.
2. **Build practices around the idea that "we are all crew,"** that is to say, we share leadership and the responsibility to work hard toward our common goal. If you enter a public service, you refer to people as "users", like you have "users" in public libraries. At *Sager der Samler*, there are no users, we are all crew, contributing. Everyone can contribute, and it starts with contributing to a good atmosphere.
3. **Support synergies in the interactions between participants rather than providing services for them from outside.** A critical learning in sustaining this community is to avoid engaging "service institutions" that perform functions the community can do for itself. Cleaning is done at a weekly cleaning party and lunch is organized as a daily joint meal where anyone can volunteer to cook or help out.
4. **Finally, take responsibility for curating participation and encourage leadership.** Have a conversation with new participants and make sure newcomers recognize what the place is about. If it turns out they are looking for something else, you can kindly direct them to other places. Just as often, if we take time to listen, we will find that their individual story will converge with the narrative and purpose of the community as a whole.

Then make sure to encourage initiative and leadership by authorizing them in the community and giving them access to resources. In *Sager der Samler* this means literally giving out a key and turning participants into "key persons."

Notes

1 www.udsatte.dk/dyn/resources/Publication_File/file/5/5/1598011011/udsathed-giver-daarligt-helbred_susy-pixie.pdf.
2 Samfundslederskab i Skandinavien (2018). "*Dem der siger, at det ikke kan lade sig gøre, skal lade vær' med at afbryde os, der allerede er i gang*" – https://rauli.cbs.dk/index.php/SiS/article/view/5633.
3 See www.synathina.gr/en/.

References

Freire, Paolo (1970). *Pedagogy of the Oppressed*. New York: Continuum.
Ganz, Marshall (2011). "Public Narrative, Collective Action, and Power." In *Accountability Through Public Opinion: From Inertia to Public Action*, eds. Sina Odugbemi and Taeku Lee, 273–289. Washington D.C: The World Bank.
Ostrom, Elinor (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
Tina Nabatchi, Alessandro Sancino, and Mariafrancesca Sicilia (2017). "Varieties of Participation in Public Services: The Who, When, and What of Coproduction". https://onlinelibrary.wiley.com/doi/full/10.1111/puar.12765
Wenger, Etienne (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press.

30

PIONEERING ASIA PACIFIC'S FIRST COMMUNITY-DRIVEN INVESTMENT PROCESS THROUGH BLOCKCHAIN

Impact Collective

*Charlotte Arribe, Stephanie Arrowsmith, Songyi Lee,
and Eunielle Yi*

THE STORY

Pakistan has the fifth largest population in the world (over 220 million), half of which may not see a doctor in their lifetimes. The majority of those that lack access to healthcare practitioners are from low-income backgrounds, particularly women and children. Moreover, 63% of the 200,000+ registered doctors in the country are women. Yet, due to social stigmas tied to pursuing careers and family caregiving, around 85,000 female doctors currently do not work.

Sehat Kahani, an impact-driven startup co-founded by Dr Sara Saeed Khurram and Dr Iffat Zafar Aga, operates a telemedical service composed of an all-female healthcare provider network and e-health clinics in Pakistan. Sehat Kahani was created to solve the prevailing supply–demand gap in the Pakistani health ecosystem, with the aim of capturing the entire national market and solving access to healthcare in underserved communities.

Like many other startups, Sehat Kahani's founding team was looking to build their network, gain more visibility, and receive investments to help scale their operations. They participated in several programs to help refine their structure and service delivery, as well as obtain grants to support initial operations. As a next step, they were looking to connect with key actors and investors across the APAC ecosystem who would support their business model's impact–profit alignment. Startups that find themselves at this stage often look to take part in acceleration programs.

GALI (2020) defines acceleration in the startup and business context as "time-limited programs that work with cohorts or 'classes' of ventures to provide capacity-building services, namely mentorship and training, with a special emphasis on connecting early-stage ventures with investment." Startups with the most viable for-profit business models can potentially receive funding through these programs, which serve to increase the startup's

value and profit on exit. Typically, acceleration programs are delivered by a single entrepreneur support organization. They consist of a closed group of mentors and a selected group of judges or decision-makers who determine what support is provided and who receives investment for equity. Due to the limited number of people engaged, power over these decisions is still held in the hands of a small network of investors, typically lacking in diversity across gender, cultural backgrounds, and domains of expertise.

While exploring acceleration and investment opportunities, Sehat Kahani applied to the first edition of Impact Collective (IC).[1] IC emerged as a collaborative experiment to enable a more inclusive and participatory entrepreneurial ecosystem by democratizing the decision-making around acceleration and investment in the Asia-Pacific region for impact-driven startups. IC is an integrated acceleration program with a dedicated $5 million investment fund to support impact startups. Their new capital model is based on "democratic capital allocation" that is centered on collective deal sourcing, market intelligence, and a blockchain-based online community platform to facilitate group decision-making, knowledge exchange, and other collective processes.

This radical investment model democratizes capital allocation with a platform that enables transparency around voting and feedback for startups. Regardless of where community members on the platform come from and whether they are investment professionals or not, IC believes the wisdom of the crowd can help evaluate which companies or projects make greater impacts on society and are therefore best suited to receive investments and community support. The aim of this community-driven approach is to significantly enhance inclusion and diversity in the decision-making landscape, sourcing inclusive solutions with greater financial performance, and scaling positive impact for people and the planet.

For the coordinators of IC, the logic behind these acceleration practices is threefold:

(a) Cross-sectoral collaboration is key to making large-scale impact.
(b) Transparency in the process – sharing what was learned and decision-making with the community – is essential to building trust and a sense of ownership in achieving impact.
(c) Communities with diverse representation allow for the identification and validation of opportunities that would otherwise be missed.

Amarit Chaerophan, ASEAN Director at IC, said:

> We believe that we might not be an expert in every emerging technology or market, but through the wisdom of the crowd and by leveraging our regional partners and experts, we can uncover the hidden gems of our regional ecosystem and help be a catalyst for accelerated growth. In the COVID-19 world, necessity is the mother of all inventions and new business models are constantly emerging.

The core team of organizers at IC is made up of a diverse group of talented people including funders, founders, lawyers, community builders, consultants, ecosystem developers, impact experts, entrepreneurs, and designers. Team members hail from Korea, Thailand, Singapore, Indonesia, New Zealand, and Malaysia. Central to the foundation of IC were organizational partners like the community collective Weave, the tech provider CAN Lab, and venture capital firm TheVentures[2] who built the US$5 million program fund, as well as World Federation of United Nations Associations who leveraged international organizations and public sector support through their UN-backed Citypreneurs initiative.[3] Building upon

Citypreneurs, which worked since 2017 with city governments to support startups with innovative solutions to urban challenges, as defined by the UN Sustainable Development Goals (SDGs), IC helped scale the program's reach to multiple city contexts simultaneously with agility, innovation, and trust. The program also aimed to connect policymakers directly to cross-sectoral actors to share knowledge, align priorities, and support concrete solutions, in addition to offering selected startups access to a wider range of technical expertise and funding from the region.

The "initiators" of IC knew there were great entrepreneurs across the region, but many were not discovered or receiving the necessary support needed to scale to Series A funding due to gaps in investment opportunity pipelines. To put things in perspective, 2019 alone saw close to US$300 billion in venture capital investments around the world, yet only 14.1% of founders were women (Startup Genome, 2020). Moreover, North America had the highest value of venture capital (VC) deal funding globally, totaling over US$130 billion in financing in 2020, and the highest number of VC deals, totaling just under 6,500 deals in 2020, yet still accounts for less than 5% of the global population (Statista, 2020).

In contrast, 60% of the global population live in the APAC region, with increasing numbers of talented social innovators and digitally connected citizens. The COVID-19 pandemic has created greater demand for new digital services that startups with understanding of local contexts are ideally placed to build. In Southeast Asia alone, 75% of the region's 589 million population are online – including 40 million who began using the internet in 2021. The sub-regional digital economy is forecast to hit US$1 trillion by 2030 (Davis, 2021). Creating a community "by the region, for the region" thus enables IC to identify promising impact startups in underserved ecosystems and offer them opportunities to build up their networks and investment leads across the region to create impact while making profit.

As an initiative owned by the collective with no governing legal entity, IC organizers work together in distributed and agile ways to bring their respective expertise to the acceleration program and connect members across startup ecosystems. The 9-week program is held online and hosted on the Impact Collective Community (ICC) – a blockchain-based platform that facilitates the exchange of ideas, feedback, and knowledge. The core implementing team is currently exploring the option of launching IC as a Decentralized Autonomous Organization (DAO) in 2022–2023.

Three types of IC members contribute to community decisions:

- Experts (by referral only): Leaders in business innovation and sustainable development, who hold expertise in at least one of the thematic areas of IC. Experts participate in a collective voting process and mentoring during the program, lending their expertise to determine which startups should be selected based on technical feasibility, potential impact, and viability of business model.
- Community Voters (open to all): Members with an active interest and role in the startup community and ecosystem in APAC. Selection is based on achieving diversity in gender, country representation, sectors, and areas of work. This includes entrepreneurs, investors, local government officials, researchers, students, developers, impact enthusiasts, and citizens who will be most affected by the products, services, and solutions in the region. Community Voters directly interact with startups on the platform to ask questions, show support, and offer feedback.
- IC Committee: Review committee of 10 core organizers (UN representatives, investors, and experts) to ensure feedback from multiple perspectives regarding inclusion,

profitability, and scalability in decision-making and due diligence for the IC Fund. Moving forward with the implementation of IC's DAO model, more contributors will take on this role.

The core team of organizers made a conscious effort to create impact themes with regional priorities in mind with the aim to fund startups that could exponentially achieve the UN Sustainable Development Goals (SDGs) in APAC by 2030. These include inclusive health services and quality of life, circular economy and waste management, sustainable agriculture and food, digitalization for equal opportunities for all, future of work and economic growth, and green energy and the environment.

Participants in the ICC platform – entrepreneurs, community builders, policymakers, investors, industry experts, and enthusiastic end-users, etc. – can inform cohort decisions from the team selection stage all the way to the final investment decision stage. In particular, the investment decision-making is done through a token voting system on the online platform where Experts, Community Voters, and the IC Committee are allocated a certain number of Impact Collective Voting (ICV) tokens. They can then allocate a number of tokens to at least three teams, but are not required to use all their tokens. The weighting of these votes depends on the member tier, for due diligence and safeguarding purposes (IC Committee, Expert, and Community Voter). The vote totals are all listed openly on the ICC platform.

An incentive mechanism has also been integrated into the program to reward those in the community who actively contribute to mentoring and supporting startups. As part of the acceleration pillar of the program, startups have access to Experts on the ICC platform anytime during the program to book "office hours" sessions. All Experts are listed in the directory and offer office hours pro bono. In order to reward the time and effort invested, startups have the option to share "THNX" tokens with those who provided them with valuable support. Down the line, a percentage of the profit generated through the IC fund will be distributed to THNX token holders for a collective financial upside.

Results

Since its launch in 2020, IC has completed two cohorts and invested US$1.3 million in 18 impact startups working on healthtech, fintech, transportation, renewable energy, edtech, multi-P2P communications, circular economy, climate tech, agritech, and online services. In 2020, the IC program received 400+ applications from across 39 countries. Out of the 86 selected startups, eight received financial investment, with more than 60% of these led by women founders. In 2021, the IC program received 360+ applications from across 42 countries. Out of the 45 selected startups, 10 from across seven countries received financial investment, with four led by women founders. IC has also garnered great momentum by bringing together the highest-ever number of impact ecosystem players (1800+) across Asia Pacific in support of a single accelerator program.

Creating an inclusive, open, and more democratic process has allowed IC to source lesser-known startups across the region and harness the collective intelligence of a wider community – a diverse range of expertise, market access, and networks – with better insider knowledge of emerging markets than an external investment panel. This collective participation has helped uncover opportunities in underserved communities, perform community due-diligence, and de-risk investment decisions. Indeed, startups with the most votes were not on the typical investment radar. For example, the investment in Sehat Kahani's

telemedicine startup was actually the first case of a Korean venture capital firm investing in a Pakistani startup. IC not only invested in these teams, but also learned of untapped markets that have huge potential and are overlooked by most VCs. "Regardless of how diverse your operating team looks on paper, you will always have blind spots. We became smarter, more effective, more efficient, and made better investment decisions because we shared power with our community," said Songyi Lee, Venture Partner at Impact Collective.

In Sehat Kahani's case, the Impact Collective community shared up-to-date market activities and local insights, and voted for them to be among the "TOP20" startups invited to the IC Fund's due diligence process. As a result, Sehat Kahani was able to close their pre-series A round with investment from the IC Fund. They have currently more than 5,000 female doctors online serving 755 enterprises and 7.2 million employees and their families, and have conducted 360,000 e-consultations serving 3.2 million beneficiaries in less-favored communities. They are now in the process of raising a Series A round (US$8 million) and are leveraging their Impact Collective experience to gain more visibility and to find new investment leads that also put social impact at their core. This experience shows that impact-driven companies, when equipped with well-organized community support, can perform better than those driven by profit alone.

What science tells us

Social innovation has been defined as "a complex process of the introduction of novel solutions to face social problems – ideas, products, services or models – that profoundly change the basic routines, beliefs or resource and authority flows of the social system in which they occur" (Westley and Antadze, 2010). The field of social innovation covers a vast range of challenges, as illustrated by the diversity of IC startup teams and the projects they create. What they share is the commitment to take action on a public problem without relying either on the mechanisms of the state or of the free market, though freely adapting methods from each sector. Smith (2017) has studied how laboratories of social innovation and "makerspaces" consciously employ techniques of democratic deliberation, consensus-building, and alternative voting methods to develop their projects. With its token-based voting system and two-way evaluation process, IC has arguably employed methods of democratic decision-making that are more distributed and inclusive than the decision processes of most "democracies" today.

And yet, the independence of social innovation initiatives from the traditional logic of the public and private sectors can pose challenges as well. Wagenaar (2019) notes that while these initiatives are on the rise in many parts of the world, they often "suffer from a democratic paradox: although they demonstrate considerable innovative potential, this goes unacknowledged by dominant economic-political institutions." The IC ecosystem exemplifies both the promise and challenge of social innovation as an emerging sector. Teams like Sehat Kahani have shown the transformative potential of empowering community-level actors to generate their own solutions independently of top-down government bureaucracies or the imperative to maximize shareholder value. And yet, what will be the ultimate relationship of these initiatives to those "rival" models of addressing social needs? For example, will a new model of primary health services in Pakistan ultimately require adoption by public authorities to achieve its promise? What would be the risks, as well as the rewards, of the Sehat Kahani model being "folded into" the public system? Alternatively, will it need to create a self-sustaining business model based on a paid user base, or to put it another way, succumb to the logic and constraints of the free market? These are questions that are likely to evoke

serious deliberation within the IC community in years to come and will require its most focused collective intelligence to solve.

These dilemmas, in turn, point to a broader blurring of boundaries between the competing logics of public governance and market capitalism. Throughout much of the 20th century, as Western institutions defined the ground rules of these two spheres, the mechanisms of accountability were more or less agreed: voters held governments accountable through the mechanism of elections; customers held firms accountable by giving or withholding their money; and governments regulated the marketplace by enforcing workplace and product standards and allowing workers to collectively bargain (Bovaird and Löffler 2003; Atanassov and Kim 2009). In the first decades of this new century, however, as the centers of political and economic gravity have shifted, new models of governance are showing the possibility of upgrading or even replacing these older mechanisms of public control. As an example, #DemocratizingWork is a global initiative combining scholars and activists, launched in May 2020 by Isabelle Ferreras, Dominique Méda, and Julie Battilana, three management scholars who shared "an abiding interest in democratic and sustainable ways of working and organizing that diverge from the model of shareholder value maximization." In May 2020 their mission statement was signed by more than 5,000 researchers from more than 700 universities on every continent, and was published in op-ed form in 43 newspapers in 36 countries around the world.

A powerful voice in this initiative is Hélène Landemore, pioneer of the "open democracy" model and leading scholar of collective intelligence, who has theorized in her recent work about the application of "mini-publics" to communities of shared concern that form across the boundaries fixed by nation-states (Landemore, 2020). IC is a noteworthy example of this trend, employing methods of collective intelligence that go beyond the traditional mechanisms either of representative democracies or the free market. In this sense, IC can be seen as part of a new wave of experiments in decentralized governance, in which blockchain-based communities like the DAO also figure. Beck (2018) notes that "governance in the blockchain economy may depart radically from established notions of governance," including in the areas of decision rights, accountability, and incentives. Beck proposes a research agenda to clarify the trade-offs of these new approaches in practice. The IC experience confirms another lesson gained from several of these early experiences in decentralized governance, namely that these technologies often come with a steep learning curve, requiring a careful strategy of community onboarding and support so that these processes that aim at social inclusion do not inadvertently deepen digital divides.

Also of note here is the concept of liquid democracy that combines elements of direct and representative democracy. Its core principle is the power to delegate decision-making authority based on the expertise required in a given situation: voters can express opinions directly on policy issues or, alternatively, delegate their votes to someone who has relevant knowledge or experience on the issue and will vote on their behalf. The "proxies" may in turn delegate their vote, as well as any votes they have been delegated by others. The advent of blockchain technology has renewed interest in such approaches, including from researchers (Paulin, 2020), as it potentially allows for a safer and more traceable delegation of proxy votes.

Other efforts to enable smarter decision-making in democracies revolve around alternative voting systems. Given the possibilities that new technologies have opened, the voting systems used in representative democracies today are increasingly seen as crude, distorting preferences and offering limited meaningful information to elected officials about people's

preferences. The "social choice" school of thought – which studies collective decision processes and procedures – seeks to explore alternatives. In France, the *Voter Autrement* ("Vote otherwise") research group is dedicated to experimenting with new voting techniques under real-life conditions (Bouveret et al., 2019).

Time and attention are needed to make these new forms of citizenship and decision-making work. But given that the Impact Collective teams have been selected and supported in an agile, democratic, multi-stakeholder process, it would be unsurprising if the leaders of these projects naturally chose to "involv[e] employees in decisions relating to their lives and futures in the workplace," as the #DemocratizingWork signatories propose. A paradigm shift may already be in process.

Do's and don'ts

We have gained through Impact Collective a number of insights that could be considered in other similar projects.

1. **All-in-one platform usability**: The IC Community platform was built from the ground up in a very short timeframe to fulfill multiple functions: token voting, member communications, startups profile registry, membership registration, and video mentoring sessions. Part of the challenge was identifying one platform which fulfilled all functions, and the ICC was built to answer these specific needs. While this permitted building new functionalities to adapt to needs as they were identified, there was friction for onboarding members and familiarizing them with the various functions. Duplicative tools were used as a result. In order to consolidate interactions in one place to track and measure what needs are being met, more time should be invested in the user experience design and systems onboarding.

2. Familiarity with the **token system**: Given that the collective participatory process was being pioneered and community members came from different sectors, the digital literacy around "tokenization" and how it works posed a challenge. Additional time should be allocated to creating knowledge sharing systems to build digital literacy around blockchain technology and tokenization.

3. **Decision-making structure**: The governance structure was prototyped step by step, with careful consideration of who could constructively contribute to decision-making at each stage. This included active screening to ensure gender and minority representation throughout program elements. To balance representation across countries with different size populations and supporter mobilization ("community voters"), weighted token disbursement should be given to ensure clear, equitable distribution to startups. This ensures a balance of "soft due diligence" (using qualitative methods like interviews and workshops) and "hard due diligence" (using quantitative measures like market studies) in the selection process.

4. **Quality engagement**: More time was spent on virtual onboarding than anticipated, with more active facilitation needed to supplement written guides particularly during the COVID-19 pandemic when all interactions and trust-building were done virtually. This was also necessary to broker connections within the community to enable "invisible wayfinding." Adding dedicated staff for these responsibilities should be considered to lessen the burden on those in charge of building and implementing the process, as well as contribute to growing the community. Additionally, seeing as the first edition was launched in 2020, there was a quick pivot to deliver the program 100% online.

Engagement would have also improved with in-person trust and relationship-building, particularly for experts and partners joining the community.

5. **Trust and ownership**: Core IC team members were flexible in collaborating and assigning responsibility based on availability and specialization. To encourage knowledge-sharing, team members were also welcomed to take part in all program development pillars and provide feedback across domains of expertise. Fostering a lifelong learning mindset and adapting to the changing needs of program development are key to the adoption of frontier technology and remote team trust in program implementation.

5. **Tracking program Key Performance Indicators (KPIs)**: Given the decentralized nature of the team, the multiple sectors involved in the program, and the mixed use of manual and automated data recording, sharing program data proved challenging. Integration of data tracking to monitor program KPIs is recommended to consolidate information and minimize external tool use.

6. **Pooling funds**: Investment from the IC Fund in participating startups became a concrete program outcome and potential direct benefit for participants. In addition, onboarded investors can initiate direct conversations with startups regarding additional investment opportunities. In particular, "connectors" with a foothold in many different networks are essential to identifying founders with aligned values and drive across different ecosystems. Additionally, the IC Korea Fund of US$5 million, the first fund dedicated specifically to the IC community, was created and managed by TheVentures (Korean VC with over 120 portfolio startups in Asia) to provide funding opportunities for IC startups. However, the fund had to go through complex processes to invest in startups from certain jurisdictions due to national venture fund regulations. Diversity in fund structures is required to cater to multinational startups in the region. IC is currently working on supporting multiple DAO funds to design an inclusive and efficient way to pool funding and facilitate these investments.

Notes

1 https://impactcollective.earth/.
2 www.theventures.co/.
3 www.citypreneurs.org/.

References

Atanassov, J., & Kim, E. H. (2009). Labor and corporate governance: International evidence from restructuring decisions. *The Journal of Finance*, 64(1), 341–374.

Beck, R., Müller-Bloch, C., & King, J. L. (2018). Governance in the blockchain economy: A framework and research agenda. *Journal of the Association for Information Systems*, 19(10), 1.

Bouveret, S., Blanch, R., Baujard, A., Durant, F., Igersheim, H., Lang, J… & Merlin, V. (2019). Voter Autrement 2017 for the French Presidential Election.

Bovaird, T., & Löffler, E. (2003). Evaluating the quality of public governance: Indicators, models and methodologies. *International Review of Administrative Sciences*, 69(3), 313–328.

Davis, S. (2021). "Google in Asia: A digital decade for Southeast Asia", Google's "The Keyword" blog (November 10, 2021). Accessible at https://blog.google/around-the-globe/google-asia/sea-digital-decade/.

Ferreras, I., Battilana, J., & Méda, D. (2022). *Democratize work*. University of Chicago Press.

Ho, C. (2020). "Introducing Collective Intelligence to Impact Investing", Medium.com. Accessible at https://medium.com/impact-collective/introducing-collective-intelligence-to-impact-investing-e5f2c8d8e4aa.

Landemore, H. (2020). *Open Democracy: Reinventing popular rule for the twenty-first century.* Princeton University Press.

Parés, M., Ospina, S. M., & Subirats, J. (Eds.). (2017). *Social innovation and democratic leadership: Communities and social change from below.* Edward Elgar Publishing.

Paulin, A. (2020). An overview of ten years of liquid democracy research. *The 21st Annual International Conference on Digital Government Research*, pp. 116–121. https://doi.org/10.1145/3396956.3396963

Smith, A. (2017). Social innovation, democracy and makerspaces. *SWPS 2017–10.* Available at SSRN: https://ssrn.com/abstract=2986245 or http://dx.doi.org/10.2139/ssrn.2986245.

Startup Genome (2020). "State of the Global Startup Economy" report. Accessible at https://startupgenome.com/article/state-of-the-global-startup-economy.

Statista (2020). "Value of Venture Capital Financing Worldwide in 2020" report, available at www.statista.com/statistics/1095957/global-venture-capita-funding-value-by-region/#:~:text=In%202020%2C%20North%20America%20had,billion%20U.S.%20dollars%20in%20financing.

Wagenaar, H. (2019). Making sense of civic enterprise. Social innovation, participatory democracy and the administrative state. *Partecipazione e conflitto*, 12(2), 297–324.

Westley, F., & Antadze, N. (2010). Making a difference: Strategies for scaling social innovation for greater impact. *Innovation Journal*, 15(2).

PART 6

Reimagining international governance
Introduction

Stephen Boucher

"It is also possible that hard imaginative thinking has not increased so as to keep pace with the expansion and complication of human societies and organizations. That is the darkest shadow upon the hopes of mankind."

<div align="right">H.G. Wells (1945)</div>

"Don't Look Up!" urge the deniers of the oncoming comet in the recent eponymous movie by Adam Mckay. The film provides a vivid caricature of society's inability to tackle major problems, even existential, whether at the individual, local, national, or international level. The movie illustrates not only the difficulty of listening to science and to one another, but also how the epistemic challenges of policymaking at international level are an order of magnitude greater because the range of conflicting interests and contradictory forces is so much greater. Yet, the idea of addressing problems locally is attractive. At the level of neighborhood, city or even region, it is more likely that citizens will know and trust their public representatives more. Making your point known, identifying and reaching out to other stakeholders is usually simpler. It is likelier that the stakeholders of the matter at hand have a shared language and understand how they work. As a former adviser in a ministerial cabinet of fragmented Belgium, I write this, however, fully aware that small is not always easy, smooth, and simple. In fact, small is sometimes just that: small.

The neighborhood of BEDZED in the UK may be a model for ecodesign. The city of Grenoble's ZAC de Bonne may be an admirable eco-neighborhood copied elsewhere that offers answers to the environmental and social challenges faced by dense urban areas. Other municipalities may have given rise to ambitious initiatives showing how solutions exist to fight climate change. Yet, if they are not replicated across countries and continents and brought at the required scale, local initiatives will not suffice to deflect comets nor solve other world challenges. Worse, the accumulation of small, seemingly appropriate decisions can sometimes cumulatively result in a larger and significant outcome which is neither optimal nor desired. The "tyranny of small decisions" is a phenomenon explored early on by American economist Alfred E. Kahn. It describes situations where a series of small, individually rational decisions can negatively affect the context of subsequent choices, even to

the point where desired alternatives are irreversibly destroyed. Kahn described the problem as a common issue in market economics which can lead to market failure (Kahn, 1966). The concept has since been extended to other areas, such as environmental degradation, political elections, health outcomes, and jury decisions (Odum, 1982; Sunstein, 2002).

It is at international level that many governance issues need to be addressed with speed and decisiveness in order to tackle major problems at the required scale. So what does collective intelligence (CI) have to offer for the adequate management of resources held in common globally? How can international governance advance collective consciousness across the planet, at the appropriate scale? What opportunities and challenges do the collective actions presented here suggest in the development of co-creation and co-management processes of global commons? The cases in this section suggest how individuals, living in their specific environments and cultures, can be linked up to better understand complex matters, enter in a more productive dialogue, reach consensus on politically sensitive matters, even co-create solutions, and, ultimately, build trust that is the essential fuel for change, especially when there is no one to enforce decisions.

Starting point: Key challenges in international governance

The initiators of the novel approaches explored in the six case studies in this section on international governance saw the need for improvements in traditional approaches, seeking to foster greater collaboration beyond national borders.

Verena Ringler and Chiara Roselli, the initiators of the Open European Dialogue, a structured format of dialogue between members of national parliaments across the **European Union**, first explain in their story "Lawmakers across Borders: Unlocking the European potential of national parliaments' collective intelligence" how the starting point for them was the acrimony between elected officials of the North and the South of the European Union following the financial crisis of the late 2000s, the prejudices on both sides, the absence of a safe space for exchanging ideas and building trust, and how this prevented quality dialogue when it was most needed. Taking a step back, one recalls how the 2008 financial crisis was one of the greatest failures in collective thinking in recent decades – or certainly of ruling elites according to Shapiro (2011). As Charles Mackay may have put it, this was an example of *Extraordinary Popular Delusions and the Madness of Crowds* (1841). A multitude of banks, investors, individuals, financial institutions, regulators, and policymakers contributed to a system-wide economic crash. "The pre-crisis system of financial regulation and supervision left public authorities dependent on private sector expertise and information provision such that policy idea-sets became increasingly aligned with private sector preferences," argues University of Amsterdam political economist Geoffrey Underhill (2015), who stresses how post-crisis institutions have failed to address sufficiently the confusion of interests at the heart of this massive policy failure. This case illustrates how some have tried – and are still trying – to create new policymaking formats that address such failures.

In "Crowd Forecasting Infectious Disease Outbreaks," Emile Servan-Schreiber and his Hypermind colleague Camille Larmanou explain how they sought to mobilize CI through prediction markets to increase our ability to predict infectious disease outbreaks, including **COVID-19**, when too many variables are involved for a single expert to handle, or when there is too little data to provide an artificial intelligence.

Also at international and multisectoral level, Catherine Jacquet of Deloitte Sustainability France and Mamello Thinyane of the United Nations University highlight in "Mobilizing collective intelligence and cultural diversity to reach Sustainable Development Goals (From

global innovation labs to collective intelligence infrastructures for sustainable development)" how the UNLEASH Innovation Lab process seeks to gather diverse perspectives across cultures without the Western bias often seen in solutions to achieve the **UN's Sustainable Development Goals** (SDGs).

In "The Intergovernmental Panel on Climate Change, striving to build a universal agreement on the science of climate change," Professor Kari De Pryck provides a concise overview of one of humanity's most complex CI exercises ever. The **IPCC**'s challenge is to enable scientists to provide policy-relevant insights that are scientifically accurate while managing the pressures of their governments whose interests vary considerably.

In "Common food for the common good? The case of Helmut Kohl," we explore with Dr Knut Bergmann the links between context, interpersonal intelligence, trust, emotions, and **collective intelligence between heads of state and diplomats**. Policymakers, diplomats, and conflict mediators indeed cannot elicit collectively superior solutions if they ignore the emotional side of the process. While it has been suggested that intelligence at the level of individuals may take essentially nine forms (Gardner, 2011),[1] interpersonal intelligence is specifically germane to CI as it refers to a person's ability to relate well with people, to manage relationships, to be empathetic, and to have the ability to communicate with and understand others.

A common thread through all these case studies is the very central issue in public governance of the **free rider problem**, which can be defined as the burden on a shared resource that is created by its use or overuse by people who aren't paying their fair share for it or aren't paying anything at all. Free riders – those, for instance, who refuse to take a vaccine shot for COVID-19 but benefit from the protection provided by those who do vaccinate, or those procrastinating on carbon emissions reductions while others make greater efforts, etc. – pose a specific governance challenge. This challenge arises when people are not paying nor contributing to the good (either directly through fees or tolls or indirectly through taxes), but continue to access or use it. Thus, the good may be under-produced, overused, or degraded (Olson, 1965; Tuck, 2008). While it is evident at all levels of governance, the challenge is eminently visible at the international level, where many issues are beyond the reach of government control and effective means of coercing others to follow certain rules.

As Russell Hardin and Garrett Cullity note in the *Stanford Encyclopedia of Philosophy* (2003), "The free rider problem gives rise to large explanatory and normative questions in six main disciplines. Social psychology asks: To what extent and in what circumstances are people motivated to free ride? and What sorts of negative incentives are effective in motivating cooperation when free riding is possible? Game theory asks: Under what strategic circumstances does the rational promotion of individual self-interest recommend free riding? Informed by those two areas of enquiry, mainstream economics then asks: What real-world mechanisms are the most efficient ways of producing public goods, given the incentives to free ride? Political science asks: What explains the existence of large-scale political participation, despite the incentives that favor free riding? Moral philosophy asks: Under exactly which circumstances is free riding morally wrong? and What explains why it is wrong (when it is)? And relatedly, normative political philosophy asks: Do the moral reasons against free riding supply a satisfactory grounding for political obligation?" As well as constituting a structural challenge for international and national governance, the free rider problem is thus a rich field of investigation.

The free rider syndrome is closely connected to the issues of public goods, the management of the commons (i.e., goods and resources accessible by all and not owned privately, such as air, water, but also certain types of knowledge), and the dramatically – yet

aptly – named "tragedy of the commons" which essentially explains how "resources held in common, such as oceans, rivers, air, and parklands, are subject to massive degradation" (Feeny et al., 1990, 2). The tragedy of the commons is a classic example of the tyranny of small decisions mentioned earlier. The phenomenon is a major governance challenge at international level. Hardin and Cullity describe the mechanism as follows:

> As a rational being, each herdsman seeks to maximize his gain. [...] But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.
> *(Hardin and Cullity, 1968, p. 1244)*

As we asked earlier: What does CI have to offer for the adequate management of resources held in common and against the free rider syndrome and the tragedy of the commons? In order to avoid the tragedy, various thinkers conclude that the solution lies in either private enterprise or control by the government. "The commons could be privatized or kept as public property to which rights to entry and use could be allocated" (Feeny et al., 1990, p.2). Deciding on such rules being even more difficult between nations than within smaller communities, the cases in this section suggest a complementary approach, enabling ordinary citizens and other stakeholders to form a community that collectively takes part in the management of issues that "belong" to no one in particular and belong to everyone at the same time. CI can thus be considered essential to the process of commoning, that is, of coming together to manage such resources.

Another key CI and governance failure illustrated by the cases in this section is the **fallacy of sunk costs**, which can be observed when individuals continue a behavior or endeavor as a result of previously invested resources (time, money, or effort) (Arkes & Blumer, 1985). This fallacy, which is related to loss aversion and *status quo* bias, can also be viewed as bias resulting from an ongoing commitment. Once governments have engaged on a pathway – which, classically, can be the United States investing in a costly conflict like the Vietnam War in the 1960s, or diplomats and parliamentarians sticking to an acrimonious posture in international negotiations, as illustrated by Ringler and Rosselli in their example of the Open European Dialogue – moving away from the previous path is hard. Such path dependency is also common to all levels of governance, yet also diplomats constantly navigate and adapt to the unknown, developing together solutions on the ride. "International actors are primarily practical and put improvisations and virtuosity — rather than rationality, cognitive processes, emotions, norm-compliance, path–dependency or even habits/habitus — in the foreground," maintains political scientist Jérémie Cornut (2018).

More generally, international relations are eminently the realm of "**goal incompatibility**" (Galtung, 2000), conflict, inequality, and attempts to dominate others, as international peace academic Johan Galtung laid out in *A Structural Theory of Imperialism* (1971). Yes, nations often collaborate on the international stage, but they also compete for resources and influence. The international stage is more often than not **the self-interest stage**. Yet, again, the stories in this section illustrate how assemblies of stakeholders can be brought together with the intention to understand, manage, and solve complex challenges in smarter ways.

Finally, a specific challenge of CI for international governance is the increased **complexity** of the task simply because participants are unlikely to share the same language and value base, level of trust, understanding of cultural norms, and other factors that make collaboration and risk taking at local level easier. Here again, the example of members of parliament working across EU countries and of Helmut Kohl's interpersonal skills provides a vivid illustration. In international governance thus also lies an opportunity, which the UNLEASH Innovation Labs illustrate: thinking across nations can result in mobilizing people's hearts and minds to come up with solutions while thinking of more than one's immediate community and addressing problems on a greater scale.

Because of such challenges – and many others, such as a lack (relative to the local and national levels) of institutions, civil society organizations and other channels to help stakeholders collaborate – alternative resources need to be mobilized to encourage the emergence of collective solutions across borders. Among the many efforts deployed to remedy such failures across borders, we note three of interest that the cases illustrate: efforts to mobilize participants' creativity and imagination; new processes and methods to help groups value their diversity; and the cultivation of more holistic, systemic thinking.

New directions

Transcending conflicts by mobilizing people's imagination

Johan Galtung, internationally recognized as a founding father of peace studies and practice, is currently the director of TRANSCEND, a network for conflict transformation by peaceful means. He maintains that there needs to be a creative jump for successful conflict transformation, with the view to "channeling conflict energy toward new, innovative ways of satisfying basic human needs for all" (Galtung, 2000). Galtung developed what he calls the Transcend Method to resolve conflicts peacefully. The central tenet is that, when two communities have goals that seem incompatible, one needs to discover ways to make them mutually compatible. In order words, to transcend the perceived incompatibility. An example of this, for instance, is when two countries agree to manage a piece of land that they were previously disputing as a condominium.

The story in this section about the IPCC is an illustration of such an arduous process. A climate conference of the parties (COP) and similar international negotiations are long-haul exercises in transcending incompatible goals. However, looking more in detail at Galtung's recommended process, it is also apparent that such negotiations lack some key components that would help transcend disagreements not with mere incremental steps but bolder action. While there is no one-size-fits-all conflicts formula, Galtung indeed identifies four steps to foster such transcendence, which Tatsushi Arai summarizes in *Creativity and Conflict Resolution: Alternative Pathways to Peace* (Arai, 2009). Galtung's first approach "involves conceptualizing an *alternative world*, or a social context of the conflict different from what it actually is in empirical reality." Second, Galtung invites parties to analogize, thinking "*this reminds me of… .*" The third method involves reversing the usual sequence of agreeing to a ceasefire, followed by negotiations and ending with a vision of what might lay after the conflict. Finally, "the fourth method described by Galtung is making the parties' axioms of faith explicit," so that they can get out of the trap of demonizing the other side through deep dialogue (Arai, 2009).

Such approaches allow stakeholders of conflicts to see together what could be, beyond what currently is. Arai identifies six emerging principles across the 16 cases reviewed in *Creativity and Conflict Resolution*: analogizing; value commitment, "a normative aspiration for realizing an alternative reality to the conflict at hand"; combining elements in a new way, unconventionality; translating new approaches into practice and learning in retrospect; and "a searching process that is open-ended and flexible, yet at the same time guided by some sense of broad directionality and purpose" (Arai, 2009). In the same vein, Rob Hopkins, founder of the Transition Towns movement and author of *From What Is to What If: Unleashing the Power of Imagination to Create the Future We Want*, argues that what is needed to address major issues is true creative, positive thinking, and the mobilization not only of society's ideas but imagination, as "Imagination is central to empathy, to creating better lives, to envisioning and then enacting a positive future" (Hopkins, 2020). How can that imagination and energy be mobilized at international level, across borders, government departments, and science fields? The six case studies in this chapter provide some clues to answer this question. The right assemblies need the right "sauce" to work together, be it careful nurturing of personal relations (Helmut Kohl's art), creating a safe space for dialogue (Open European Dialogue), motivating participants to tackle major problems in innovative ways (UNLEASH), or bringing together young talents and prominent thinkers to think about their future (African Digital Futures).

Building trust and appreciation for other perspectives

International governance reminds us powerfully how CI is not simply a "brainy" process, as the word "intelligence" or the technicality of prediction markets or crowdsourcing technologies might suggest. CI also taps into people's hearts. In fact, greater attention is increasingly paid to the role that emotions, positive or negative, play in politics and diplomacy, and whether they are generating the right type of energy for reflection and collaboration among individuals and groups.

This is of course relevant at all levels of governance. It is, for instance, a central consideration in Stéphanie Tawa-Lama's case of the *jan sunwai* in India, in Knut Bergmann's story of Helmut Kohl's diplomatic skills, or in the Open European Dialogues. At international and lower governance levels, "conflict transformation and peacebuilding," note Isabel Bramsen and Poul Poder in the *Emotional Dynamics in Conflict and Conflict Transformation* handbook,

> comprise processes of shifting anger, resentment and disillusion towards more productive emotional states such as trust, hope and forgiveness. Practices of transitional and restorative justice mostly focus on the role of negative emotions like shame, guilt and anger. Although they are essential to peacebuilding processes in post-violence societies, positive emotional dynamics should also be addressed, since **hope and forgiveness** are quintessential for a sustainable peace process.
>
> *(Bramsen & Poder 2018)*

As CI studies stress the importance of cognitive diversity, one might hope that the collaboration between different parties and nations across borders may, due to enhanced diversity, help solve public problems more effectively. Recent research has however indicated that the link between demographic and cultural creativity on the one hand, and creativity on the other hand, is far from straightforward (see, for instance, McLeod, 1996). A key factor is

whether groups involved are willing to appreciate their differences. Whereas, indeed, it has been shown that **ethnic diversity** and generally group diversity can enhance group-level creativity, this effect seems to be moderated by having prosimilarity versus prodiversity beliefs and by the willingness to take the perspective of the other group members (Keith Simonton, 1997). We know from research that "groups that value the differences of its members, rather than their similarities, perform more effectively on a group creativity task, regardless of the actual level of diversity that is present in the group," as management researcher Sun-young Kim (2014) posits. A key factor, according to Kim, is that "valuing group diversity reduces negative emotion in groups, allowing these groups to be more creative." More generally, emotions, values, and cultural bias perceptions greatly affect the ability to foster CI. Relations across nations can thus be particularly affected by **negative affective reactions**, which refer to the formation of a common in-group identity. This is also what the Opean European Dialogue, in particular, seeks to address. Only under the right conditions therefore – i.e. with the right mindset, fostered by the right facilitation methods – may ethnic diversity produce tangible, positive effects. The "diversity bonus" which Scott Page (2017) insists upon therefore requires specific care and skills at international level. This is where well-honed facilitation or mediation skills, as seen in the UNLEASH labs, the IPCC and the Open European Dialogue, are essential.

Holistic and systems thinking

Seeing beyond one's interests, technocratic silos, or borders and dealing with the world's complexity is imperative for anyone committed to bringing public solutions that will last and be accepted by others. Again, this is relevant at all governance levels. However, the higher one goes up the governance ladder, the greater, possibly, is the number of actors involved and the more complex are their interlinkages.

One of the dominating themes in the conceptualization of post-Cold-War international politics has been the prevalence of **massive uncertainty**. Some analysts have therefore proposed that the study of international relations should be informed by **complexity theory**, which proposes heuristic devices that both challenge conventional wisdom and provoke analytical imaginations. Seeing the whole picture requires thinking differently. Systems thinking in particular is a process that studies complex things and phenomena as a whole – as "systems." It seeks to understand how different components' relationships within a system affect the qualities and behavior of the whole.

Thinking systemically also involves linking individual experience and global problems. Thomas Malone, founder of the MIT's Center for Collective Intelligence, recalls in his book *Superminds: The Surprising Power of People and Computers Thinking Together,* how in the Climate CoLab initiative,[2] which invites individuals to "collaborate with people all over the world to win contests on what to do about climate change," his team was

> inspired by the supply webs for physical products to create contest webs for our knowledge products. These contest webs let us create a kind of supply chain for knowledge in which different groups of people choose for themselves whether they want to work on solving specialized subproblems related to climate change or integrating solutions for these subproblems into overall climate action plans at the national and global levels.
>
> *(Malone, 2018)*

All the cases in this section exemplify the promise that collaborative and co-intelligence processes hold for seeing the bigger picture on a global scale.

New agenda: A world government of assemblies?

Efforts to cultivate CI at the international level are the continuation of efforts at other governance levels. Geoff Mulgan thus invites us to think of CI through the prism of **assemblies**, which are best understood as different elements co-evolving with their environment. Mulgan (2018) suggests:

> Assemblies bring together many elements of collective intelligence into a single system. They show how the world could think on a truly global scale, tracking such things as outbreaks of disease or the state of the world's environments, and feeding back into action.

Assemblies that "allow the world to think in a novel way" need to combine different elements to

> work well, and serve a whole system (...): rich sources of observation and data; models that can make predictions; capacities to interpret and analyze; abilities to create and innovate in response to new problems and opportunities; a structured memory, including of what's worked in the past; and a link into action and learning that's aligned with how people really behave. The test of these elements, when linked up, is then whether they help a whole system think and act more effectively.
>
> *(Mulgan 2018, p. 28)*

As the IPCC, the Open European Dialogue, predictive markets, the UNLEASH Innovation Labs, or the 22 African change-makers illustrates,

> Assemblies are in part technical designs, but they only become useful if they connect to action, which requires them to be sophisticated about behaviors, cultures, and organizational norms, all of which may be more taxing than the design of sensing systems and algorithms.
>
> *(Mulgan 2018, p. 29)*

The cases you are about to read hint at new, promising directions in international governance, with much yet to explore and understand to enable truly collaborative management of global commons.

Notes

1 Harvard developmental psychologist Howard Gardner proposed that there are eight types of intelligence (visual-spatial; linguistic-verbal; interpersonal; intrapersonal; logical-mathematical; musical; bodily-kinesthetic; and naturalistic), with the possible addition of a ninth known which he called "existentialist intelligence." This theory has been criticized for being too broad and representing no more than talents, personality traits, and abilities, without sufficiently supporting empirical research. It is however popular among educators and facilitators.
2 Climate CoLab: www.climatecolab.org.

References

Arai, T. (2009). *Creativity and Conflict Resolution: Alternative Pathways to Peace*. Routledge.

Arkes, H. R., & Blumer, C. (1985). "The psychology of sunk costs." *Organizational Behavior and Human Decision Processes*, 35:124–140.

Bramsen, I., & Poul, Poder (2018). "Emotional dynamics in conflict and conflict transformation." *Berghof Handbook for Conflict Transformation*. Online Edition. Berlin: Berghof Foundation. https://berghof-foundation.org/files/publications/bramsen_poder_handbook.pdf, accessed January 3, 2022.

Cornut, J. (2018). "Diplomacy, agency, and the logic of improvisation and virtuosity in practice." *European Journal of International Relations*, 24(3):712–736. doi:10.1177/1354066117725156

Feeny, David, et al. (1990). "The tragedy of the commons: Twenty-two years later." *Human Ecology,* 18(1):1–19.

Galtung, J. (1971). "A structural theory of imperialism." *Journal of Peace Research,* 8(2): 81–117.

Galtung, J. (2000). Conflictual Transformation by Peaceful Means (The Transcend Method), United Nations.

Gardner, H. (2011). *Frames of Mind: The Theory of Multiple Intelligences* (3rd edn.). Basic Books (first published 1983).

Hardin, R., & Cullity, Garrett (1968). "The tragedy of the commons." *Science,* 162(3859):1243–1248.

Hardin, R., & Cullity, Garrett (2020). "The free rider problem." In Edward N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2020 Edition) https://plato.stanford.edu/archives/win2020/entries/free-rider/.

Hopkins, R. (2020). *From What Is to What If: Unleashing the Power of Imagination to Create the Future We Want*. Chelsea Green Publishing.

Kahn, A. E. (1966). "The tyranny of small decisions: market failures, imperfections and the limits of economics." *BioScience*, 32(9):728–729.

Kim, S. (2014). "Valuing Group Diversity Fosters Creativity for Individuals and Groups." Northwestern University ProQuest Dissertations Publishing.

Malone, T. (2018). *Superminds: The Surprising Power of People and Computers Thinking Together*. Princeton University Press.

McLeod, Poppy; Lobel, Sharon; & Cox, Taylor (1996). "Ethnic diversity and creativity in small groups." *Small Group Research* 2(27).

Mulgan, G. (2018). *Big Mind: How Collective Intelligence Can Change Our World*. Princeton University Press.

Odum, W.E. (1982). "Environmental degradation and the tyranny of small decisions." *BioScience*, 32(9):728–729.

Olson, M. (1965). *The Logic of Collective Action*. Harvard University Press.

Page, S. (2017). *The Diversity Bonus: How Great Teams Pay Off in the Knowledge Economy*, Princeton University Press.

Simonton, D.K. (1997). "Foreign influence and national achievement: The impact of open milieus on Japanese civilization." *Journal of Personality and Social Psychology*, 72.

Shapiro, I., *The real world of democratic theory.* Princeton University Press.

Sunstein, C.R. (2002). "Conformity and dissent." John M. Olin Program in Law and Economics Working Paper No.164.

Torbert, B. & Associates (2004). *Action Inquiry - The Secret of Timely and Transforming Leadership*. Berrett-Koehler Publishers.

Tuck, R. (2008). *Free Riding*. Harvard University Press.

Underhill G. (2015). "The emerging post-crisis financial architecture: The path-dependency of ideational adverse selection." *The British Journal of Politics and International Relations,* 17(3):461–493. doi:10.1111/1467-856X.12056

Wells, H.G. (1945). *The Mind at the End of Its Tether*. London: Heinemann.

31
UNLOCKING THE COLLABORATIVE POTENTIAL OF NATIONAL PARLIAMENTS

The Open European Dialogue

Verena Ringler and Chiara Rosselli

The story

In the early teens of the 21st century, two of the European Union's (EU) member states engaged in an epic year-long clash over money. Leading politicians in Germany and Greece disputed the future of the Greek economy. Headlines in German newspapers castigated the recklessly spending Greeks, whereas headlines in Greek newspapers admonished the relentlessly austere Germans.

During this period of tension, one of the authors of this chapter worked with the Italian Institute of International Affairs (IAI) in Rome, and the other one oversaw the Europe program at Stiftung Mercator, a private foundation advancing Europe's cohesion at home and its role in the world. In the fall of 2013, the team convened a meeting to probe the demand for a new kind of program, a partly self-managed platform for exchange and projects among national members of parliament (MPs) in different EU countries. In 2014, the German Marshall Fund of the United States (GMFUS) was approached and invited to lead a project consortium of half-a-dozen think tanks – some with informal ties to parties, most of them independent – from different countries to develop and refine the "Mercator European Dialogue," since 2021 called "Open European Dialogue."

The consortium set out to identify the most urgent and transformative arenas of engagement in the detrimental North–South divide within the EU – embodied in the clash between Greece and Germany, but extending to many other contexts as well. The German–Greek financial dispute suggested to some observers that national parliaments in the EU were a promising yet overlooked arena to harness collective intelligence on Europe-wide policies. After all, members of the German Bundestag had to decide about billions of taxpayers' money to bail out a foreign country, while their Greek counterparts found themselves dependent and ostensibly devoid of sovereign choices.

Missing collective intelligence infrastructure for national lawmakers in the EU

The foundation and its think tank partners contacted MPs both in Berlin and in Athens, asking them what kind of approach could help them better navigate the dispute and mitigate the probable long-term bilateral damage that seemed imminent at the time. The politicians' answers were simple: "We need one or two mobile phone numbers of colleagues in the other country, who we could call up the night before a big debate or decision day in our parliament." The initiating consortium was surprised – less by the need for informal opportunities to consult across borders, but rather by the lack of any mechanism or program that would offer such a safe space for exchanging ideas and building trust among MPs across the EU.

Meanwhile, the initiators had counted a total of roughly 10,000 national parliamentarians throughout Europe and began mapping existing opportunities for contact and cooperation among national legislatures, for instance, via their European Affairs Committees. These opportunities were more limited than they had anticipated: the main player in this space was the Conference of Parliamentary Committees for Union Affairs of Parliaments of the European Union (COSAC), which brought together Members of the European Parliament (MEPs) and selected national MPs. However, COSAC had several perceived shortcomings. Due to its soft mandate, official nature, traditional approach, and limited mission, it does not encourage or enable cross-border dialogue, much less the opportunity to explore policy innovation across countries. The lack of a cross-border cooperation space for national lawmakers was all the more striking considering the fact that national parliaments *are* responsible for key elements of EU legislation and for the democratic control of the heads of government, who act as primary policymakers in the European Council. Also, the absence of such mechanisms highlighted a strategic and long-term gap. As Hakan Altinay (2017) states, "The gap between the conversations we *do* have and those we *can* have is greater than the gap between the governance schemes we have and those we ought to have. If we close the conversation gap, a profoundly feasible goal, we may discover that several challenges (…) become more manageable."

Creating a safe space for parliamentarians to think together

The consortium concluded that members of national parliaments, who arguably act as key "transmission belts" between European voters and EU policymaking, had never enjoyed a dedicated space for networking and trust-building outside the rigid, protocol-driven EU negotiating tables. What they were asking for was a space to listen and learn from each other, and ultimately to find new ways of cooperating on policies that impacted them all. Eventually the consortium hosted their first two-day plenary with roughly 25 members of different national parliaments in 2015 in Berlin, the first in a series of larger and smaller encounters and activities.[1]

State-of-the-art dialogue: Listening before speaking

In these meetings of national MPs, the design challenge was to harness the whole spectrum of systems-transformation techniques from the fields of leadership and management, innovation studies, and conflict mediation. It was agreed that network events should operate largely without panels and PowerPoint presentations and without "stars" commanding the stage. Listening and learning would not just be the approach and process, but also the attitude

and habit of these encounters. Every voice would be of equal importance. Hence, inductive processes and iterative conversations in small groups would be the road toward conclusions—all key design principles for unleashing the power of collective intelligence.

One methodology that turned a room of politicians – many of them natural leaders with a strong presence in the room, keen on speaking rather than listening – into empathic dialogue partners, was a technique we, the authors, borrowed from Imago Relationship Therapy. Developed by Dr. Harville Hendrix and Dr. Helen LaKelly Hunt in 1980, Imago focuses on relational counseling to transform conflict into opportunities for healing and growth. Of course, in our case, we applied Imago to dialogues between representatives of countries and not to couples; based on the strong emotions and potential for conflict on these policy issues, this relationship-focused approach was seen as particularly relevant. Parties agree to a basic ground rule: to talk to one person at a time. This, in turn, enables a possibly transformative conversation through the steps of dialogue, mirroring, validation, and empathy (Reichlin, no date; Bohm, 2014; Isaacs, 1999).

Another methodology used was the Futures Toolkit: scenarios, visioning, and value creation modeling. When asked to vividly imagine the traits of a desired future in Europe, and then backcast from this imagined future scenario to the here and now, even experienced politicians grasped the benefits of proactive visioning exercises that direct their attention toward future consequences and desired outcomes of choices made today. They realized the potential of a network of lawmakers communicating, even sparring across borders. They conceived the richness in thinking about big policy questions in a room filled with people with very different perspectives, political priorities, and cultural backgrounds.

From 2015 onward, the program took off like a rocket. Motivation, commitment, and enthusiasm have been consistently high among the participating MPs as well as the project consortium. Take the fact-finding journey to Lesvos in March 2016. A dozen MPs from Estonia, Slovakia, Greece, the Netherlands, Italy, Germany, and Spain traveled to the Greek island to examine this hotspot of the European migration crisis. The group visited camps and met with local and EU authorities, coastguards, FRONTEX and UNHCR officials, volunteers and refugees, and a network supporting unaccompanied refugee minors. In less than 24 hours, this small medley of MPs with very different views not only downloaded impressions, they also changed attitudes and in some cases their policy positions as well.

Several participating MPs acknowledged that the visit had profoundly altered their viewpoints about the European refugee situation. Comments ranged from "I have to report back home that we've got it all wrong" to "The Greeks are being heroic and we too must do our part." According to participants, leaving their desks back home and looking with their own eyes was game-changing, as were the personal, unembellished conversations in particular with Coastguard representatives and Greek parliamentarians.

Over the past years, such stories have continued to emerge. "This program made me meet colleagues from other political perspectives," recalls one MP in an evaluation interview. Another observes: "Some issues are differently seen in different countries. This widens your horizon, you might even change your mind." Other participants praise the program as "a platform to discuss issues in a way you usually don't discuss matters in your own country or political context," or, "a place for an intellectually broader discussion. For me, that helps in national politics."[2] According to the OED documentation, this program to meet and exchange views far away from home has enabled numerous MPs to reach out to domestic political rivals on thorny issues as well as deepening cooperation with colleagues across national borders (Ringler, 2020, p. 54).

By 2021, the Open European Dialogue has developed into the EU's first cross-party, cross-border informal network of elected politicians, a neutral organization with the aim of helping European politicians better understand different political challenges and perspectives from across the continent, connecting European policymakers across parties, mentalities, and nations, while providing them with an informal but much-needed space for dialogue. Whether they meet live or via videoconference, MPs talk *with* each other rather than *about* each other in ways that challenge national stereotypes and open new possibilities.

What science tells us

Trust-building and safe-space convening are key. In politics, as in other areas of human interaction, empathy, mindfulness, and trust enable more effective and efficient long-term results. The ability to pay attention to others' thoughts and feelings without judging them is essential. This assertion – easily discarded as a truism – contrasts sharply with our common understanding of political life. We receive images of elected representatives bickering rather than bending calmly over a document. We assume that in politics, also in the supranationally built EU, confrontation trumps collaboration, and, to use Otto Scharmer and Katrin Kaufer's distinction (2013), "ego" – behavior is rewarded more than "eco" –behavior, in the sense of ecosystems thinking.

While trust as a psychological phenomenon was first developed and applied to international politics by Deborah Welch Larson in the late 1990s (analyzing US/Soviet relations during the Cold War), the science of trust has not yet gained prominence in EU studies, let alone targeted research on national MPs as participants in a cross-border, confrontation-oriented paradigm.

Jan Ruzicka and Vincent Charles Keating state in their illuminating 2015 review on the body of literature on the subject of trust in international relations:

> Until about a decade ago, international relations scholarship by and large overlooked trust as an explanatory factor in the relations between states. Likewise, trusting relationships rarely feature as something to be explained, irrespective of the numerous calls from practitioners regarding the importance of trust-building.
>
> *(Ruzicka and Keating, 2015, p. 2)*

A growing number of scholars acknowledge that psychological predispositions and emotions of actors take a prominent role and must be investigated with regard to the formation and maintenance of trust between individuals acting on the international stage.

While the offer to foster trust-building between a group of several hundred MPs across the EU might have been rather new to the EU's group of national legislatures, the advantages of "safe spaces" or "backchannel talks" had been appreciated, applied, and fine-tuned for centuries in the world of diplomacy. The importance of communication in privacy is even reflected in the term "diplomacy," which is based on the ancient Greek diplōma, "an object folded in two." The object described the practice of sovereigns providing a folded document to confer some sort of official privilege. What this etymology hints at is the critical importance of trust and personal connections between participants needed to enable the collective thinking of MPs from different countries. Building this space for trust-building and collective reflection and exchange is precisely the purpose of the Open European Dialogue.

Looking at recent history, almost all breakthrough narratives in international relations required a safe space held for a certain duration. Whether the launch of the Schuman plan in

1950, the signature of the Dayton agreement on Bosnia in 1995, or the Iran Nuclear Deal and Paris Climate Agreement of 2015, international relations have functioned at their best when parties can communicate with each other in an environment of mutual trust for an appropriate length of time. Only under such circumstances can parties forge their path toward common ground without external disturbance or disruption. "Empathy and dialogue are critical to building collective ownership of the framing," underline Angela Wilkinson and Betty Sue Flowers (2018, p. 12). While many of the MPs in this new program have grown up in a world of 24–7 social and instant media penetration and have learned to act under the pressure of constant public attention, they hugely appreciate exchanges with colleagues and peers in spaces and places that are far away from the buzz of politics and the media beat.

Do's and don'ts

The Open European Dialogue has achieved its principal goals for national MPs – including turning collective wrath in the Greek bailout crisis into collective intelligence – through a purpose-driven process and carefully designed methods of dialogue and exchange. Informed by an understanding of cognitive science and human behavior, the OED program creates a tailored process for each of the exchanges it organizes. Its key aim is to enable trust by deepening the quality of dialogue and active listening among actors with diverse, even contrary views who would otherwise be less likely to engage constructively with one another. We found that this requires attending to the following three key conditions:

1. **Communicate process, purpose, and principles clearly from the start. The key word is "ownership."** Interested MPs are provided with sustained funding, capacity support, and an enabling managerial and organizational backbone team in Berlin with no political affiliation. They have been invited to suggest destinations for fact-finding missions, ask for expert briefings, realize joint media products, campaigns, or public presentations. The condition for this has been participants' ownership over this new space. These rules of engagement were new to most participating MPs in the beginning. They were used to highly constrained or even adversarial professional relations. Co-ownership by MPs has also proven essential to ensure demand-driven programming as well as visioning and innovation beyond existing legislative and national political frameworks.

2. **Focus on dialogue and trust-building, and let participants do the rest.** The Open European Dialogue space is strictly non-prescriptive and explorative in design. The scholar and political convener Hakan Altinay muses:

   "Good conversations render participants as peers, and mitigate hierarchies. There is often a humility in good conversations, as they are predicated on curiosity, not knowing everything, and an eagerness to listen and to hear. That constellation of good faith, curiosity, and humility may be the most under celebrated of our civic temperaments.

   (Altinay, 2017)

   This requires ceding control of the agenda and of outcomes and embracing the role of facilitators as guides rather than dispensers of truths. The intellectual honesty and the radical openness towards the outcomes in a certain setting or session matters hugely to participating MPs. This also requires not engaging in forced consensus-building. Rather,

it is key to maintain a rich diversity of voices throughout, even when this requires more listening and time. This principle works to ensure genuine discussion and engagement of all points of view rather than silencing dissenting voices or papering over important differences. If trust-building and dialogue are the purpose of exchange, the focus should be on allowing such an outcome to be achieved on its own terms. Participants should be shielded from other factors or competing objectives.

3. **Prioritize the journey over the destination.** Contemporary politics as well as typical project funding cycles tend to insist on fast, tangible, measurable outcomes. However, mutual respect, understanding, and trust can only grow in conditions where participants feel safe to say what they really think, without external pressure or artificial constraints. Networks of trust and understanding are "nurtured in quiet" and deliver in public when the moment is ripe. This idea of the journey as a goal in itself is central to the design of this meeting space for national MPs in the EU, which has been built by participants and their organizational enablers, widened and deepened, one MP and one theme at a time.

Notes

1 The consortium contacted national MPs and their offices, to invite their – voluntary – participation. Usually, they got permission by their party caucus to participate.
2 Quotes by Andreas Schröer and Richard Händel: Evaluation Report on the Mercator European Dialogue. Internal report for Mercator Foundation, Darmstadt: University of Applied Sciences EH Darmstadt and IZGS, Institut für Zukunftsfragen der Gesundheits- und Sozialwirtschaft der EHD, July 2016.

References

Altinay, H. (2017). 'A treasure in plain sight: The premise and the promise of a good conversation', *Global Policy Journal*, 25 January. Available at: www.globalpolicyjournal.com/blog/25/01/2017/treasure-plain-sight-premise-and-promise-good-conversation (Accessed 5 December 2021).

Bohm, D. (2014). *On dialogue: 2nd edition*. Routledge.

Hendrix, H. and Lakelly Hunt, H. (no date). 'What is imago relationship therapy', What is imago?. Available at: https://harvilleandhelen.com/initiatives/what-is-imago (Accessed 5 December 2021).

Isaacs, W. (1999). *Dialogue and the art of thinking together*. Currency.

Marks, S. and Freeman, C.W. (2020). 'Diplomacy', *Encyclopedia Britannica*. Available at: www.britannica.com/topic/diplomacy (Accessed 5 December 2021).

Mayer, M., Ringler, V. and Wilkinson, A. (2014). 'Collaborative futures - Integrating foresight with design in large-scale innovation processes: Seeing and Seeding the Futures of Europe', *Journal of Future Studies*, 18(4), pp. 1–26.

Reichlin, B.J. (no date). 'Imago dialogue: The basic steps', Imagoworks. Available at: http://imagoworks.com/the-imago-dialogue/steps/ (Accessed 5 December 2021).

Ringler, V. (2020). *The glue that holds relationships together: Trust*. Trilogue Salzburg 2020 Background Paper. Gütersloh: Bertelsmann Stiftung, pp. 47–64.

Ruzicka, J. and Keating, V.C. (2015). 'Going global: Trust research and international relations', *Journal of Trust Research* 5(1), pp. 8–26.

Scharmer, O. and Kaufer, K. (2013). *Leading from the emerging future: Ego-system to eco-system economies*. Oakland: Berret-Koehler.

Wilkinson, A. and Flowers, B.S. (2018). *Facing global challenges*. Amsterdam: Amsterdam University Press.

CROWD FORECASTING INFECTIOUS DISEASE OUTBREAKS

Emile Servan-Schreiber and Camille Larmanou

The story

On March 5, 2020, the world was still awakening to the threat of the coronavirus disease 2019 (COVID-19) outbreak. It would be another week before the World Health Organization would declare it a pandemic. In the United States, only 12 people had died of the disease, but a thousand times more would die over the next month alone.

In Washington, DC, the US House of Representatives' Committee on Science, Space and Technology was holding hearings on "Coronaviruses: Understanding the Spread of Infectious Diseases and Mobilizing Innovative Solutions". Dr. Tara Kirk Sell, a Senior Scholar at the Johns Hopkins Center for Health Security, began her testimony: "*Traditional disease surveillance is critical during infectious disease outbreaks. However this information can be enhanced with tools to support decision-making. One such tool is crowd forecasting*" (Sell et al. 2021).

But what is crowd forecasting? Dr. Sell explained: "*Crowd forecasting consolidates the diverse opinions of many into hard probabilities. This is helpful in gauging the most likely outcome, and also for understanding the uncertainty about that outcome.*"

Accurate and early prediction of outbreaks helps public health practitioners and policymakers protect the public with better-managed responses, planning, and communications. But forecasting infectious disease outbreaks is a complex challenge. It depends not only on the characteristics of the viruses themselves, and their novel mutations, but also on people's interactions, and in turn their reactions to public health policies.

To deal with a multitude of variables, unknown unknowns, and lack of relevant data, statistical modelers make different assumptions to model the future: what factors matter, and how much? How will people behave? Which mathematical approach should be used behind the scenes? To produce its COVID-19 mortality forecast just four weeks ahead, the U.S. government's Centers for Disease Control and Prevention (CDC) averages no less than 20 statistical models making different, sometimes irreconcilable assumptions.

But then, Dr. Sell and her research team tried something different. They partnered with our group at Hypermind – a leading operator of prediction markets since 2000 – to develop and test a novel crowd-sourced disease prediction platform. The idea was to harness the wisdom of crowds rather than computing power; collective intelligence in place of statistical wizardry. On this platform, they could operate a contest where hundreds of volunteers made

predictions about a variety of infectious disease outbreaks around the world. It was the largest experiment of its kind ever attempted. But would it work?

Over the course of 15 months, starting in January 2019, we organized a prediction contest in which we asked participants to predict the severity of outbreaks for 19 infectious diseases including dengue, influenza, cholera, Ebola, measles, etc., and eventually COVID-19. We posed 61 questions with a total of 217 possible answers, of which only 61 would come true.

For example, at the beginning of the COVID-19 epidemic, when its severity was still uncertain and it had not yet been classified as a pandemic, we asked: "How many WHO member states will report more than 1,000 confirmed cases of COVID-19 before April 2020?," and there were four possible answers: "Less than 15," "16 to 30," "31 to 45," or "more than 45." Participants were asked to provide probabilities for each answer.

The Johns Hopkins team recruited a diverse crowd of knowledgeable participants through its own professional networks and via specialized newsletters: public health experts, medical professionals, epidemiologists, modelers, veterinarians, risk assessment experts, vector control officials, microbiologists, individuals with on-the-ground understanding of conditions surrounding disease outbreaks, and graduate students. In total, 70% of the 562 volunteers indicated that they had some form of professional medical background. Another 23% were skilled prediction traders recruited and vetted by Hypermind over several years of participation in its geopolitical and business prediction market. By no means public health experts, these Hypermind forecasters had been betting for years on the probabilities of various events ranging from election outcomes to policy, military conflicts, and gross domestic product.

We measured the average prediction error of each forecaster over all questions. For this we used a standard method for computing the error of a probability forecast (Brier, 1950). Figure 32.1 shows the results. In the graph, every dot represents one forecaster. The higher a dot is, the worse the forecaster's predictions are.

Most participants tend to cluster around the same level of error, which happens to be the same as "blind chance": it is what you would expect from the proverbial dart-throwing monkey picking answers at random. Although most participants were medical professionals, only very few of them produced substantially better forecasts than a monkey, and many did much worse.

Interestingly, the Hypermind volunteers, who overwhelmingly brought no medical expertise to the table, performed no worse than the medical and public health professionals recruited by Johns Hopkins. For instance, among the top ten forecasters in the contest's final leaderboard, four were public health professionals, three had some other health-related professional background, and three were Hypermind skilled forecasters who did not report any health-related professional background. Both kinds of expertise, be it in infectious diseases or in forecasting, seemed to enable equivalent performance.

The fact that the overwhelming majority of individuals were weak forecasters may simply reflect the difficulty of the disease prediction challenge. It involves a multitude of intertwined factors – people's fickle behavior, politics, armed conflict, travel habits, weather, virus mutations, availability, and timeliness of surveillance data – which influence each other, charting complex outbreak courses. It is not particularly surprising that even experts lack the data or expertise necessary to make smart guesses.

But collective intelligence saves the day. Figure 32.1 shows that simply averaging individual forecasts produced aggregate crowd forecasts that outperformed all but six participants, or 99%. When enhanced by a few intuitive statistical transformations, the crowd forecasts
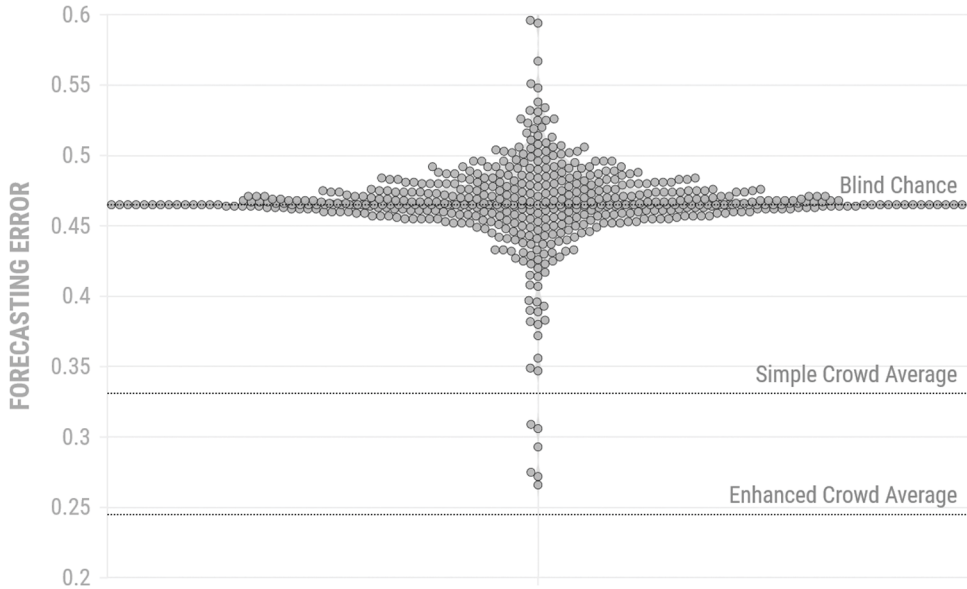
Figure 32.1   Individual forecasters versus the crowd.

Note: Each of the 562 dots plots the average prediction error of an individual forecaster over all questions in the infectious disease forecasting contest. The lowest dots indicate the best forecasters, while the highest dots indicate the worst. Average forecasts of various sophistication outperformed most or all individuals.

beat even the best forecaster in the crowd. As illustrated in Figure 32.2, the outcome prob‑abilities forecasted by the crowd were also well "calibrated," in the sense that they were closely correlated with the actual outcome frequencies in the real world: about 20% of all outcomes forecasted with 20% probability did occur, while 80% of all outcomes forecasted with probability 80% did occur, and so on at every level of probability.

"*On most occasions,*" concluded Dr. Sell in her testimony to Congress, "*crowd forecasts provided accurate predictions about three weeks ahead of time.*"

Three weeks during an epidemic outbreak is almost a lifetime, as all of us who lived through multiple waves of COVID-19 can testify. For example, it took less than three weeks for the Omicron variant of the coronavirus, first reported in South Africa in November 2021, to overtake the previous infectious champion Delta… half a world away in London! Accurate and early forecasting of the new variant's explosive contagiousness helped countless governments and individuals better prepare to face a fourth pandemic wave.

The science

By what mathematical magic can a smart collective judgment emerge from the combination of many flawed individual judgments? The central idea is that everyone's guesswork contains both information and error. When the judgments are offered independently, without unduly influencing each other, they are flawed in different ways. The pieces of information are naturally correlated while the errors are uncorrelated, so that, when combined, the pieces of information complement each other, while the errors cancel each other out (Galton, 1907). For instance, someone may overestimate an outbreak's severity, while another may
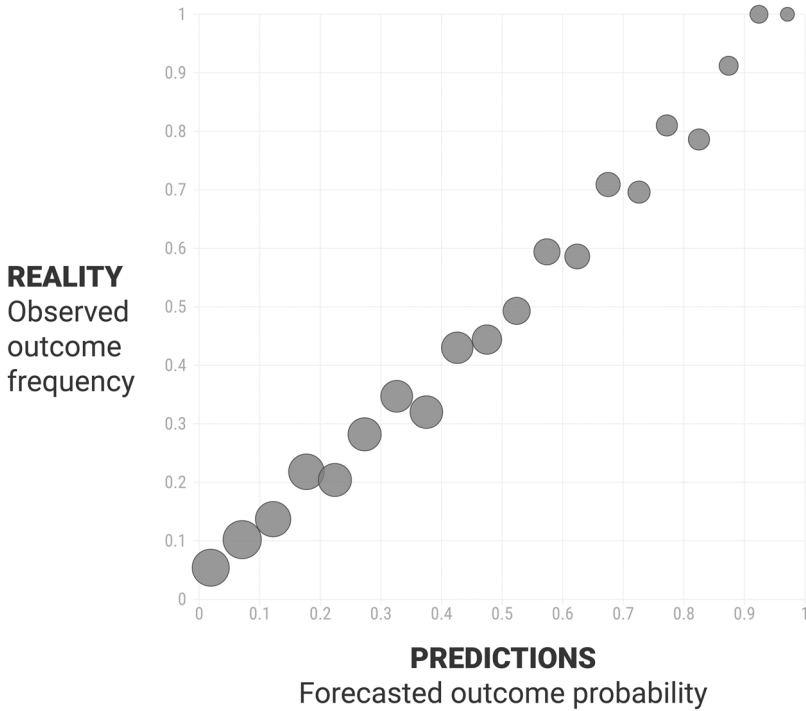
Figure 32.2 Crowd predictions versus reality.

Note: Each dot answers the question: "What fraction of all outcomes forecasted with probability *p* did occur?" The size of each dot indicates the relative number of unique outcomes forecasted at this level of probability. Accurate probabilities should align closely to the diagonal line.

underestimate it by the same amount. The combined estimation would then be closer to the truth than either one.

The mathematical formula that powers the wisdom of crowds is known as the "Diversity Theorem," discovered by the American sociologist Scott Page (2007). It is as simple as it is profound: collective error equals average individual error, minus the diversity of the estimates.

Collective Error = Average Individual Error − Diversity of Estimates

$$(Group - Truth)^2 \; = \; \frac{1}{N} * \sum_{i=1}^{N} (individual_i - Truth)^2 \; - \; \frac{1}{N} * \sum_{i=1}^{N} (individual_i - Group)^2$$

In other words, the size of a group's error decreases when individual errors are smaller – that's obvious – but it also decreases when different people make different mistakes. That's the diversity term in the equation. Because of the minus sign in front of this diversity term, the more people disagree, the smarter the group becomes (provided that the average individual

error remains about the same). That's why a diversity of opinions, which implies a diversity of errors that can cancel each other out, is so important to collective intelligence.

You can understand this formula as simply stating that a group's collective intelligence depends *as much* on diverse opinions as on individual expertise. Expertise and diversity are complementary and interchangeable. If most people aren't experts, you can compensate by seeking a higher diversity of opinions. Or if everyone thinks alike, then they'd better be very knowledgeable.

In our case, we injected both diversity, by recruiting hundreds of participants from different backgrounds, and expertise, by targeting participants who were either skilled forecasters or medical professionals.

As mentioned earlier, we further enhanced the collective forecast by use of a four-step aggregation algorithm that embodied some common-sense ideas:

1. *Weighting*: Individual forecasts were weighted, with greater weight given to forecasters who updated their predictions frequently and who had a better past record of accuracy. Initially everyone is weighted equally, but individual differences in behavior and performance progressively emerge as forecasting questions are settled throughout the contest.
2. *Culling*: The pool of individual forecasts was then reduced so that only the 30% most recent forecasts – likely the most informed – were retained for aggregation, while the others were ignored.
3. *Averaging*: The weighted forecasts were then averaged.
4. *Extremizing*: Finally, the resulting forecast was sharpened, or exaggerated, to compensate for collective under-confidence (Baron et al., 2014): outcome probabilities were nudged toward 0% or 100% depending on which side of *1/n* they fell, where *n* is the number of alternative outcomes.

This algorithm was first developed and tested between 2011 and 2015 by the Good Judgment Project, a multi-year research program initiated by the Intelligence Advanced Research Projects Activity, the research arm of the U.S. government's intelligence community (Atanasov et al., 2016). The aim of the project was to "dramatically enhance the accuracy, precision, and timeliness of intelligence forecasts for a broad range of geopolitical events, through the development of advanced techniques that elicit, weigh, and combine the judgments of many intelligence analysts." Although the resulting aggregation algorithm was developed in a geopolitical context, it proved just as powerful and relevant for crowd-forecasting disease outbreaks.

Do's and don'ts

"Probability estimation, applied to the life of nations, is the foundation of all high politics," wrote the great 19th century French journalist Emile de Girardin. "Depending on whether the estimations are rigorous or faulty, thorough or neglected, politics is glorious or disastrous, great or small... To govern is to forecast!" (Girardin, 1852).

This case study in predicting public health outcomes demonstrates that those who govern public policy would be well advised to heed probabilistic crowd forecasts. Individual "domain experts" were generally underwhelming at predicting the course of viral epidemics. But a crowd offering a diverse set of expertise was reliably astute.

Specifically, we would recommend that:

- Public policy decisions should be informed by probability forecasts obtained by consolidating the guesswork of a large crowd engaged in prediction contests.
- The crowd should be composed of volunteers with incentives to compete to make their best personal forecasts.
- If expertise is lacking, which it often is when facing a novel situation (such as a new disease), then go big on diversity to compensate.
- The crowd should be fed with as much timely and quality data as possible. If data is not easily available or is widely dispersed, then adjust the recruitment strategy to attract more participants close to the relevant events on the ground.
- The personal forecasts should be aggregated into crowd forecasts using best-practice algorithms that go beyond simple averaging, such as the one described above.
- Crowd forecasts should be used to complement, not replace, legacy forecasting methods. Diversity also rules when combining methods into ensembles: each method, whether crowd-based or model-based, provides a complementary point of view on a complex forecasting problem.
- Individual forecasting accuracy scores should be used to provide objective feedback to the participants and help them learn from mistakes.
- Individual forecasting accuracy over many questions should be the only criteria used for identifying trustworthy forecasters; not charisma, storytelling prowess, job titles, or diplomas.

References

Atanasov P, Rescober P, Stone E, Swift SA, Servan-Schreiber E, Tetlock P, Ungar, L, & Mellers, B (2016) *Distilling the wisdom of crowds: Prediction markets vs. prediction polls. Management Science*, 63(3). https://doi.org/10.1287/mnsc.2015.2374

Baron J, Mellers BA, Tetlock PE, Stone E, & Ungar LH (2014) Two reasons to make aggregated probability forecasts more extreme. *Decision Analysis*, 11(2).

Brier GW (1950) Verification of forecasts expressed in terms of probability. *Monthly Weather Review*, 78(1).

Galton F (1907) *Vox Populi. Nature*, 75.

Girardin E (1852) *La Politique universelle, décrets de l'avenir*. Muquardt.

Page, S (2007) *The Difference: How the power of diversity creates better groups, firms, schools, and societies*. Princeton University Press.

Sell TK, Warmbrod KL, Watson C, Trotochaud M, Martin E, Ravi SJ, Balick M, & Servan-Schreiber E (2021) *Using prediction polling to harness collective intelligence for disease forecasting. BMC Public Health*, 21, 2132. https://doi.org/10.1186/s12889-021-12083-y

MOBILIZING COLLECTIVE INTELLIGENCE AND DIVERSITY TOWARD SUSTAINABLE DEVELOPMENT GOALS

From global innovation labs to collective intelligence assemblies for sustainable development

Catherine Jacquet and Mamello Thinyane

The story

The aspirations of the United Nations 2030 global development agenda are rooted in the understanding that achieving the 17 Sustainable Development Goals (SDGs) is only possible through partnerships among different stakeholders across society and at a global scale. The very conceptualization of SDGs, and in particular SDG17 ("Partnerships for the Goals"), thrusts collaborative and participatory approaches at the center of achieving sustainable development. This was aptly recognized and noted by Antonio Guterres, the United Nations Secretary General:

> To deliver on the promise of a prosperous and peaceful future, development actors will have to find new ways of working together and leveraging genuine partnerships that make the most of expertise, technology and resources for sustainable and inclusive growth.[1]

As a North star for developed and developing nations alike, strategies for achieving the SDGs will emanate from all corners of the globe, including from the least developed countries (LDCs). For example, the wisdom of the Mbororo pastoralist community in Chad (one of the LDCs) in fighting climate change is informing solutions in other parts of the world, including offering new approaches to weather forecasting systems.[2]

With less than a decade until 2030, the biggest challenge for the global community is unleashing collective intelligence capabilities and harnessing the resources, insights, and wisdom of the global community to meet these ambitious goals. While there are pockets and clusters of effective collective intelligence making progress on specific SDGs, these are not yet coordinated and institutionalized.

UNLEASH,[3] an initiative established in Denmark in 2016, is one of these efforts that aims to harness the creativity, energy, and diversity of young people and the expertise of innovation and domain specialists from around the world toward addressing the SDGs. Every year, the main event is an innovation lab that gathers more than 1,000 young "talents" to design concrete solutions for the SDGs and to reinforce capacities for innovation in their communities. During the coronavirus disease 2019 (COVID-19) pandemic UNLEASH Innovation Lab has been virtualized and reshaped into localized mini-hackathons.

UNLEASH Innovation Labs were designed as a global platform proposing an ever-expanding catalog of solutions open to all. It seeks to foster a collaborative state of mind through a rigorous method of team innovation, where collective intelligence is built around reflections in which several structures and stakeholders have participated. The aim of this lab is for the participating "talents" to come up with an idea for a commitment on an SDG-related theme that can quickly be translated into tangible solutions. The principle is to collectively define a precise value proposition to society by bringing together diverse perspectives on a common problem.

The theory of change that gave rise to UNLEASH recognizes that the principal strength of the United Nations system is also its greatest potential weakness. Founded in the wake of a world war that pitted nations against one another, the architects of the UN created a new order of governance that, nearly eight decades later, remains the principal arena in which disputes are negotiated and, through the agencies, common causes are advanced. Yet the singular strength of this system – its ability to knit together a global community of nation-states – incorporated the weaknesses of the nation-state system as well. Men, the wealthy, and the internationally educated are disproportionately represented in the governing classes of these nations. Since nations are the governing unit of the UN system, these imbalances are manifest in global policies that by definition cannot challenge the power structures of their "sovereign members."[4]

UNLEASH creates an alternate model of collective intelligence that can be seen as a re-balancing of this dynamic. Rather than taking national policymakers as the principal actors in the race to achieve the SDGs, UNLEASH puts the focus on young people with no "official status." The creative talents of young people, by nature the least assimilated into the prejudices and blind spots of established society, are at the heart of the UNLEASH process. The rigorous innovation methodology employed in the UNLEASH labs is designed to assist young people in stitching together new collaborations based on ideas for better health (SDG3), gender equality (SDG5), or zero hunger (SDG2), among others. These collaborations are not antithetical to the sovereign state; rather, by empowering fresh ideas and community-level action, UNLEASH opens an alternate space for intelligence that could cause state-level actors to rethink what is possible and bring promising new approaches to scale.

During the UNLEASH Lab in Shenzhen in 2019, where the authors participated as facilitators, teams of four to six talents were grouped based on diversity of gender, issues of interest, backgrounds, and geography and subsequently brought together into clusters of teams focused on specific SDGs. Participants bring a range of experiences and skills to the table; some have extensive experience in social advocacy and movement-building, while others specialize in entrepreneurship and market-based approaches.

Each team would be guided by facilitators through a series of "gates" or passages through steps of defining a problem and developing possible solutions. The first day launched the "forming phase" (Tuckman 1965) in the life of the team. The four to six members of each team collaboratively set the goals and norms by drawing up a team charter and discussing the leadership and decision-making principles that suited their needs.

Thereafter, the teams embarked on the "problem-framing phase." In this phase, one of the steps required is to write down the *insight,* defined within UNLEASH as "a friction, dilemma or contradiction that is either a reason why a challenge still exists or a primary barrier to adoption of solutions that could address or mitigate a challenge." The goal is not to enumerate facts; rather, the teams are asked to identify a persistent tension that must be addressed in order to fashion a better world. The *why* of the problem is the key. Once the insight is defined in this way (i.e., that a particular problem persists because of a specific set of factors that can be changed), the team goes deeper into problem-framing, using tools to map the stakeholders affected by the problem and understand their perspectives and needs.

The ingenuity of this stage is to force teams to confront the barriers of language and culture and overcome them; the collective introspection that is required to frame the problem also brings each team member to articulate why they are there, and what problems matter most to them. By enacting their own ground rules, the teams create a psychologically secure space in which the most sensitive social issues can be raised – and diverse stories shared – without making any single perspective the "authoritative" view (Edmondson 1999). Further, the structured problem-framing approach helps the teams avoid the trap of solutionism, that is, leading with solutions instead of investing time to better understand the problem (Morozov 2013). We observed that the solutionist temptation was especially strong with the "young entrepreneurs" on our teams, but that the group's diversity of backgrounds helped temper this tendency and maintain focus on defining the problem first.

Upon approval from the gatekeepers (i.e., the lead facilitator and one or two other facilitators or experts designed by the UNLEASH organizers), the ideation phase begins. The *insight* chosen by the team becomes the heart of their week-long collaboration through the phases of testing, prototyping, and deployment. The teams prepare a journey map, a solution canvas, sketches of three ideas, an analysis of values and complexity, and the development of one idea in a theory-of-change framework describing the immediate outputs, intermediate outcomes and long-term impacts expected by the team (see Funnell and Rogers 2011).

The journey traveled by each team is often surprising. One of the groups that we facilitated expressed an initial concern to "leave no one behind" in sustainable development. This initial concern blossomed in a series of iterations.

Their brainstorms took them from identifying the challenges faced by handicapped people in finding work, to the need to improve citizen education on primary health care, and to redistributing food from supermarkets to deal with food waste. They grappled with the challenges of formulating a problem that would conceivably be solvable within the principles of the UNLEASH innovation methodology.

Ultimately, they decided to focus on the process of inclusion itself, and in particular, the manner in which development projects fail to account for the opinions and preferences of local communities. With careful detail, they called into question the Western norms embedded in the development programs they had witnessed, and the subsequent biases of the policies that emerged from them. By the end of the UNLEASH Lab, they had arrived upon a prototype solution: a platform for responsible codesign with the potential to transform the development sector in order to work better with local communities. The journey of this

team was a case study in meta-cognition, the facilitated thought processes through which a group can call into question its own patterns of thought.

While respecting the constraints of the UNLEASH process, this team's reflection went further, concluding that we need to listen better, to unlearn in order to collaborate better and be accountable for the results. They both called for, and themselves practiced, the enhanced collective intelligence needed for sustainable development.

Results

The Lab we facilitated in Shenzhen produced solution ideas for eight SDGs: good health (3), education (4), clean water (6), clean energy (7), infrastructure innovation (9), sustainable cities and communities (11), responsible consumption and production (12), and climate action (13).

By the end of the week, many ideas had taken concrete form, including a sound-absorbing system to reduce noise pollution in Asian megacities; a low-tech, low-cost solution to prevent neonatal asphyxia in Nigeria; a self-cooling school uniform to improve student comfort, and thus raise attendance rates, in Pakistan; and an innovative process to mitigate open defecation in rural India.

These solutions, selected by the UNLEASH expert panel, were each rewarded with a grant to fund initial deployment of their prototype. The solution ideas of all participating teams would be included in the "UNLEASH Catalog" of projects with contact information to enable the young talents to develop their ideas further or join up with other teams. This newly created network of young and creative minds is itself one of the principal outcomes of the UNLEASH Lab process.

A phase of acceleration ("UNLEASH+") was introduced in 2019 to "accelerate ideas into real solutions by inviting top teams to a 6-month program with tailored mentoring, knowledge access, and a special program at UNLEASH." While just a few of the solutions proposed at UNLEASH labs have completed the incubation process, either at UNLEASH+ or external incubators, the network of potential funders and partners continues to grow.[5]

What science tells us

The synergy of ideas is a fundamental expression of collective intelligence. By combining diverse perspectives on a problem, putting diverse cognitive skills to work, and learning as a group, ideas emerge that can be attributed not to any individual, but rather to the group as a whole (Klein, 2012). Idea synergy is not an automatic process, nor can it be scripted in advance. The art of facilitation is to create processes for what the scientist David Bohm (2004) calls "participatory thought" – that is, a framework for collective thinking in which each member both contributes to and benefits from the store of common ideas. In this sense, successful problem-solving or knowledge creation processes must find a balance between setting the structures necessary to align group attention, and allowing space for the unpredictable flashes of insight from which new ideas are born (Berditchevskaia and Baeck, 2020).

But who decides how this balance will be struck? Who defines the rules and allocates the resources that can favor or undermine the synergy of ideas?

From our experience, the UNLEASH Lab illustrates both the transformative potential of a guided innovation process as well as the power dynamics that can limit its effectiveness. Here we can apply the "CI genome framework" of MIT Center for Collective Intelligence

founder Tom Malone to unpack the elements of the UNLEASH innovation program and better understand the group dynamics at play (Malone et al. 2010).

The CI genome framework provides a simple analytical framework for demystifying the "black box" of collective cognition and for identifying the building blocks that contribute to the effectiveness of an open innovation process. These building blocks are framed around four questions: "*What is being done?,*" "*Who is doing it,*?" "*Why are they doing it*?," and "*How is it being done*?" Each answer to one of these questions comprises a "gene" that is expressed in the quality or manner of a group's collective thinking – for example, a group organized in a top-down manner is seen as bearing a *hierarchy* gene that will reliably affect how that group makes its decisions.

The UNLEASH CI genome can be considered from two distinct angles, one is that of the overall UNLEASH program and the other is that of the individual teams (see Table 33.1). At the overall program level, the main "*What is being done?*" genome is expressed in the creation of the UNLEASH program and the innovation methodology that is adopted by the talents. UNLEASH also generates a collection of ideas and innovations, out of which a few are selected by the organizers as the "winners" across the various streams and categories, what in this framework would be called the *contest* gene.

We see too that several aspects of decision-making within the overall UNLEASH program are structured *hierarchically*. For example, it is the organizing team that selects the young talents, facilitators, and advisory experts, evaluates the teams' progress, and selects the "winning" innovations. While there are invariably financial sustainability and profitability considerations (associated with the *money* gene), one of the strong motivations for UNLEASH and for participation in the program is the passion to contribute to sustainable development and, for some, to be recognized for their contributions (i.e., the *love* and *glory* genes).

If the *hierarchy* gene is dominant in the strategic decisions of the UNLEASH program, the thrust of the work in the Labs takes place within small teams that, from their inception, are structured *collaboratively*. From defining the problem to imagining and prototyping solutions, group interactions are governed by egalitarian principles; the facilitator is meant to guide without imposing, and each group member has an equal say. If it is the *hierarchical* gene that influences how resources and participants are aggregated, therefore, it is the *collaborative* gene of the teams that determines whether the Lab produces something of value.

But as we have seen, the collaborative environment created within the Lab can open a space for teams to question the hierarchical structures that instituted and control it.

Why should facilitators and UNLEASH organizers have the power to decide on their progress? This exact question was raised by a team we facilitated. In their view, the balance between hierarchy and collaboration, between structure and autonomy, had favored the former over the latter. While grateful for the opportunity to participate, and recognizing the challenges of organizing a thousand participants from 160 countries, the team nevertheless bristled at being told on the one hand to work collaboratively while their work was judged by "experts" they had neither designated nor could overrule. They wanted a more inclusive, participatory, and transformative innovation process. They wanted UNLEASH to practice better what it preached.

Casting this scenario through a power lens clearly highlights the exercise of "power over" the talents by the organizers and the facilitators, which in the case of this particular team constrained their "power to" freely innovate (Berger, 2005). These tensions are to be expected, perhaps, given the varied responsibilities and investments into the UNLEASH program by its stakeholders. We might also say that in this case, the team was agitating for

Table 33.1 Collective Intelligence "genome mapping" for UNLEASH

Situation	What		Who	Why	How
UNLEASH program	Create	• UNLEASH program • Innovation approach • SDG innovations	Crowd Hierarchy: *UNLEASH Organizers*	Love Glory Money	Collection – Contest, Hierarchy
	Decide	• Who are the participants? • Which are the best innovations? • Progression through gates	Hierarchy: *UNLEASH Organizers,* *Facilitators*	Love Glory	Hierarchy
Individual UNLEASH Lab teams	Create	• Specific SDG innovation	Crowd	Love Glory Money	Collaboration
	Decide	• Problem framing • Ideation decisions	Crowd	Love Glory	Consensus

an increased expression of the *collaboration* and the *consensus* genes within the "create" and "decide" genomes of the overall UNLEASH program; and that better communication of expectations between organizers and participants could make these power dynamics a subject of the group's thinking as well.

Our abiding impression of these young talents was that their focus was not on obtaining status, finally, but rather on practicing a new mentality that can transform society. What if the only way to achieve the Sustainable Development Goals was through a new form of distributed leadership or "communityship," where the group takes collective responsibility and exerts collective control (Mintzberg 2009)?

Do's and don'ts

The innovation lab experiment of UNLEASH highlights the following key lessons that can inform collective intelligence assemblies for sustainable development:

- **Don't "manage" complexity, diversity, and conflict – embrace them**. The innovation teams we facilitated at UNLEASH brought together diverse talents passionate about sustainable development. The inevitable tension that emerges from these heterogeneous settings should be seen not as a problem to be managed but a creative force to be harnessed. What seem like disagreements can actually be complementary perspectives from which a new insight is born. These settings, where conflict is agonistic rather than antagonistic, can provide a conducive environment to catalyze novel solutions that recognize, for example, how an inclusive urban space in Brazil can be both inspired by, and necessarily different from, a similar space in Hong Kong.
- **Empathy from a distance isn't enough.** Our experience with the UNLEASH Lab showed the limitations of innovation that is driven from the top down. The most powerful insights that emerged were not from empathy alone, but rather from the range of personal connections to the issues being faced on the ground. This lesson has aptly been articulated by Lilla Watson, "*If you have come here to help me, you are wasting your time; but if you have come because your liberation is bound up with mine, then let us work together.*"
- **Innovation proves itself in collective action**. On reflecting on the experience as UNLEASH facilitators, we realized that, in fact, the important factors for success in innovating for sustainable development must be related to grassroots collective actions, the resilience of the Global South, and the creation of new commons (Ostrom et al. 1999). It is necessary to create new tools and approaches grounded in the transformative participation of local communities and in connecting grassroots volunteers together into a collective cause. It is also important to forge new pathways that challenge the traditional North/South power dynamic and introduce South-to-South connections.
- **Composing smart teams is a science and an art**. During UNLEASH all the teams go through the group *forming* phase to define goals and norms. Teams typically then enter a *storming* phase where frictions, tensions, and conflicts arise. As the teams realize their mutual interdependence and common destiny, and as they employ the conflict resolution and innovation process tools, they progress to the group *norming* and ultimately *performing* phases. Throughout this process several tools can be employed to aid the teams through the phases; however, it also takes spontaneity, creativity, and serendipity.

Notes

1 Repositioning the UN development system to deliver on the 2030 Agenda – Ensuring a Better Future for All. www.un.org/ecosoc/sites/www.un.org.ecosoc/files/files/en/qcpr/sg-report-on-unds-qcpr-june-2017.pdf.
2 "We Know How to Keep the Balance of Nature. Why Including Indigenous People Is Vital to Solving Climate Change." https://time.com/5686184/indigenous-lesson-climate-change/.
3 UNLEASH – A global innovation program for the SDGs. https://unleash.org/.
4 To illustrate the point, the word "democracy" does not appear a single time in the SDGs. Rather, SDG16 refers to "Peace, Justice, and Strong Institutions".
5 For a full list, see https://unleash.org/partners/.

References

Berditchevskaia, A. and Baeck, P. (2020). "The future of minds and machines – How artificial intelligence can enhance collective intelligence." *Nesta*, available at www.nesta.org.uk/report/future-minds-and-machines/

Berger, B. K. (2005). "Power over, power with, and power to relations: Critical reflections on public relations, the dominant coalition, and activism." *Journal of Public Relations Research*, 17(1), 5–8. doi: 10.1207/s1532754xjprr1701_3

Bohm, D. (2004). *On dialogue*. Routledge, Taylor and Francis Group.

Edmondson, A. (1999). "Psychological safety and learning behavior in work teams." *Administrative Science Quarterly*, 44(2), 350–383.

Evans, P. (2002). "Collective capabilities, culture, and Amartya Sen's development as freedom." *Studies in Comparative International Development*, 37(2), 54–60.

Funnell, S. C. and Rogers, P. J. (2011). *Purposeful program theory: Effective use of theories of change and logic models* (Vol. 31). John Wiley & Sons.

Ibrahim, S. (2017). "How to build collective capabilities: The 3C-model for grassroots-led development." *Journal of Human Development and Capabilities*, 18(2), 197–222.

Klein, M. (2012). "Enabling large-scale deliberation using attention-mediation metrics." *Computer Supported Cooperative Work (CSCW)*, 21(4), 449–473.

Malone, T. W., Laubacher, R., and Dellarocas, C. (2010). "The collective intelligence genome." *MIT Sloan Management Review*, 51(3), 21.

Mintzberg, H. (2009). "Rebuilding companies as communities." *Harvard Business Review*, 87(7/8), 140–143.

Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. Public Affairs.

Mouffe, C. (2014). Democratic politics and conflict: An agonistic approach. Political power reconsidered: State power and civic activism between legitimacy and violence, 17–29.

Ostrom, E., Burger, J., Field, C. B., Norgaard, R. B., and Policansky, D. (1999). Revisiting the commons: Local lessons, global challenges. *Science*, 284(5412), 278–282.

Sen, A. K. (1999). *Development as freedom*. Oxford: Oxford University Press.

Tuckman, B. W. (1965). "Developmental sequence in small groups." *Psychological Bulletin*, 63(6), 384.

Wenman, M. (2013). Agonism and the problem of antagonism: Chantal Mouffe. In *Agonistic democracy: Constituent power in the era of globalisation* (pp. 180–217). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511777158.009

BRIDGING SCIENCE AND DIPLOMACY TO BUILD A UNIVERSAL AGREEMENT ON THE SCIENCE OF CLIMATE CHANGE

The Intergovernmental Panel on Climate Change

Kari De Pryck

The story

One of the most complex intergovernmental expert organizations

The IPCC has been producing and synthesizing scientific knowledge for the public for more than 30 years. The quality and international recognition of its assessment reports (ARs) and special reports (SRs) has made the Intergovernmental Panel on Climate Change (IPCC) an exemplar of the interface between scientists and international policymakers. In 2007, the IPCC was awarded the Nobel Peace Prize jointly with former US Vice President Al Gore for "their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change".[1] Its impact is such that, after every new global crisis or threat that appears on the public agenda (pandemics, food insecurity, artificial intelligence, endocrine disruptors, etc.), calls are made in their wake to establish IPCC-like institutions. In 2012, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), also known as the "IPCC for biodiversity", was created, incorporating several of the features of the IPCC. As democratic theorist Hélène Landemore (2020) has argued, such "global collective action problems" require our creativity in redesigning public institutions, so that dispersed information and diverse perspectives can more efficiently be harnessed to tackle humanity's most complex problems.

Peeking behind the curtain, how is the IPCC organized and what makes it so authoritative as a bridge between the scientific and political arenas? The French sociologist and philosopher of science Bruno Latour has characterized the IPCC as an "epistemological monster" (cited in Dahan Dalmenico, 2011, p. 71). As a matter of fact, since 1988, the organization has brought together thousands of experts from different disciplines and countries to

assess the scientific knowledge about climate change, measure its impact, and discuss solution portfolios. It is to date the biggest effort of this kind. While serving as an IPCC author is voluntary, the IPCC brings together some of the world's leading experts in the field, driven by a desire to be useful for society and the prestige that comes with it. Formally under the auspices of the World Meteorological Organisation (WMO) and the United Nations Environmental Programme (UNEP), the IPCC also convenes representatives from governments, and, to a lesser extent, from civil society and the private sector as observer organizations. The IPCC therefore can be said to serve as a "climate parliament" (again a Latourian metaphor) where experts deliberate about climate change and its consequences for humanity.

While none of these representatives is directly elected by citizens, the organization serves as an interface where a wide range of actors enter in dialogue with one another, explore this crisis from different epistemic, cultural, and (geo)political perspectives, and attempt to forge a consensus that can satisfy them all. The IPCC thus taps into two complementary sources of authority and legitimacy: the UN system and the international scientific community.

At the same time, the history of the organization suggests that the coexistence of these two sources of intelligence has not always been smooth. The IPCC was born out of a political compromise between international organizations charged with the global environment (UNEP and WMO) and the USA, which wanted to keep scientific advice under control. In the following decades, the US fossil industry also heavily financed climate denialism to undermine the scientific consensus and delay action (Oreskes and Conway, 2010). In the IPCC, representatives of fossil fuel industries worked closely with the US and Saudi delegations to highlight "uncertainties" that purportedly remained regarding human-caused climate change (Leggett, 2001). In 2009, factual errors were identified in the Fourth Assessment Report (AR4) and publicized, with scant regard for the proportion or context of these errors, by actors seeking to undermine the IPCC's reputation for political reasons. The organization came under criticism for its poor handling of the situation and was compelled to initiate reforms in an effort to regain its reputation (Beck, 2012). Consequently, the IPCC established a protocol for addressing potential errors, introduced new procedures, and developed a communication strategy.

While some actors have tried to undermine the IPCC, others have heavily drawn on its work to push for more ambitious climate action. For instance, the publication in 2018 of the Special Report on Global Warming of 1.5 °C (SR15) supported a worldwide mobilization of the youth movement, urging policymakers to "listen to the scientists".[2] Between 2018 and 2021, several millions of people participated in climate strikes across over 150 countries. These put significant pressure on governments worldwide to take climate change seriously (Han and Ahn, 2020).

This small introduction to the science and politics of the IPCC illustrates the challenging task that was assigned to the organization, as well as the scrutiny it is exposed to. We thus may ask, how does the IPCC work as a hybrid organization and what can be learned from social studies of the IPCC?

What science tells us

The IPCC: A social, human, and political endeavor

One of the most important determinants of collective intelligence in a group is the cognitive diversity of its members (Hong and Page, 2004; Page, 2007). For Scott Page and Lu Hong, the power of diverse forms of thinking, while highly correlated with identity diversity (such

as gender, ethnicity, and language), is derived from combining different ways of encoding problems (perspective diversity) and applying frameworks which suggest possible solutions (heuristic diversity). The IPCC is one of the most complex interdisciplinary experiments, bringing together the work of climate modelers, ecologists, economists, policy analysts, etc. Not all epistemologies and viewpoints are, however, equally represented in the process. The organization has been dominated by research institutions situated in the Global North, and in particular in Anglophone countries (Ho-Lem et al., 2011). It is also dominated by natural scientists, and within social sciences, by economists (Bjurström and Polk, 2011; Corbera et al., 2016). Finally, a serious gender imbalance in its authorship is also visible (Gay-Antaki and Liverman, 2018). Despite efforts to broaden its scope, the IPCC still struggles to engage with a more diverse range of epistemological and ontological viewpoints (e.g., from indigenous people, practitioners, and critical social scientists) (Ford et al., 2012).

Social scientists tell us that endeavors like those carried out by the IPCC are social and human processes that are steeped in complexity. Diverse epistemologies, nationalities, and personalities may converge into a common framework or fail to do so. The IPCC is thus emblematic of the challenges of an intricate collaboration on a highly charged issue where impacts and recommendations must be negotiated across disciplinary, linguistic, and political divides, including a range of inputs from observer organizations and external reviewers (Hughes, 2015; Livingston et al., 2018).

The IPCC has developed over time a sophisticated set of procedures to guide its work, from the definition of the reports' outlines to the organization of a twofold review process and the line-by-line approval of the reports' Summaries for Policymakers (SPMs).[3] It has also developed numerous guidelines to help authors assess the level of uncertainty of each statement and respond to review comments. At the same time, the process leaves them much freedom in assessing the available literature, distinguishing between diverse claims and making expert judgments, notably through techniques of expert elicitation or more informal processes. This kind of "discernment" is central to assessment writing yet challenging to formalize (Oppenheimer et al., 2019).

IPCC findings are thus the imperfect result of a multifaceted process of gathering, selecting, and synthesizing knowledge that entails deliberate choices about which literature to include or exclude, which key messages to affirm in the reports' SPMs, and how strongly these messages should be formulated. For instance, authors may disagree about how to best convey the severity and urgency of the climate problem without sounding too alarmist and fueling defeatism and hopelessness.

The most read documents, the SPMs, are subject to intense scrutiny and submitted to a line-by-line approval process by government representatives (De Pryck, 2021). Such a process, aimed at creating governmental ownership of the reports, is political and needs to reflect the multiple, and sometimes inconsistent perspectives of the member states of the IPCC. While the negotiations may render statements clearer or more policy-relevant, they can also lead, when perceived too contentious or prescriptive, to "least-common denominator generalities" (Vardy et al., 2017, p. 59) and ambiguous statements. Participants, for example, remember instances where quantified information on impacts or references to specific regions were replaced by vague determiners – as in *few* impacts or *some* regions.

The empanelment process and the strive for consensus that underpin IPCC assessments shape the way climate change is framed and communicated. The organization has been sometimes criticized for presenting a "view from nowhere" and promoting a universal and nonpolitical framing of climate change, downplaying the multiple and sometimes conflicting ways societies around the world experience it and envision its solutions (Hulme, 2021; Borie

et al., 2021). Such global framing tends to favor technological fixes over more profound transformative changes in the way we produce, consume, and redistribute wealth (Beck and Mahony, 2018). For instance, in SR15, the IPCC, while stressing the impacts that could be avoided by limiting global warming to 1.5 °C compared to 2 °C, also conditioned the achievement of such a target to the large-scale deployment of afforestation activities and bioenergy with carbon capture and storage (BECCS), two options which technical and social feasibility is uncertain.

Social scientists finally tell us that IPCC reports, once published, are not used and interpreted the same way (Jasanoff, 2011). Depending on the context, they also do not have the same legitimacy. While some governments use those reports as "usable knowledge" to guide the definition of climate policies (e.g., European countries), others see them with distrust because they do not represent their perspectives well (e.g., India, Saudi Arabia, and at times the United States). The United States, Russia, Kuwait, and Saudi Arabia, for instance, opposed in 2018 welcoming the publication of SR15 in the United Nations Framework Convention on Climate Change (UNFCCC), instead asking to simply "take note" of the report.

Do's and don'ts

The case of the IPCC shows the potential that intergovernmental expert organizations have as spaces for the co-production of knowledge, ideas, and practices between state and non-state actors. Not only do they provide useful information to policymakers, but their assessment increasingly provides leverage for civil society to hold governments accountable. Yet, judging from the IPCC's own successes and failures, similarly situated public institutions would be wise to:

- **Aim for greater geographic, intergenerational, and gender balance** in the authorship of global environmental assessments, and make special efforts to include voices that are less often heard.
- **Engage with a wide range of epistemologies and ontologies** to broaden the range of perspectives and challenge underlying assumptions behind the scientific data. This means intentionally engaging, and potentially giving more power to, civil society, citizens, and marginalized communities in the analysis and presentation of these assessments.
- **Recognize the asymmetries** in the way assessments are produced and negotiated between experts (between, e.g., researchers from the natural and the social sciences), between experts and governments (experts have the last word only to the extent governments let them have it), and among governments (some of whom have far more resources and bargaining power than others).
- **Evaluate whether consensus is the appropriate principle for decision-making**. When stakes are high and worldviews are conflicting, it may be better to "agree on disagreements" and clearly call out differing perspectives than to achieve consensus at the lowest common denominator. This may require stakeholders to rethink the current paradigm in international diplomacy of agreements that command the widest possible support.

Though an impressive instance of collective intelligence at the global scale, IPCC will not "save the planet" as some have suggested.[4] As history and social science have demonstrated, very few complex societal issues are caused by a simple deficit of scientific knowledge and even fewer have been solved simply by presenting good science to the public. Thirty years

of IPCC assessments have brought greater attention to the climate crisis, but have they significantly shifted its trajectory? Greenhouse gas emissions keep steadily rising while policy commitments and political action are still lagging behind. Climate change is a deeply complex political, cultural, economic, and social issue. A scientific consensus alone won't solve it unless such consensus is carried forward, as Landemore argues, by new democratic institutions, methods, and movements of transformative action.

Acknowledgment

Notes

1 www.un.org/en/about-us/nobel-peace-prize/ipcc-al-gore-2007 (accessed October 24, 2021).
2 www.theguardian.com/us-news/2019/sep/18/greta-thunberg-testimony-congress-climate-change-action (accessed October 24, 2021).
3 The IPCC assessment process is explained in greater detailed here: www.ipcc.ch/about/preparing reports/ (accessed February 7, 2022).
4 https://becauseipcc.thesuccession.ca/; https://group.bnpparibas/actualite/giec-sauvera-t-il-planete (accessed October 24, 2021).

References

Beck, S. (2012). 'Between tribalism and trust: The IPCC under the "Public Microscope"', *Nature and Culture*, 7(2), pp. 151–173.

Beck, S. and Mahony, M. (2018). 'The politics of anticipation: The IPCC and the negative emissions technologies experience', *Global Sustainability*, 1, pp. 1–8.

Bjurström, A. and Polk, M. (2011). 'Physical and economic bias in climate change research: A scientometric study of IPCC Third Assessment Report', *Climatic Change*, 108(1), pp. 1–22.

Borie, M. et al. (2021). 'Knowing like a global expert organization: Comparative insights from the IPCC and IPBES', *Global Environmental Change*, 68, p. 102261.

Corbera, E. et al. (2016) 'Patterns of authorship in the IPCC Working Group III report', *Nature Climate Change*, 6(1), pp. 94–99.

Dahan-Dalmedico, A. (2008). 'Climate expertise: between scientific credibility and geopolitical imperatives', *Interdisciplinary Science Reviews*, 33(1), pp. 71–81.

De Pryck, K. (2021). 'Intergovernmental expert consensus in the making: The case of the Summary for Policy Makers of the IPCC 2014 Synthesis Report', *Global Environmental Politics*, 21(1), pp. 108–129.

Ford, J. D., Vanderbilt, W. and Berrang-Ford, L. (2012) 'Authorship in IPCC AR5 and its implications for content: Climate change and Indigenous populations in WGII', *Climatic Change*, 113(2), pp. 201–213.

Gay-Antaki, M. and Liverman, D. (2018). 'Climate for women in climate science: Women scientists and the intergovernmental panel on climate change', *Proceedings of the National Academy of Sciences of the United States of America*, 115(9), pp. 2060–2065.

Han, H., and Ahn, S. W. (2020). 'Youth mobilization to stop global climate change: Narratives and impact'. *Sustainability*, 12(10), pp. 1–23.

Ho-Lem, C., Zerriffi, H., and Kandlikar, M. (2011). 'Who participates in the Intergovernmental Panel on Climate Change and why: A quantitative assessment of the national representation of authors in the Intergovernmental Panel on Climate Change', *Global Environmental Change*. 21(4), pp. 1308–1317.

Hong, L. and Page, S. (2004). 'Groups of diverse problem solvers can outperform groups of high-ability problem solvers', *Proceedings of the National Academy of Sciences of the United States of America*, 101(46). 16385–16389.

Hughes, H. (2015). 'Bourdieu and the IPCC's symbolic power', *Global Environmental Politics*, 15(4), pp. 85–104.

Hulme, M. (2021) *Climate Change: Key Ideas in Geography*. Abingdon-on-Thames: Routledge.

Jasanoff, S. (2011). Cosmopolitan knowledge: Climate science and global civic epistemology. In: *The Oxford handbook of climate change and society*, John S. Dryzek, Richard B. Norgaard, David Schlosberg (eds.). Oxford University Press.

Landemore, H. (2020). *Open democracy: Reinventing popular rule for the twenty-first century*. Princeton, NJ: Princeton University Press.

Leggett, J. (2001) *The carbon war*. Londres: Routledge.

Livingston, J. E., Lövbrand, E., and Johanna Alkan, O. (2018) 'From climates multiple to climate singular: Maintaining policy-relevance in the IPCC synthesis report', *Environmental Science and Policy*, 90, pp. 83–90.

Oppenheimer, M. et al. (2019). *Discerning experts. The practices of scientific assessment for environmental policy*. Chicago, IL: The University of Chicago Press.

Oreskes, N. and Conway, E. M. (2010). *Merchants of doubt*. New York: Bloomsbury Publishing.

Page, S. (2007). *The difference: How the power of diversity creates better groups, firms, schools, and societies*. Princeton, NJ: Princeton University Press.

Vardy, M. et al. (2017). 'The Intergovernmental Panel on Climate Change: Challenges and Opportunities', *The Annual Review of Environment and Resources*, 42, pp. 55–75.

35

NURTURING THE RIGHT CONTEXT FOR FRUITFUL DIALOGUE

The case of Helmut Kohl's "gastrosophy"

Knut Bergmann

The story

> I loved him. Hillary said I loved him because he was the only person with a bigger appetite for food than I have. He came to Washington so much he once took me to his favorite restaurant in the capital of my country – Filomena – it is still there and I recommend it to you.

Those two sentences were a central part of the obituary that former U.S. President Bill Clinton delivered for former German Chancellor Helmut Kohl at the "European Ceremony of Honour" in Strasbourg on July 1, 2017 (Clinton 2017, p. 9). And Clinton was not the only politician to refer to Kohl's culinary habits, or rather his skills in gastronomic diplomacy, in his tribute.

Helmut Kohl believed that relationships of trust were fundamental to international politics, and that eating and drinking together was a critical tool in building that trust. Food was one way to build bridges through a sharing of identity. He invited many foreign guests to his homeland, the Palatinate of southwest Germany, and treated them to regional specialties. With these trips, which always meant an excursion into his biography, Kohl was not only able to establish closeness to many of his colleagues, but he also used them to illustrate political claims.

Even beyond these excursions, the chancellor cultivated friendships with this mixture of homeland ties and culinary delights: He had a crate of home-made sausage and wine sent to French President François Mitterrand at Christmas, and a crate of wheat beer sent weekly to Yitzhak Rabin via the embassy. The Israeli prime minister had become acquainted with this drink at a dinner given by the chancellor.

This form of hospitality was much ridiculed in Germany, especially by journalists. It all seemed pretty bourgeois, provincial – as many observers failed to realize that in large parts the Federal Republic corresponded exactly to this. For intellectuals, the celebrated love of one's homeland, which went through Kohl's stomach, was downright unbearable. They

mocked the "rule of the stomach over the head," failing to recognize how beneficial this form of diplomacy was. An outstanding example of this is that Mikhail Gorbachev proposed to Helmut Kohl at a dinner in the "Deidesheimer Hof" that they should henceforth be on a first-name basis. The last General Secretary of the Communist Party of the Soviet Union had become a close political friend of Helmut Kohl and a staunch supporter of German reunification, even though Kohl had compared him to Nazi propaganda minister Joseph Goebbels in an interview a few years earlier.

In addition to Gorbachev, Kohl dined in the "Deidesheimer Hof" with his successor, Boris Yeltsin, French Presidents François Mitterrand and Jacques Chirac, US President George Bush Sr. and British Prime Minister Margaret Thatcher and her successor, John Major. Staff members of the Chancellor classified such an invitation as a "special honor." In addition to the visit to Deidesheim, the program usually included a visit to Speyer Cathedral, which, in Helmut Kohl's own words, had been his "Hauskirche" (home church) since childhood.

Margaret Thatcher, for example, completed such a program in April 1989, which she and her foreign policy advisor Charles Powell recall in their memoirs. Here, the joint meal is explicitly mentioned once, although the visit was not crowned with political success – the political positions were too far apart, the personal antipathy was too great, and in addition the meal did not correspond to the British woman's preferences. However, although Thatcher was said to be uninterested in the pleasures of life – except work – she was aware of the effect of eating together. In her memoirs, the Prime Minister writes with regard to her team in No 10 Downing Street, with whom she wrote her speeches together: "Shepherd's pie and a glass of wine can do a great deal to improve morale" (Thatcher 1995, p. 302).

In his "Memories," Kohl described the negotiations leading up to the meeting as a "laborious business" and Thatcher as a politician who had given him "many a headache" (Kohl 2005, pp. 781, 59). For, while Germany favored the European Community and urged the superpowers to hold disarmament talks, Britain blocked all of the chancellor's efforts: "My impression was that Margaret Thatcher basically had only her country's interests in mind on all the issues we discussed and hardly reacted to the sensitivities of other countries," (Kohl 2005, p. 871) Kohl later noted.

Thatcher wrote in her memoirs that during the visit to Speyer Cathedral, the chancellor took her foreign policy adviser Charles Powell aside and explained to him, that now I had seen him on his home ground, on the borders of France, surely I would understand that he – Helmut Kohl – was as much European as German." Although the prime minister did not share the conclusion, she expressed sympathy for Kohl's attitude. Beforehand in Deidesheim, the mood had been amicable: "It was jolly, quaint, sentimental and slightly overdone – *gemütlich* is, I think, the German word." Also worth remembering for the prime minister was the meal consisting of potato soup, *Saumagen* (pig's stomach, "which the German Chancellor clearly enjoyed"), sausages, liver dumplings and sauerkraut (Thatcher 1995, pp. 747–748). Her adviser Powell later commented that Thatcher's appetite had mysteriously dwindled, while Kohl had taken second helpings several times. Powell, who had promised Kohl at the cathedral to do his best to convey the latter's views to his boss, saw that mission fail the moment Thatcher sighed immediately after boarding the plane for the return flight, "My God, that man is so German" (Powell 2000, pp. 40–41). Kohl's "Saumagen diplomacy" – a term that has actually found its way into the German language – was thus not crowned with success toward all guests. However, one could ironically add: Even Margret Thatcher had realized that gastronomical elements could be used to illustrate the country's origins. However, if the political positions are as far apart as in the case described, they cannot be bridged even with the most sophisticated form of culinary diplomacy. It certainly does not

go too far to state that Thatcher simply did not want to approach Kohl – and therefore put everything into a begrudging perspective. She "also recalled with displeasure the 'filthy sweet wine' she received as a present" (Moore 2019, p. 133).

With many other politicians, the Chancellor had succeeded in building up trust in a short time. Even the weekly magazine *Der Spiegel*, which was downright hostile toward him, acknowledged in its obituary that Kohl, with his "Saumagen diplomacy," had "seemingly effortlessly established a connection with numerous powerful people in world politics."

What science tells us

"If we look at any historian, from the time of Herodotus up to our own days, it will be seen that, without even excepting conspiracies, no great event ever took place that was not previously concocted, planned, and determined upon at a banquet," wrote French food expert and gastrosopher Jean-Anthelm Brillat-Savarin in the early part of the 19th century (Savarin, 1884). Hospitality is, in a sense, at the beginning of man's social and cultural development. The communal meal helps to increase bonding and social cohesion among individuals (Fischler 2011). Georg Simmel, the founder of German sociology, sums up the community-building effect to a basic denominator: "Of all now that is common to people, the most common is: that they must eat and drink" (Simmel 1910).

Psychologically, the pacifying effect of eating together can be corroborated by Gordon Allport's contact hypothesis: Contact with members of other groups, such as ethnic minorities, reduces prejudice against these groups – provided that it takes place under favorable circumstances (Allport, 1954). In combination with international law and political science work on soft power, public diplomacy and cultural diplomacy, the practically oriented field of culinary diplomacy makes use of this approach. It aims to improve intercultural understanding through the use of "gastrosophical" elements – the title of a seminal article on this topic alone, "Breaking Bread to Win Hearts and Minds," succinctly summarizes its entire content (Chapple-Sokol 2013). For a comprehensive review of more advanced studies, especially from experimental psychology, see Charles Spence (2016), who has also published popularly on the topic (Spence 2018). The bottom line is that eating together yields concrete returns. It is ultimately the basis of interpersonal exchange and – in the spirit of the book presented here – offers the opportunity to become smarter together, to generate collective intelligence and thus to achieve better governance, especially at the supranational level.

Widely cited is an analysis of Israeli parole board files. Meal breaks have an impact on decision-making: The later the decision is made after a meal break, the lower the likelihood of being granted parole. The probability of being given parole in fact decreased from 65 percent to near zero percent, only to spike back up after a meal break (Danziger/Levav/Avnaim-Pesso 2011). While the parole officers interviewed insisted that they were making neutral decisions based on the same criteria all day long, it appeared that food can have a positive effect on decision-making, even when we don't realize it. It has also been shown that, when negotiators are served the same meal – which is usually the case for official meals in diplomatic settings – this has the effect of building trust (Woolley and Fishbach, 2017). The authors conclude that

> food serves as a social lubricant and is especially beneficial for new relationships where people have limited information about the other person and are forming first impressions. In consuming similarly, people can immediately begin to feel camaraderie and develop a bond, leading to smoother transactions from the start.

Spence summarizes his review of all these mentioned studies – and also refers indirectly to Collective Intelligence – thus: "it would seem sensible to give more careful consideration to the food that one serves when involved in any kind of negotiation / decision-making" (Spence 2016).

This conclusion also concurs with decades of research that have explored the link between emotions and politics. Certainly, we all have in mind how emotions are and have long been an object of manipulation to throw citizens into the arms of political leaders. In this perspective, emotions have since been opposed to rational decision-making. Yet, recent studies at the intersection of cognitive neuroscience, biology, psychology, evolutionary economics, and political communication have helped understand how rationality and emotions are not necessarily separated, and how emotions help understand group behavior (Clarke et al. 2006). The conclusion of recent research on emotion in politics is that "emotion is often the driving force behind – and works in conjunction with – cognition," as summarized by political scientist Elizabeth Theiss-Morse in *The Affect Effect: Dynamics of Emotion in Political Thinking and Behavior* (Neuman et al. 2007).

The levels of emotions that the players in a political context have to deal with, also referred to as "emotional energy," are a key factor for the group's ability to tackle matters. A certain level of energy is necessary to bring the relevant stakeholders together, as opposed to apathy, resignation, and hopelessness. Emotions will also govern the ability to talk openly and air disagreement, which is an essential factor in avoiding group dynamics that hinder collective thinking (Sunstein 2005).

A key concept behind what Helmut Kohl seemed to have in mind is agency, which is the ability of an actor to act in a given environment. It becomes an issue – i.e., an agency problem – when one party, motivated by self-interest, is expected to act in another's best interests. It is a concept often used in conflict resolution to explain people's internal dynamics and why some lean toward one strategy or another. Drawing on the theory of emotional energy and positive emotions, Bramsen and Poder (2018) identify four types of interaction crucial to understanding emotional conditions for agency:

> 1) cooperative interaction engenders positive emotional energy such as confidence and trust, promoting productive agency, 2) dominating interaction energizes the dominant party and de-energizes the dominated actors in shame and hopelessness, fostering one-sided agency, 3) conflictual interaction produces negative emotional energy such as anger and resentment, driving conflictual agency, and 4) disengaged interaction leads to boredom, indifference and fatigue in all parties involved, diminishing agency.

Understanding better the role that emotional dynamics play in political processes is crucial to expand our understanding of how solutions emerge in groups. While scholars have tended to focus primarily on negative emotional experiences such as anger, frustration, humiliation and fear, there is scope for exploring the role of fostering positive emotions over a sustained period of time to contribute to better collective resolution of public problems. This suggests new perspectives for productive solutions to public problems and, in international contexts, conflict resolution.

This direction is being explored in relation to citizen engagement formats. As another case in this handbook suggests,[1] students of participatory democracy around the world explore how to allow citizens to express all types of emotions in a way that is conducive to the resolution of public problems (Blondiaux et al. 2018).

Do's and don'ts

It makes a difference what food is served or what substances it contains. Tryptophan–rich foods such as eggs, cheese, shrimp, salmon, or turkey, for example, can have a pacifying effect because this amino acid is converted to the "happy hormone" serotonin in the nervous system (Aan het Rot et al. 2006).

However, **the decisive factor in Culinary Diplomacy is preparation**. In particular, if the relations of the countries – or the acting persons – are not close, the own country is also presented in culinary terms. In the described case of Kohl and Thatcher there were close relations between the countries, but the personal relations between the two most important politicians were not good. Even if the Federal Republic of Germany no longer needed any introduction, Kohl tried to make his homeland vivid – also in culinary terms. And even if the mood between Thatcher and Kohl could probably hardly have been improved, knowledge on the German side of Thatcher's likes – and even more so, dislikes – could have been helpful. For example, the British prime minister felt that Saumagen reminded her of the Scottish national dish haggis, which she also disliked. Ironically, the Saumagen could be interpreted as a kind of anticipated revenge against Thatcher. Nevertheless, in all of the cases mentioned, all of the politicians mentioned were aware of how gastrosophical elements can be used to communicate symbolically, to establish trust – in other words, to bring about situations in which, in the broadest sense, collective intelligence can come into play in decision-making, even if these may still lie in the future.

Another example where the preferences of a guest could not be taken into account because they were simply not yet known was the first visit of the new French President François Hollande: He was served asparagus by German Chancellor Angela Merkel, even though he loathes it. However, the chef at the Élysée was not yet aware of this dislike, which is why he was unable to brief his colleague in the Chancellor's Office accordingly. This is a harmless case that also does not produce problematic images. At the other extreme are diplomatic upsets, such as negotiations over visits by Iranian politicians and whether alcohol should be served. In 1999, for example, Iranian President Mohammad Khatami refused to attend a dinner at which non–Muslim guests were to be offered alcoholic beverages. Since in France, a state banquet without wine is not a state banquet, Khatami's visit was downgraded in protocol from a state visit to an official visit, because there is no state visit without a state banquet.

In 2011, the Republic of Ireland – a country that, historically at least, is more likely to be associated with famine – demonstrated the virtuosity with which state banquets can be used to communicate politically. But the fact that the visit of Queen Elizabeth II, the first by a British monarch nine decades after the independence of the Republic of Ireland, was a highly symbolic act is less surprising. The chef of one of Dublin's best restaurants was commissioned to create a menu using only the finest local ingredients. It has been standard practice on the Emerald Isle since the 1940s for crockery, glasses, cutlery, and table linen to come from Irish production. Even the wine, which of course could not have come from Ireland, featured Irish references. President Mary McAleese subsequently stated that the menu told a story of the country and of Irish food – a fact that did not go unnoticed by the Queen. Good preparation just pays off.

More generally, most facilitators, moderators, and mediators of collective intelligence and conflict resolution **pay close attention to nurturing the appropriate context**. Facilitators often see their task as creating the right "containers" for dialogue (Isaacs 1999). While some may wish to prevent or navigate around emotions to focus on a "purer"

exchange of arguments, most will know that it is more effective to work constructively with emotions, to acknowledge them, allow them to be aired and thus signal respect for what the participants feel.

In the face of an outburst of negative emotions – positive emotions are easier to deal with – facilitators will typically ask the following five questions: What are you feeling? What makes you feel like this? What is the meaning behind this feeling? What can we do about this feeling in relation to our topic? What are we willing to do about the feelings expressed here? By doing so, not only do negative emotions deescalate, but also what's beneath the emotions becomes material that the group can verbalize and use.

Note

1 "Hearing the marginalized: The *jan sunwai* in India", by Stéphanie Tawa Lama.

References

aan het Rot, Marije/Moskowitz, Debbie S./Pinard, Gilbert/Young, Simon N. (2006). "Social behavior and mood in everyday life: The effects of tryptophan in quarrelsome individuals". *Journal of Psychiatry & Neuroscience*: JPN, 31(4), 253–262. www.ncbi.nlm.nih.gov/pmc/articles/PMC 1488902/

Allport, Gordon W. (1954). *The nature of prejudice*. Cambridge: Addison-Wesley.

Bergmann, Knut (2020). *Mit Wein Staat machen. Eine Geschichte der Bundesrepublik Deutschland*. Berlin: Insel Verlag.

Blondiaux, L., & Christophe Traïni (Ed.) (2018). *La démocratie des émotions*, Presses de la Fondation nationale des sciences politiques.

Bramsen, I., & Poul Poder (2018). "Emotional dynamics in conflict and conflict transformation", *Berghof handbook for conflict transformation*, Online Edition. Berlin: Berghof Foundation. First launch Feb. 15, 2018.

Brillat-Savarin, Jean Anthelme (1826). *Physiologie du goût*. Paris: A. Sautelet. English edition: *Brillat-Savarin's Physiologie Du Goût: A Handbook of Gastronomy*. New York: J. W. Bouton 1884.

Chapple-Sokol, Sam (2013). "Culinary diplomacy: Breaking bread to win hearts and minds". *The Hague Journal of Diplomacy* 8, 161–183. http://culinarydiplomacy.com/wp-content/uploads/2013/09/ breaking-bread-to-win-hearts-and-minds.pdf

Clarke, S., Paul Hoggett & Simon Thompson (Eds.) (2006). *Emotion, politics and society*. Hampshire: Palgrave Macmillan.

Clinton, Bill (2017). European Ceremony of Honor for Dr. Helmut Kohl, former Chancellor of the Federal Republic of Germany and Honorary Citizen of Europe, Strasbourg, 1 July 2017. www. protokoll-inland.de/SharedDocs/downloads/Webs/PI/DE/Staatsakte/reden-trauerfeierlichkei ten-kohl-englisch.pdf?__blob=publicationFile&v=1.

Danziger, Shai/Levav, Jonathan/Avnaim-Pesso, Liora (2011). "Extraneous factors in judicial decisions". *Proceedings of the National Academy of Sciences*, Apr 2011, 108 (17) 6889–6892. https://doi. org/10.1073/pnas.1018033108

Fischler, Claude (2011). "Commensality, society and culture". *Social Science Information*, 50, 528–548. https://doi.org/10.1177/0539018411413963

Isaacs, W. (1999). *Dialogue and the art of thinking together*. Random House.

Kohl, Helmut (2005). *Erinnerungen 1982–1990*. München: Droemer.

Mahon, Elaine (2015). "Ireland on a plate: Curating the 2011 State Banquet for Queen Elizabeth II". *M/C Journal*, 18(4). https://doi.org/10.5204/mcj.1011

Moore, Charles (2019). *Margaret Thatcher. The Authorized Biography*, Volume Three: Herself Alone. London: Allen Lane.

Powell, Charles (2000). "My God, that man is so German", In: Iain Dale (Ed.): *Memories of Maggie: A Portrait of Margaret Thatcher*. London: Politico's Publishing, 38–42.

Russell Neuman, W., George Marcus, Ann Crigler, Michael Mackuen (ed.) (2007), *The Affect Effect: Dynamics of Emotion in Political Thinking and Behavior*, The University of Chicago Press.

Simmel, Georg (1910). *Soziologie der Mahlzeit. Der Zeitgeist – Beiblatt zum Berliner* Tageblatt Nr. 41 vom 10. Oktober 1910, 1–2.https://socio.ch/sim/verschiedenes/1910/mahlzeit.htm.

Spence, Charles (2016). 'Gastrodiplomacy: Assessing the role of food in decision-making,' in: Flavour 5 no. 4, 1–16; https://doi.org/10.1186/s13411–016–0050–8

Spence, Charles (2018). *Gastrologik. Die erstaunliche Wissenschaft der kulinarischen Verführung*, München 2018.

Stefanini, Laurent (2019). *À la table des diplomates: L'histoire de France racontée à travers ses grands repas* (1520–2015). Paris: Gallimard.

Sunstein, C. (2005), *why societies need dissent*, Harvard University Press.

Thatcher, Margaret (1995). *The Downing Street Years*. New York: Harper Collins.

Woolley, Kaitlin/Fishbach, Ayelet (2017). "A recipe for friendship: similar food consumption promotes trust and cooperation". *Journal of Consumer Psychology*, Volume 27, Issue 1, 1–10; https://doi.org/10.1016/j.jcps.2016.06.003

36

THINKING AHEAD COLLECTIVELY

The case of African Digital Futures

Passy Amayo Ogolla and Julie Anne Jenson[1]

The story

Africa is a young, vibrant continent, with three-quarters of its population under the age of 35 and the fastest growing online population in the world (Hajjar, 2020). African youth aren't just consumers of global media trends. They create and use technology to educate themselves, protest corruption and oppression, make world-leading art and entertainment, drive economic development, adapt to the mounting pressures of climate change, and respond to the everyday challenges their communities face.

However, this vibrancy is dimmed by various challenges, including unemployment, lack of electricity or Internet connectivity, insufficient resources to incubate African tech startups, and repressive government policies. Recent examples include internet and social media shutdowns in Uganda, Tanzania, Ethiopia, Zimbabwe, Togo, Burundi, Chad, Mali, Guinea, and Nigeria.

Hopes and hype run high for technology to "leapfrog" old problems and create new wealth, but there is rising concern that the same advancements will also be a vector of recolonization. Every day more African data is generated, collected, and stored in servers around the world with unclear rules governing access and ownership in distant jurisdictions. Are powerful interests extracting African data resources for their own benefit while imposing non-African values? Necessarily, issues of data governance, especially privacy laws, digital privacy infrastructure, data protection, and digital identity, are becoming more significant. Often, African countries are importing regulatory models from Europe, the USA, or China, without consideration of a country's context or the needs of their citizens. Elsewhere, there can be insufficient regulation to counter the power of global technology companies.

Recognizing this situation, the Omidyar Network funded the School of International Futures (SOIF) and its Next Generation Foresight Practitioners' (NGFP) network to identify emerging signals and drivers of change, explore alternative future scenarios for the coming decades, generate visions for the worlds that young Africans want to help create, and bring those worlds to life in a series of stories and artifacts that anticipate what the future might look like.[2]

They did this via a futures process that was designed to generate collective, collaborative, and networked intelligence through conversation. In essence, it used one form of collective intelligence (the process) to debate and consider the impacts of new forms of collective intelligence (data-driven technologies). A third form of collective intelligence (a network of networks) is being used to disseminate the stories and visions and act on them.

The collective

The NGFP program was created to address explicitly the lack of representation of young, non-Western, future-alert activists in decisions and conversations that are taking place around the world at a global, regional, and local level. Its sensing network is one of the largest global networks of its kind, comprising more than 400 individuals from 69 countries across six continents.[3] People generally become part of the network by applying to the Next Generation Foresight Practitioners Awards which calls for ideas and projects that shape or disrupt the future.

In this project, 22 members of the NGFP network in Africa worked in three teams, centered on Nigerian, Kenyan, and pan-African communities, in order to explore these issues at both national and continental levels. The professional background of participants ranged from human rights defenders and community workers to organic farmers, cryptocurrency experts, doctors, educators, data scientists, technology policy researchers, entrepreneurs, and international development professionals.

These next-generation changemakers worked alongside leading experts in African history, culture, journalism, storytelling, agriculture, education, civic technology, environmental activism, and scenario development who facilitated and informed the conversations. Their visions were produced as immersive, multimedia stories by a team of writers, performers, and designers in Nigeria. The process was convened and supported by a research and design team that spanned four continents and the conversations were hosted by three African institutions: the Society for International Development in Kenya, Arthur Mbanefo Digital Research Centre University of Lagos Nigeria, and the Civic Tech Innovation Network in South Africa.[4]

The intelligence

Through the process, participants created 11 different stories of the future of digital societies in Africa. These stories were not just guided by what is happening in the world today and how the world might change in the future, but also by metaphors from language, folk stories, film, music, and memes that offer alternative ways of thinking, seeing and being. For example, a Nigerian team worked with the idea of "Naija no dey carry last," or Nigerians striving to finish first, to inspire their vision of digital civic participation.

The values embedded in these stories hold wide-ranging implications for how data is collected, stored, tracked, shared, and valued by individuals, communities, governments, and business. They call on policymakers and technologists to stretch their focus beyond questions of personal privacy and identity and consider collective data and intelligence as a public good used to inform better decision-making and benefit the communities who generate it.

Their visions demand new models of technology investment, development, and regulation. They remind investors and funders that Africa has a rich history of innovation, an

abundance of young talent and a wealth of ideas to be incubated and developed for the benefit of people and the planet.

Concerns were similar across all three cohorts, but with different levels of priority and nuance.

In general:

- Kenyan participants focused heavily on the role of technology to address climate change and environmental issues.
- Nigerian teams were deeply concerned about technologies role in direct democracy.
- The Pan-African cohort highlighted the role of technology in emotional and social experience.

As a collective six key priorities emerged:

1. Data needs to be seen as a collective resource for public good. A change of focus from the rights of the individual and the interest of companies that are enshrined in many data protection regulations (e.g. GDPR) to an approach that respects and responds to local culture and cooperative ownership.
2. Data to support good governance. A shift from data being used for citizen surveillance to support government accountability transparency and direct democracy.
3. Bio-internet and connectivity. Connecting data to the natural world. Technology becomes additive not extractive to nature and the environment.
4. Technology as a way back, not just a way forward. Progress and globalization with not against African languages, practices, cultures and tradition.
5. Sincere, humane, and co-designed technology. A focus on the digital divide. Technology is used to meet people's real needs, not to exclude and divide society.
6. African voice. Creators, innovators, scientists, technologists, and researchers are able to shape the global conversation.

To complement the group futures process, eight members of the cohort also conducted independent community visioning exercises. They designed their own approaches (for example, video interviews, community workshops and online surveys) to take the questions they were encountering on their own journeys and explore them through the fears, hopes, and dreams of other Africans who were missing from the African Digital Futures conversation.

Many team members also created video blogs each week to reflect on and provide feedback at each stage of the process. This provided an opportunity to track learning outcomes from the process and understand individual experiences, as well as group dynamics.

The process

The first phase of scoping opened up the question of the future of data governance in Africa to break it apart, re-interrogate it, and re-frame it. SOIF researchers[5] analyzed social media and mainstream media discourse to identify how the question of data governance intersected with the youth experience within Nigeria and Kenya, alongside emergent political, economic, demographic, and technological trends (Figure 36.1).

The team decided to frame the project around how young Africans imagine healthy digital societies in the future. If a healthy society is like a garden ecosystem, which digital

FRAMING THE DATA GOVERNANCE CONVERSATION

| THE PROJECT STARTED HERE → | **What does the next generation aspire to and want for the future of data governance, data protection and privacy across Africa?** |

Initial research identified six key topics at the intersection of technology, and the youth experience within Nigeria and Kenya, which were used to frame the group futures process

| Collective intelligence | Personal safety | Emergent identities | Shadow institutions | Distributed labour | Cultural production |

REFRAMED PROJECT QUESTION

| THE GROUP FUTURES PROCESS STARTED HERE → | **How do young Africans envision a healthy digital society in 2030 and beyond? What technological freedoms and safeguards will encourage that ecosystem to grow?** |

Source: NGFP Digital Africa project

Figure 36.1   Setting the question.

Source: NGFP/SOIF.

technologies should be bred and planted and watered, which invasive species should be removed, which delicate shoots need protection, and from which menacing threats?

With the project question in mind, the NGFP Africa Network Weaver[6] (Passy Amayo Ogolla) selected 22 participants from the sensing network who were based on the continent or in the African diaspora. A core principle of the NGFP network is that people should be compensated fairly for their contribution. Each participant was therefore contracted to SOIF and paid an appropriate day rate for their involvement.

However, the need to identify and contract this many individuals limited the time available for co-design of the process with the participants. As a proxy, the team engaged the NGFP Africa Governance Board, composed of the six NGFP fellows from the region, to review and refine the methodological approach in parallel to cohort selection and contracting.

Creating a further constraint, the process took place during March 2021 during the pandemic, and needed to be conducted entirely virtually. This became an intrinsic part of the design, informing a flow of synchronous and asynchronous activities between individuals, pairs, small teams, and larger groups, facilitated using technologies such as Zoom, Miro, WhatsApp, and Google Drive. The virtual format allowed a broader range of local and regional perspectives within each cohort, but did create accessibility challenges for people with intermittent access to electricity or Wi-Fi.

Finally, the project team wanted the process both to create scenarios and visions, and to challenge dominant visions of the future. To accomplish this, designers Pupul Bisht and Johann Schutte choreographed a four-stage process that flowed from "Setting the Stage,"
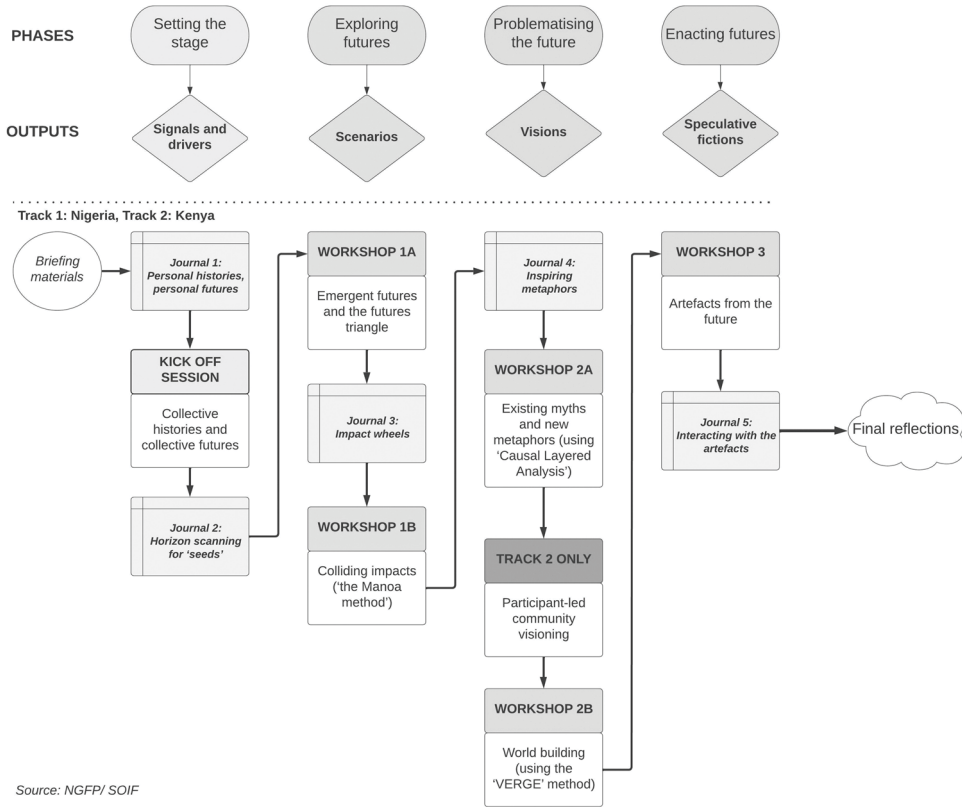
Figure 36.2   The project process.

through "Exploring the Future," then to "Problematizing the Future" and "Enacting the Future." Within the process, they intentionally brought together a number of different foresight methods (Figure 36.2).

The science behind

In his influential book about futures, Wendell Bell (2007: 75–76) proposes that:

> The exploration of possible futures includes trying to look at the present in new and different ways, often breaking out of the straitjacket of conventional, orthodox, or traditional thinking and taking unusual, even unpopular perspectives… It involves, most of all, expanding human choice.

Modern futures practice is largely a product of the aftermath of the Second World War. It can be seen as a response to the emergence of open systems. A research-driven, more positivist, approach emerged in the United States, while more sociological and philosophical practices emerged in Europe (Curry, 2021). Within these broad approaches, there are specific techniques and approaches, such as horizon or environmental scanning, emerging issues analysis, visioning, delphi, scenario development, futures literacy, anticipation, and so on.

These two traditions have, in effect, danced around each other for the past 70 years, even as they have evolved and become more global. Significantly, however, over the last two decades, futures thinking has undergone the same "complexity turn" (Urry, 2003) that has been seen in other disciplines and areas of practice. It has moved toward approaches that are more reflexive, more participatory, more visionary, and more connected to agency. Forms of social practice around social construction (Fuller and Loogma, 2009) and social cognition have become more prevalent.

Such approaches emerged either side of the turn of the century, and afterward, including integral futures (Slaughter, 2020), causal layered analysis (Inayatullah, 2004), design futures (Candy and Potter, 2019), and others.[7] More recently, decolonization (Bisht, 2020) has also made its way onto the futures agenda.[8] The design for the Africa data governance project drew on tools and techniques from this repertoire.

This shift toward more reflexive and more participatory approaches means that good dialogue practices have become more important to process. Space precludes a review of this literature, but Atlee (2003: 63) defines dialogue as "shared exploration towards greater understanding, connection, and positive possibility." (Also see the Definitions chapter.) Bohm (2004: 7) describes it as "a *stream of meaning* flowing among us and through us and between us" (emphasis in original). More pragmatically, Yankelovich (2001: 41–44) identifies three distinctive characteristics of dialogue. These are equality and the absence of coercive influences; listening with empathy; and, bringing assumptions into the open.

The third important strand of theory reflects the specific location of the project. It drew on ideas associated with Afro-futurism, "Africanfuturism," and African narrative, brought into the conversations by Prof. Alinah Segobye, Charles Onyango-Obbo, Tanja Hichert, and the artists, performers, and scholars of The Orature Collective.[9]

Afro-futurism emerged in North America. It is described by the sociologist Alondra Nelson (Ogbunu, 2020) as "visions of the future—including science, technology and its cultures in the laboratory, in social theory, and in aesthetics—through the experience and perspective of African diasporic communities."[10] African futures, proposed by the writer Nnedi Okorafor (2019), can be seen as a distinctive African version of this.

As Okorafor writes:

> Africanfuturism is similar to Afrofuturism in the way that blacks on the continent and in the Black Diaspora are all connected by blood, spirit, history and future. The difference is that Africanfuturism is specifically and more directly rooted in African culture, history, mythology and point-of-view as it then branches into the Black Diaspora, and it does not privilege or center the West.[11]

The element of narrative related to Okarofor's construction, involves making the jump between the work in the project and African material culture and intangible culture. As Prof. Segobye shared with the Nigerian team, "Futures studies have enabled us to cross that divide… If you are able to interact with and appreciate this rich past, then the current present is only a slice of time of our future possibilities."

The action

Although the work of the Data Society Series lives in its stories and artifacts of the future, it also lives in the people who participated and in the network that it helped strengthen and grow. The process created a community, a network of informed and motivated individuals,

each connected and cross-connected within other networks and communities, with a motivation and shared ambition to shape the conversation that isn't reliant on top-down intervention.

One example of this collective action is the creation of a new Centre for Future Studies at the University of Lagos by the facilitators and hosts of the Nigerian cohort. Dr. Ismail Ibrahim notes,

> We live in uncertain times where the dizzying pace of disruptive changes is far beyond our capacity to make sense of them. The current situation of the Nigerian State, with its rapidly deteriorating security architecture and myriad socio-economic challenges, reflects the realities of these uncertain times and the need for institutionalized futures research that will provide comprehensive futures know-ledge and analysis for decision makers and contribute practical futures anticipation skills and knowledge base towards enabling leaders and citizens to co-create better futures for the Nigerian society.

These conversations have the power to influence, shape, and inform decisions, investments, and behavior at different levels of engagement and influence including but not limited to the public sector, digital and technology private sector, regional and international institutions and active citizen participation. As Kenyan facilitator Arthur Muliro observes,

> It is crucial to understand the system and the forces that created and maintain it. We need to be able to read and understand the local systems and their power dynamics in order to be able to intervene effectively and ultimately, deconstruct them and replace them with something that would hopefully be more useful.

Roselyne Wanjiru, from the Kenyan team reflects,

> Even though we had divergent points of view and different origins of thought, there was such a high convergence. It really struck me in the sense that we are one. Proverbially, the tears we cry are no heavier for one or the other. If I am crying for instance about climate change, and another is crying about biases in tech in terms of languages, representation, inclusion, it's the same issues affecting us all across the board. And we are capable then of synergising to find solutions that will work well for each other. As young people… we can get some serious traction and acceleration if we get working on these issues. Africa's greatest resource is not her minerals but her people. This is a process that has built capacity in each one of us to collaborate in the future.

Participants saw the conclusion of the four-week visioning process not as the end, but as a beginning. They have continued to collaborate within the NGFP Africa network on these topics, as well as carry forward into their own work and self-organized initiatives, with a renewed appreciation for the power of storytelling and conversation in collective change.

Nancy Muigei, a member of the pan-African cohort, reflected on what should happen next:

> Don't stop the conversation…. For the next one year, let's spend time exploring the different facets of this work and how we can make sure we build a community that is conscious about some of the things that came out of the process. This is how

agendas are set, and before you know it, the whole world will be talking about these things.

Professor Geci Karuri–Sebina, who facilitated the Pan–African team, concluded her series by noting: "We often have to remind people that Africa is not a country, but a continent. But this experience revealed to us that Africa isn't just a place or a continent, Africa a starting point for a new conversation."

Do's and don'ts

Given that this project explicitly addressed topics of power within a context of historic colonization and the risk of present and future recolonization, it needed to negotiate throughout its course a number of boundaries, tensions, and questions. From these, some critical lessons emerged:

- **Don't separate creators from content. Don't separate content from context**
  The project individually names the people present in the process and they have been involved in deciding how that content is presented and disseminated. At each stage, participants gave explicit consent to have their content and identity shared. This can slow down the process or create complications in presentation, and always open the risk of making mistakes, but it is essential to the integrity of the work.
- **Be clear on who is involved and who is not involved (and why)**
  This process and project do not assume or stand as an entirely representative voice for all of Africa's youth or all of Africa's countries and regions. For example, this project had limited participation from northern or central African countries, and people without Internet access could not participate in the virtual format.
- **Time is not just a constraint, it is a design element**
  Relationships and trust take time to build, but time constraints also create productive pressure to focus the group to move forward. The expansion and contraction of time can be used creatively to facilitate the process and progress. Spending time on designing the process, selecting the cohorts, and contracting allowed the process itself to proceed within a four-week window. However, as noted above, the end of that four-week window was just the beginning. Reflection, discussion, design and creation of outputs, and decisions on next steps also take time if they are to proceed consensually and collaboratively.
- **Trust is relational and continuously negotiated**
  People accepted the invitation into the project space with enthusiasm and consent, based on long-standing bonds of personal respect built up at the intersection of existing networks. They agreed to step into the flow and see where it went. This is challenging in an inherently precarious and transitory situation, and requires humility, dignity, generosity, optimism, and forgiveness.
- **Make the boundaries and tensions explicit**
  Technology and governance are largely defined in non–African terms and reside within a colonial history of power, politics, education, and economic and human exploitation. These frames of reference cannot be avoided, but must be acknowledged, for example, in the scoping and framing question. This includes global trends toward looking to indigenous forms of knowledge as a way to solve Western problems, separate from the individuals, cultures, and contexts themselves. Good practice in paying people for their time and contribution creates issues of power within the project and with the funder. For

example, it requires people to be contracted, which establishes an employer and employee relationship rather than a peer–to–peer dynamic.

• **Know what you are using the future for**

The future is a concept that can be understood and made useful in many different ways (not just in linear time). In this project, we were using "the future" to imagine states of being and lived experience that are different from now. In these futures, technology will enable different things to be possible, but will also create new risks, dangers, and consequences to be avoided.

Notes

1 Our thanks to Andrew Curry for his editorial contribution.
2 You can explore these visions and meet their creators at https://africanfutures.jwlfi.xyz.
3 The project was created by 22 members of the cohort, four facilitators, and three host institutions. The members of the cohort were: (Nigeria) Charles Umeh, Chiagozie Udeh, Fasoranti Isaac Damilola, Fisayo Oyewale, Gideon Seun Olunreqaju, Memunat Ajoke Ibrahim, Stephanie Itimi, and Zainab Sunmisola Ynusa; (Kenya)Brian Wamukota, Cheryl Akinyi, Dunacan Koome, Frank Ogolla, Iman Bashir, Roselyne Wanjiru, Saraphina Anjia Ambale, and Shem; and (pan Africa) Jesse Forester (Kenya), Marizanne Knoessen (South Africa), Mutsa Samuel Kaseje (Zimbabwe), Nancy Muigei (Kenya), Rahma Ben Lazreg (Tunisia), and Oluwaseun David Adepoju (Nigeria). The four facilitators were: Prof. Geci Karuri-Sebina (Civic Tech Innovation Network), Arthur Muliro (Society for International Development), Dr. Ismail Ibrahim (University of Lagos), and Bunmi Ajilore (NGFP Fellow).
4 The names of the collective creators of the African Futures Data Society Series are listed at the end of the chapter, and its stories are published at https://africanfutures.jwlfi.xyz.
5 Julie Anne Jenson, Memunat Ajoke Ibrahim, and Johann Schutte.
6 A Network Weaver envisions the activities of a network, developing and implementing a plan that aligns the various parts of the network's membership and focus, connecting people across groups, projects, and actions. See https://networkweaver.com/network-weaver-job-description/.
7 The term "integral futures" was adapted from Ken Wilber's integral theory. It draws attention to the importance of interior worlds in considering futures. Causal layered analysis invites consider–ation of change at multiple levels, including worldviews and metaphors – and therefore of values. "Design futures" uses the development of future-facing objects and images to invite engagement with possible futures.
8 The best single guide to contemporary futures thinking is *The Knowledge Base of Futures Studies,* edited by Richard Slaughter and Andy Hines. Association of Professional Futurists, 2020.
9 Dr. Mshai Mwangola, Zein Abubakar, and Aghan Oderoagan.
10 The term "Afro-futurism" was invented by the radical white cultural critic Mark Dery (1994). Cultural examples of Afro-futures include, for example, the music of Sun Ra, George Clinton, or Erykah Badu, or the novels of Octavia Butler.
11 See "Aficanfuturism defined" at http://nnedi.blogspot.com/.

References

Atlee, T. (2003). *The Tao of Democracy*. Cranston, RI: The Writers' Collective.

Bell, W. (1997). *The Foundations of Futures Studies*. New Brunswick: Transaction Publishers.

Bisht, P. (2020). "Decolonizing futures: finding voice, and making room for non-Western ways of knowing, being, and doing." In Slaughter, R., and Hines, A. (Eds.), *The Knowledge Base of Futures Studies 2020*. Washington, DC: Association of Professional Futurists/ Foresight International.

Bohm, D. (2004). *On Dialogue*. Abingdon: Routledge.

Candy, S., and Potter, C. (Eds.). (2019). "Introduction to the Special Issue: Design and Futures," *Journal of Futures Studies: Special edition, Design and Futures*. Volume 23 (3), March 2019.

Curry, A. (2021). "A critical history of scenario planning." In Galviz-Lopez, C., and Spiers, E. (Eds.), *The Social Futures Handbook*. London: Routledge.

Dery, M. (1994). "Black to the future: Interviews with Samuel R. Delany, Greg Tate and Tricia Rose." In Dery, M. (Ed.), *Flame Wars*. Durham, NC: Duke University Press.

Fuller, T., and Loogma, K. (2009). *Constructing Futures: A Social Constructionist Perspective on Foresight Methodology*. Lincoln: University of Lincoln. eprint.http://eprints.lincoln.ac.uk/id/eprint/2749/1/Constructing_futures%3B_a_social_constructionist_perspective_on_foresight_methodology_final-v2-1.pdf.

Hajjar, B. (2020). "The children's continent; keeping up with Africa's growth." World Economic Forum, 13 January 2020. www.weforum.org/agenda/2020/01/the-children-s-continent/. Last accessed 18 August 2020.

Inayatullah, S. (2004). "Causal layered analysis: Theory, historical context, and case studies." In Inayatullah, S. (Ed.), *The Causal Layered Analysis (CLA) Reader*. Taipei: Tamkang University Press.

Ogbunu, C. B. (2020). "How Afrofuturism can help the world mend." *Wired*, July 15th 2020. www.wired.com/story/how-afrofuturism-can-help-the-world-mend/. Last accessed 8 August 2021.

Okorafor, N. (2019). "Africanfuturism defined". Online http://nnedi.blogspot.com/2019/10/africanfuturism-defined.html. Last accessed 8 August 2021.

Slaughter, R. (2020). "Integral futures: Theory, vision, practice." In Slaughter, R., and Hines, A. (Eds.), *The Knowledge Base of Futures Studies 2020*. Washington, DC: Association of Professional Futurists/ Foresight International.

Slaughter, R., and Hines, A. (Eds.). (2020). *The Knowledge Base of Futures Studies 2020*. Washington, DC: Association of Professional Futurists/ Foresight International.

Urry, J. (2003). *Global Complexity*. Cambridge: Polity.

Yankelovich, D. (2001). *The Magic of Dialogue*. New York: Touchstone.

PART 7

Collective intelligence, technology, and collective consciousness

Introduction

Carina Antonia Hallin

Can we advance collective consciousness by mastering the balance between human (collective) intelligence and technology by means through participatory democracy and deliberate processes?

Consciousness holds many meanings, and there is no generally agreed definition of consciousness, but the following general definitions are often used to define consciousness (Blackmore, 2017, p. 7). One is related to subjectivity and phenomenality, that "consciousness" means subjective experience or phenomenal experience. This is the way things seem to me, as opposed to how they are objective. Another definition relates to qualia (pronounced qua-lay) which is the subjective qualities of experience, such as the perception of redness of red or the indescribable smell of turpentine. A third definition relates to the hard problem: How do subjective experiences arise? In physics, materialists see matter as fundamental, but then they face the challenge of how to account for consciousness. For example, how can a physical brain, made purely of material substances and nothing else, give rise to conscious subjective experiences or ineffable qualia?

With these contrasting perspectives of consciousness in mind, scientists acknowledge a fundamental divide in consciousness studies: If consciousness is an extra ingredient embedded in our ability to perceive, think, and feel, or is it inseparable from being able to perceive, think, and feel? Although it is still difficult to single out an accurate functional role for consciousness, many believe that consciousness endorses more robust autonomy, higher resilience, and more general capability for problem-solving, reflexivity, and self-awareness (Atkinson, Thomas, and Cleeremans, 2000; McDermott, 2001; Franklin, 2003).

It is thus relevant for collective intelligence to unfold how collective intelligence supported by technologies can possibly advance such states of our sensory apparatus and lead to a collective consciousness across many individuals when harnessing their insights in participatory democratic processes to serve policymaking.

It should be clarified to the reader of this chapter that some of the perspectives and studies presented in this chapter have not been confirmed in natural sciences and for many are all not generally accepted explanations for these sorts of phenomena that have for the most part been

ignored (Barušs, 1996; Cardeña, Lynn, and Krippner, 2000). As the authors of this handbook, it is not our intention here to defend their validity or reject them. Our intention is to present some of the emergent perspectives on consciousness related to collective intelligence. With that in mind, let's proceed to a consideration of collective intelligence and technology for the advancement of collective consciousness.

Collective intelligence and collective consciousness

Pierre Lévy is a French philosopher and media scholar who has specialized in understanding the cultural and cognitive implications of digital technologies and collective intelligence (Lévy, 1994). He argues that to solve our current and complex problems involving a number of people and organizations in varying environments, a new form of collective intelligence is required. Such collective intelligence, he argues, will emerge especially via digital media and as a type of collective intelligence called "holomidal" (Lévy, 2017) that comes into being in the internet age, building upon such stages as *swarm* (insects), *original* (tribes), and *pyramidal* (armies, corporations) (Pór, 2018).

The Collective Intelligence Research Institute, an international organization, defines holomidal collective intelligence as both local and global, decentralized and distributed, agile, polymorphic, based on leadership, individuation, open-source, integral wealth, and mutualist economy. They argue that collective intelligence across the world is still living in its infancy phase, although it already exercises considerable impact on humanity. This is caused by an increasing number of people in civil society who self-organize in groups and communities with the purpose to address societal issues that centralized decision-making cannot address and even provokes. Socialware and communityware serve as the keystone on which collectives can rely in order to self-organize and scale up, both locally and remotely (CIR Institute, 2022). Lévy (2017) makes the assumption that such a form of collective intelligence develops and moves humanity toward consciousness as it is the constant exchange with people both in small and large groups on the internet that makes humans grow into the future of consciousness.

There are many definitions of collective consciousness, but a more general one is that collective consciousness can be understood as a shared sense of being together with others in a single or unified experience (Combs and Kripner, 2008; Midgley, 2006; Ziman, 2006).

Collective consciousness (sometimes also referred to as collective conscience) is studied by different disciplines. For example, in sociology, it refers to the set of shared beliefs, ideas, attitudes, and knowledge that are common to a social group or society (Combs and Kripner, 2008). In sociology, collective consciousness is seen to inform our sense of belonging and identity, and our behavior, is considered to be at the highest wisdom level (Atlee, 2010). For example, founding sociologist Émile Durkheim developed the collective consciousness concept in 1893 to explain how unique individuals are bound together into collective units like social groups and societies. Collective consciousness can be derived from collective intelligence to produce a higher level of wisdom, but collective intelligence is not necessarily collective consciousness.

Collective intelligence, like any individual intelligence, can be used in harmful ways, such as building gas chambers, initiating warfare, and building new technologies with disastrous "side effects." In other words, collective intelligence can take the form of extraordinary delusions of crowds and can show a signs of madness (Mackay, 1852).

The role of collective intelligence and technology in the formation of collective consciousness

Within the realm of participatory democratic and deliberative forms, collective intelligence is an emergent science that embeds artificial intelligence and machine learning applications, such as natural language processing (NLP) along the collective intelligence concepts of "the wisdom of crowds," "collective wisdom," and "community wisdom", to name some few related subfields of collective intelligence. Building on such interactions between collective intelligence, artificial intelligence, and related concepts, collective consciousness developed from collective intelligence as an emergent scientific discipline could be described along a continuum of the extent to which technology is integrated into the formation of collective consciousness.

On the very left end of the continuum is the harnessing of collective intelligence from groups and crowds in offline settings, such as group- and team meetings, seminars, conferences, and major events meetings where collective intelligence is formed through the exchange of both explicit and tacit knowledge in face-to-face interactions. Collective consciousness is increasingly arising in such offline settings due to a growing number of problem-solving groups in modern society (Kenny, 2004), especially in the business community (Hamilton, 2004; Hamilton and Zammit, 2008). Collective consciousness is also argued to arise in spiritual practices, such as the Hindu Kecak chanters of Indonesia (Eiseman and Eiseman, 1989), the "gathered" meetings of the American Quakers (Kelly, 1997), and advanced states of group meditation (e.g., Dillbeck et al., 1987; Hagelin, 1987). Such studies point to claims of higher states of collective consciousness. That is when humans experience the qualities of spiritual consciousness arising from a feeling of love, peace, unity, bliss, and the experience of freedom from fear. According to such traditions blissful feelings can be seen in higher states than a social and a common set of beliefs and values being transferred from generation to generation through traditions. A recent example of how such collective consciousness is increasingly being invested in at the collective level is by the "Mulholland Drive" director David Lynch as the founder of the Lynch Foundation. On April 14, 2022, Lynch announced that he is setting up an initiative to fund transcendental meditation training for 30,000 international college students with the goal to encourage the next generation to "become advanced peace-creating meditation experts and build a legacy of lasting global peace." The program will invest approximately $500 million in its first year, in partnership with the Global Union of Scientists for Peace.

As the world has become more networked on the internet, collective computational power has increased accordingly, and thereby humanity has undergone a series of continual, relentless, and powerful technological developments. Each generation through the history of technology has relived a new technological era than the previous one, along with acquiring the necessary skills and information to live in a changed outer reality different from their parents.

Turning to the continuum analogy, one could argue that the mid-point of the collective consciousness continuum is when technologies are applied to facilitate human interactions in which collective consciousness can be developed at a larger scale due to the technology's capacity to spread messages in an effective manner across many people. For example, collective intelligence platforms and technologies can advance the alignment on common goals and visions within a global company, community or nation. So, resulting from information technology such as the internet and collective intelligence platforms, large groups of people can act and interact to make collective actions, informed by their knowledge and experience.

Consequently, users of information technologies would participate in a shared cognition that can be distributed locally and/or globally. In exercising distributed insights through collective intelligence technologies, humans are both creating and being created by an emergent collective consciousness (Pór, 2018).

An example is during the COVID-19 pandemic. Both experts and nonexperts communicated via the network across the globe to investigate and report on death rates by age and built a cultural consensus on the importance of social distancing while promoting the concept #FlattenTheCurve to give the call for collective sacrifice a brand. This arose from the network, not from government direction, market forces, or business self-interest. This was a new collective global brain performing such actions alias the one described by the term *Holimidal*.

The suggestion that linking patterns on the worldwide web can create collective consciousness was proposed by the visionary scientist and philosopher Teilhard de Chardin in 1959. He proposed the concept of the noosphere ("mind sphere"), which he conceived as a layer of thought that envelops the Earth, or as a collective brain constituted out of billions of individual brains communicating via a network of links. While this concept to some degree anticipated the World Wide Web, it adds that this network would support a global reflection that would allow humanity to resolve its problems, and thus converge to a coherent understanding. Therefore, we can interpret the noosphere as the conscious level of the global brain, with the web as the infrastructure that supports the required propagation of information. So, the key argument for consciousness shows itself in reflexivity, the ability to reflect in a qualitatively new way on global problems.

The idea that the World Wide Web is a global brain that produces consciousness has also been discussed by Russell (1983). He recognizes that the challenge is the number and diversity of all the human and computational variables involved are so large that it seems impossible to model consciousness processes in any detail. Thinking of such networks and couplings of nodes across the internet can be compared with another extremely complex, self-organizing network, the human brain. In this analogy, individual agents, such as people, websites, computers, applications, and so on, play the role of neurons in the brain. Messages being communicated between neurons in the brain are similar to electrical impulses or "activation" being transmitted between neurons via their connecting synapses. The links between agents – such as "friend" or "follower" links on social media, routing directions between computers, or hyperlinks between web pages – play the role of these synapses. This "neural network" thereby learns new knowledge when consolidated information is registered in a shared database or linking patterns (Beigi and Heylighen, 2021). For example, it could be linking patterns on Twitter that can produce a trending page. Trending topics on Twitter are determined by the collective intelligence and can develop into collective consciousness as people become more at peace and unified in a common set up of beliefs. If certain words or phrases are simultaneously appearing from accounts worldwide, Twitter recognizes this subject as a collective trend. This interconnectedness of thousands of computers (and the humans that operate them) acts as the collective conscious network which provides an outlet for publishing and accessing information from humankind's unified knowledge and beliefs, a collective consciousness.

In our continuum analogy, when artificial intelligence is then added to human interactions on platforms, it brings additional insights into knowledge-sharing activities across individuals, and we are now dealing with a weak artificial consciousness in which design and construction of machine simulates human behavior and cognitive processes (Chella and Manzotti, 2007). Most of the people currently working in AI could acknowledge that this is

the currently the state of artificial intelligence. Yet, on the very right end of the continuum, collective intelligence is taken over by the consciousness of machines. For instance, if many machines could exhibit all behaviors normally associated with human collective intelligence the question arising is whether the machines could be conscious similar to human beings? Would their behaviors be similar to human consciousness? These questions are continuously studied across various disciplines. This latter type of collective consciousness is referred to as strong artificial consciousness which refers to the design and construction of conscious machines (Holland, 2003). In other words, the collective consciousness continuum captures both existing and future consciousness studies (Atlee, 2002).

Such consciousness studies may also be explained from where collective intelligence can take place at different measurement levels

At the **individual unit level** embedding collective intelligence among our own internal subjective parts and voices, e.g., communication between the cells in one's body.

At the **interpersonal or relational level** including studies of collective intelligence within groups, e.g., between individuals and the navigation within units in the group of species.

At the **group level** in which different groups interact, such as the formation of collective intelligence between different organizational groups in the execution of projects.

At the **activity level**, such as collective actions on the internet, e.g. #SAVEUkraine.

At the **organizational level** when civil servants of a municipality partake in the predictions of health policies for the region.

At the **neighborhood level** in the local community where one lives and where one engages with neighbors on a daily basis that forms tacit knowledge about the local social life, e.g., discussion about the local schools and their ability to create positive learning experiences for children.

At the **community level** such as the community of the Global Union of Scientists for Peace and the Community of Higher Consciousness where people come together to form knowledge about how to elevate humanity to the next level.

At the **city level** that embeds collective intelligence across smart cities when the region adapts sensors to aggregate data on the density of the traffic and helps navigate the traffic to control CO_2 emissions.

At the **county/shire level** when municipalities across a county mutually engage the youth and crowdsource their ideas for how to meet challenges with substance use (see Chapter 17).

At the **state/province level,** such as when the Commission spéciale sur le modèle de développement (CSMD) of Morocco achieved the mandate to elicit ideas from Morocco's 36 million citizens on how to deliver high–quality public services to all parts of the country (Paulson, 2021).

At the **network level**, such as the interactions between people on, for instance, LinkedIn, Twitter, and Facebook for various purposes and meanings

At the **global brain level** across the entire internet or across the entire planet, e.g., the Masterplanet, which is designed by the architect company BIG with headquarter in Copenhagen which draws up a masterplan for the Earth to "prove that a sustainable human presence on Planet Earth is attainable with existing technologies."

Such collective intelligence studies and practices across different measurement and societal levels seem to have considerable potential for the future of our planet and civilization and for the overall advancement of collective consciousness. From the above list it is easy to see how collective intelligence can both advance and overlap with collective consciousness embedded

in common values and beliefs within a unit, perhaps even down to the individual's cells and the individual cell's communication on illnesses in the body.

Collective consciousness and participatory democracy

Recently, Pór (2018) has elaborated on the link between collective intelligence, collective consciousness, and participatory democracy and refers to the concept of collective awakening. Pór takes a starting point in the statement that "When everything is 'getting better and better and worse and worse, faster and faster, simultaneously,' how do we deal with the ensuing chaos?" In 2008, Pór already hinted that answer is collective intelligence as a discipline that will be the source of a massive collective awakening to a new level of consciousness. To be reliable at the requisite large scale, collective awakening must be an integral part and manifest also in our behavior, culture, and social systems.

Pór (2018) continues to argue that such collective awakening concerns a new awareness of a reality that has originally been distorted by our minds. It is a higher state that is free from human stress, fears, avoidances, ego-gratifying tendencies, as well as limited creative structures of educational and political systems and other social institutions, aimed at conserving the dominant socio-economic order. Collective awakening is to our highest potential as human beings. Such progress can be internalized both at the individual level and at the collective level.

So how should humanity recognize that it has undergone a collective awakening to a higher consciousness level? According to Pór (2008; 2018), it happens when all social institutions have been re-invented and re-designed for enabling the greatest individual and collective potential, based on participatory democratic processes. So, while the concept of "awakening" has traditionally been discussed in a spiritual context, the distinction between integral and collective awakening also needs to be explored from a systemic context lens.

An example of this internalization is through Participatory Action Research, which is defined as "a participatory, democratic process concerned with developing practical knowledge in the pursuit of worthwhile human purposes" (Pór, 2018, p. 16). That is a worldview grounded in the idea of bringing together action and reflection, theory and practice, in participation with others in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and communities (Reason and Bradbury, 2001). For example, collective consciousness is likely to arise by the widespread use of collective intelligence platforms with many people interacting. An example is Ushahidi which is a free and open-source platform used for crowdsourcing crisis information and crisis mapping. The purpose of Ushahidi is to democratize crisis information. Ushahidi could also be used for peacebuilding activities such as suggesting ways to solve the Ukraine war that can promote consciousness for policymaking on solutions and how to avoid a war crisis. What do the cases tell us about how collective intelligence and technology can advance collective consciousness?

The following six chapters present cases on how different forms of crowdsourcing and collective intelligence technologies can be adopted to increase collective consciousness for a peaceful and societal purpose.

The chapter "Smarter crowdsourcing and COVID-19: Beyond the open call" presents a new tech-based approach for rapid and global consultation to identify narrow root causes of complex problems. It engages with experts from several disciplines who bring their experience in solving complex problems. While traditional crowdsourcing brings together large numbers of people to generate ideas or implement a particular task, Prof. Beth Noveck,

Director of The GovLab, describes the Smart Crowdsourcing method as "crowdsourcing wisely, not widely." The case demonstrates how crowdsourcing of diverse experts across different disciplines can develop nuanced information, new innovative ideas, and recommendation catalogs for policymakers, translated into different languages, for the purpose of dealing with complex and global problems in their policymaking. Thereby, the smarter crowdsourcing methods can positively influence the development of collective consciousness among policymakers that could result in advanced policies benefiting the involved countries' populations.

The chapter "Mobilizing collective intelligence for adapting to climate change in the Arctic: The case of monitoring Svalbard's and Greenland's environment by expedition cruises." Through the harnessing of collective intelligence of resident communities and visitors, the study embeds citizen science theory and enables valuable data and information to be generated from local and outside sources of knowledge. This chapter outlines a citizen science pilot program of environmental monitoring by Arctic expedition cruises in Svalbard and Greenland during 2019 conducted to understand the potential this kind of environmental monitoring may have and to identify suitable approaches for enhancing data collection, management, and knowledge sharing. The conclusion of the study is that an intermediary organization that can facilitate participatory democratic processes, dialogue, and knowledge transfer between citizen science programs, scientists, and decision-makers is critical to ensuring that data enter the decision-making processes. The case demonstrates that mobilizing the collective intelligence of visitors, staff, and local communities can make a significant contribution to improve collective consciousness at the regional level about environmental decision-making and strengthen efforts to adapt to climate change.

A chapter "Using collective intelligence to assess the future with the Pandemic Supermind" describes how the MIT Center for Collective Intelligence (CCI), MIT Media Lab's Community Biotechnology Initiative (CBI), and MilliporeSigma (the life science business of Merck KGaA based in Germany) harnessed insights adopting crowdsourcing from 180 experts and global leaders in science, healthcare, public policy, and other sectors. The task given to the experts was to provide insights for the challenge: "How can we develop pandemic resilience—the ability for society to recover quickly from global disease outbreaks—both in resolving the COVID-19 pandemic and in building public health infrastructure to prepare for future pandemics?" Especially, the interest of the MIT CCI was to assess the power of expert-based crowdsourcing such as platform-enabled expert crowdsourcing combined with a Natural Language Processing (NLP) algorithm by clustering all contributions into "meta-topics" can effectively support decision-making and provide the basis for more holistic and effective responses that, by operating on the level of complex systems, could better serve public needs and raise collective consciousness about future pandemics.

A chapter "Using political bots and artificial intelligence to facilitate the interaction between citizens and lawmakers" shows the possible use of digital technologies and to exchange reliable information and answer citizens' individual questions which is an approach that remains largely unexploited. The case presents how the Congress of Brazil has been experimenting with different AI-assisted technologies and a chatbot – automated dialogue system – to handle citizen questions. The study was coordinated by the HackerLab team at the Chamber of Deputies and tested out basic answers from civil servants on the most diverse subjects that would be received by citizens, and thereby had to be carefully prepared in order to be automatically used by a Congress virtual assistant. Thus, the collaborators of the *Miscuta* (translated: Hear me out, representative) experiment had to prepare all answers in language accessible to all, and in a dialogue format. It incorporated both content curation

and dialogue design best practices gleaned from the deputies, their teams, and the civil servants, each of whom had years of experience facilitating dialogue with citizens in Brazil's particular context. In this fashion, the collective intelligence of a community of public servants is a necessary input to the artificial intelligence of the chatbot algorithm. This chapter started out by the question: Can we advance collective consciousness by mastering the between human (collective) intelligence and technology through participatory democracy and deliberate processes?

The chatbot experiment reveals that there are at least four essential dimensions that must be considered and are relevant for collective intelligence, technology and their potential trigger for collective consciousness for governmental institutions. It raises research questions and hypotheses as it draws deeper conclusions of effectiveness or impact. The authors observed that the potential benefits for a large-scale communication system based in political virtual assistants demands a certain complex organization to work properly, and must consider technology, governance, human resources, and ethics, as highlighted throughout the chapter.

A chapter "Turning organizations into innovation ecosystems: The Hexagon of Public Innovation (HIP) model" presents a case from transformation of traditional, hierarchical, closed, and bureaucratic institutions into a network of open, empathetic and democratic organizations. The model is based on the idea that "innovation is mainly grounded in social interaction and conversation". The Laboratorio de Aragón Gobierno Abierto (LAAAB), the "Aragon Open Government Lab," was launched at the beginning of 2018, as an evolution of the Citizen Participation Service of the Government of Aragon in the north of Spain. LAAAB's mission was threefold: prototype and experiment with new models of public action and solutions; and use collective intelligence to build and recover the trust of Aragon's citizens that their government is working for them. The study shows how a new form of emotional connectivity and community-wide approach to deal with contemporary challenges is valid, and draws on a combination of network science, 105 methodological approaches to innovation, and the "hacker ethic" which arises from the early internet but now extending well beyond technology circles. It is the ideas of systems guided by the values of community, on shared resources, on social impact, and playing with or subverting the systems imposed by those in power, and more organic co-creation, such as Wikipedia. The study offers an approach to balance human (collective) intelligence and technology to promote some of the main components for collective consciousness, such as design, imagination, and innovation to design, to imagine and to innovate, and to do this together to create community, so that people feel that they can be more than the sum of their individual lives.

Finally, the chapter "Co-initiating, sensing, presenting, creating and shaping: How the Scottish government applied Theory U for collective leadership against COVID-19" presents how a nation can be creative and productive during a crisis and move toward a higher consciousness purpose. Each year, the Collective Leadership for Scotland (CLS) network draws on around 5,000 participants from public service and civil society to learn and take action on collaborating together to solve complex and systemic issues. The case shows that a collective intelligence case can also promote collective consciousness as the intention of CLS is to shift leadership in complex issues from ego-systemic to regenerative eco-systemic solutions. That is done through the investment in, among other aspects, self-reflection work, group learning, and taking time to recognize patterns and reflect on their meaning before jumping to a solution. Such initiatives should elevate the collective consciousness about pandemics.

References

Atkinson, A. P., Thomas, M. S. C. and Cleeremans, A. (2000). Consciousness: mapping the theoretical landscape. *Trends in Cognitive Sciences* 4 (10): 372–382.

Atlee, T. (2002). *The Tao of Democracy: Using Co-Intelligence to Create a World that Works for All.* BookSurge Publishing, 344 pp.

Atlee, T. (2010). Integral politics as process. *Integral Review* 6 (1): 274–285.

Barušs, I. (1996). *Authentic Knowing: The Convergence of Science and Spiritual Aspiration.* West Lafayette, Indiana: Purdue University Press.

Beigi, S. and Heylighen, F. (2021). 'Collective consciousness supported by the web: Healthy or toxic?'. In N. T. Nguyen, L. Iliadis, I. Maglogiannis, and B. Trawinski (Eds.), *Computational Collective Intelligence:* ICCCI 2021 (Vol. 12876, pp. 81–93).

Blackmore, S. (2017). *Consciousness: A Very Short Introduction.* Oxford University Press, Oxford, UK.

Cardeña, E., Lynn, S. J. and Krippner, S. (Eds.). (2000). In *Varieties of Anomalous Experience: Examining the Scientific Evidence.* American Psychological Association. https://doi.org/10.1037/10371-000

Chella, A., Manzotti, R. (Eds.). (2007), *Artificial Consciousness*, Exeter, UK: Imprint Academic.

Combs, A. and Kripner, S. (2008). 'Collective consciousness and the Social Brain', *Journal of Consciousness Studies*, vol. 15, 10–11, pp. 264–276.

Dillbeck, M. C. (1990). 'Test of a field theory of consciousness and social change: Time series analysis of participation in the TM-Sidhi program and reduction of violent death in the US', *Social Indicators Research*, 22, pp. 399–418.

Durkheim, E. (1893/1997). *The Division of Labor in Society.* New York: Simon and Schuster.

Eiseman, F. B. and Eiseman M. H. (1989), *Bali: Sckala and Niskala.* Berkeley: University of California Press.

Franklin, S., (2003), "IDA: A Conscious Artefact?" *in Journal of Consciousness Studies*, 10: 47–66.

Hagelin, J. S. (1987), 'Is consciousness the unified field? A field theorist's perspective', *Modern Science and Vedic Science*, 1, pp. 29–87.

Hamilton, C. (2004), 'Come together: The power of collective intelligence', *What Is Enlightenment?*, 25, pp. 57–79.

Hamilton, C., and Zammit, C. (2008), 'Thinking together without ego: Collective intelligence as an evolutionary catalyst', in. M. Tovey (Ed.), *Collective Intelligence: Creating a Prosperous World at Peace*, (New York: Earth Intelligence Institute), pp. 507–540.

Heylighen, F. (2013). From human computation to the global brain: The self-organization of distributed intelligence. In: *Handbook of Human Computation* (pp. 897–909). Springer.

Heylighen, F. (2017). 'The Offer Network Protocol: Mathematical foundations and a roadmap for the development of a global brain'. *Eur. Phys. J. Spec. Top.*, 226:283–312. https://doi.org/10.1140/epjst/e2016-60241-5. 5.

Holland, Owen. (2003), Eds. *Machine consciousness*, New York, Imprint Academic.

Kelly, T. (1997). *The Gathered Meeting.* Philadelphia, PA: Quaker Books.

Kenny, R.M. (2004). 'What can science tell us about collective consciousness?', Collective Wisdom Seed Paper. Retrieved October 29, 2007, from www. collectivewisdominitiative.org/site_map. htm.

Lévy (1994). L'intelligence collective. Pour une anthropologie du cyberspace, Paris, La Découverte, 1994.

Lévy (2017). Entretien avec Pierre Lévy – conscience du futur, futur de la conscience. Retrieved from the homepage of Pierre Lévy (May 2022): https://plassat.wordpress.com/.

Mackay, Charles (1852). *Memoirs of extraordinary Popular Delusions and the Madness of Crowds.* London: Office of the National Illustrated Library.

McDermott, Drew V. (2001). Mind and Mechanism. Cambridge (Mass), MIT Press.

Midgley, D. (2006), 'Intersubjectivity and collective consciousness'. *Journal of Consciousness Studies*, 13(5), pp. 99–109.

Paulson, L. (2021). *A Moroccan model of collective intelligence: The Commission spéciale sur le modèle de développement (CSMD).* Evaluation Report (December 2021), Morocco: UM6P School of Collective Intelligence.

Pór, George (2008). 'Cultivating collective intelligence: A core leadership competence in a complex world'. In *Creating a Prosperous World at Peace.* Ed. M. Tovey, New York: Earth Intelligence Institute.

Pór, George (2018). "Collective intelligence and the future of consciousness." *Collective Sentience*, https://medium.com/collective-sentience/collective-intelligence-and-the-future-of-consciousness-532f86020e76.

Reason, P., and Bradbury, H. (2001). *Inquiry and Participation in Search of a World Worthy of Human Aspiration*. In P. Reason & H. Bradbury (Eds.), *Handbook of Action Research: Participative Inquiry and Practice*. London: Sage Publications.

Russell, P. (1983). *The Global Brain: Speculations on the Evolutionary Leap to Planetary Consciousness*. Los Angeles: JP Tarcher.

Shoshitaishvili, B. (2021). 'From Anthropocene to Noosphere: The Great Acceleration', *Earths Future*. 9, https://doi.org/10.1029/2020EF001917.

Teilhard de Chardin, P. (1959). *The Formation of the Noosphere*. In: *The Future of Man*. New York: Image Books Doubleday, pp. 165.

Ziman, J. (2006), 'No man is an Island', *Journal of Consciousness Studies,* 13 (5), pp. 17–42.

37

SMARTER CROWDSOURCING TO TACKLE COVID-19

Beyond the open call

Anirudh Dinesh

The story

Governments often struggle to find timely and implementable solutions to tackle urgent public problems. The myriad challenges presented by the COVID-19 pandemic (whom to test when tests are in short supply, how to increase vaccination rates, etc.) are only the most recent example of the world's crisis of agility.

In the first few months of the COVID-19 pandemic, the Inter-American Development Bank (IADB), the governments of seven countries from Latin America and the Caribbean along with The GovLab formed a consortium to launch the initiative "Smarter Crowdsourcing in the Age of Coronavirus." In the summer of 2020, these leaders reached out to hundreds of global experts in a short span of time and gathered over 70 practical strategies to tackle six issues related to the pandemic.[1] Usually, expert councils and advisory commissions are formulated in such circumstances. Often, these will include representatives from stakeholder groups along with local experts. These councils, like the COVID-19 task forces in the USA and similar ones constituted by governments around the world, usually work slowly and in a format not suited to providing concise advice as quickly as required. In addition they may not include participants from diverse sectors, geographies, and skillsets who may have innovative, global perspectives to bring to the table. These are the problems that the Smarter Crowdsourcing approach can overcome while addressing pressing global problems.

Traditional crowdsourcing is effective at bringing together large numbers of people to generate ideas or implement a particular task. It achieves such scale by what's known as the "open call" – an invitation to the general public to contribute ideas or proposals. But this process relies on the right people learning about the opportunity to participate, and actually taking the initiative on their own to do so. Governments dealing with an urgent crisis clearly need a more agile solution to identify expertise quickly.

Smarter Crowdsourcing is thus a methodology that integrates the agility and diversity of crowdsourcing with curation.[2] Curation involves identifying individuals with academic, practical, subject matter, technical or methods expertise, as well as people who have demonstrated success solving the problem at hand. Prof. Beth Noveck, Director of The GovLab describes this method as "crowdsourcing wisely, not widely."

The Smarter Crowdsourcing method was first developed and deployed by New York University's The GovLab in 2015 for the city of Quito in Ecuador, in response to the imminent eruption of the Cotopaxi volcano.[3] This blueprint was subsequently used by The GovLab to tackle problems such as the Zika epidemic, anti-corruption, and most recently the COVID-19 pandemic. With Smarter Crowdsourcing, global, interdisciplinary experts are brought together rapidly through a series of video conferences where they focus on specific issues related to a larger public problem.

Smarter Crowdsourcing is thus a tech-based approach for a rapid, global consultation process. It is best used to find implementable solutions to complex public problems like corruption, infectious diseases, or disaster management. The approach identifies narrow root causes of complex problems, before crowdsourcing innovative solutions for the same. It is a great way to engage experts from several disciplines, who bring with them their field experience of solving complex problems.

"Using Smarter Crowdsourcing, we remove a layer of selection bias (for example, only consulting experts from a local university or political allies) and facilitate much broader global reach to include different languages, sectors and countries," states Henri Hammond-Paul, Research Fellow at The GovLab.

The GovLab envisions the process of Smarter Crowdsourcing over five steps:

1. Identifying partner institutions: The first step is to engage institutions that have authority and institutional knowledge. They should commit in advance to implement the solutions that are identified for tackling the problem at hand. In later stages, having these stakeholders work together serves as a critical incentive for experts to participate in the process.
2. Problem identification: The second step involves breaking down the large, complex issue into a set of narrower root causes. This process usually results in a long list of issues being compiled, all of which require immediate action. The partner institutions then prioritize the list to decide which ones are of the greatest concern. Evidence-based problem briefs are prepared to describe those issues in detail. The resulting 5–6 issues become the topics of focus.
3. Curation: The third step is to identify the participant experts. The GovLab has come up with a process for curating this list of diverse experts. The target demographic includes individuals with academic, practical, subject matter, technical or methods expertise as well as people who have demonstrated success solving the problem at hand. The GovLab's Smarter Crowdsourcing "playbook"[4] describes four methods to compile this curated list of experts: (1) Global network analysis; (2) Rapid evidence review; (3) Friend of a friend recommendations; and (4) Self-selection.
4. Deliberation: The experts are brought together in a series of online sessions, each one focused on a specific issue identified in Step 2. These sessions bring together 15–20 experts per topic and are spaced 1–2 weeks apart. Each session lasts around two hours. Using a discussion guide to moderate the conversation, each expert is invited to share their experience and recommendations to tackle the issue at hand.
5. Implementing the ideas: Following the online sessions, the suggestions made by the experts are expanded on through intensive research and interviews. The final product is an implementation guide which describes actions that should be taken along with relevant timeframes, costs, and examples that span multiple jurisdictions.

In the case of Smarter Crowdsourcing Coronavirus, this was done over the course of five months, when The GovLab and IADB worked with government officials from six countries

across Latin America and the Caribbean to identify solutions to key problems arising from the pandemic. Through a rigorous process of problem definition, The GovLab's team worked with experts to create a catalog of 24 problems related to the COVID-19 pandemic. These included the emergency management continuum (from preparedness to recovery response), health data collection management, support for vulnerable populations, public health infrastructure, data collection, and procuring personal protective equipment (PPE). The partner governments then prioritized six of the 24 topics of most urgent concern:

1. Testing Strategy
2. Contact Tracing
3. Behavioral Science and COVID
4. Supporting Marginalized and Vulnerable Populations
5. Epidemiological Monitoring and Surveillance
6. Mental Health and Emotional Wellbeing.

Rather than putting out an open call inviting ideas to "solve COVID-19" (since the pandemic is a problem that is too broad and complex to solve easily), the Smarter Crowdsourcing process enabled The GovLab to quickly bring together experts on infectious diseases and data science, computer scientists and behavioral scientists, social scientists, and logistics experts. After all, expertise is not only credentialed, it is also found in lived experience. For example, to address epidemiological monitoring and surveillance challenges with COVID-19, the Smarter Crowdsourcing method engaged innovators like Nick Donowitz of THINKMD and Jonathan Jackson of Dimagi, who put their heads together with academics like Ed Hammond of Duke University and Eric J. Alm of Massachusetts Institute of Technology. The resulting fusion of experience, background, and perspective yielded a set of recommendations that approached the problem from a technology infrastructure, policy and legislation, and communications vantage (The GovLab, 2021a).

The benefits for experts in participating in these sessions are put forward as follows:

1) They are given an opportunity to lend their skills to solving complex and urgent public problems in a focused, time-bound, and structured online advisory session.
2) They can speak directly to institutions and policymakers who are responsible for and potentially interested in implementing their ideas. These decision-makers are always part of the online sessions and listening to what the experts have to say.
3) They can refine their own ideas through the two-hour long discussion with other global, interdisciplinary peers in the field.

For each online session, a problem brief was created by The GovLab team describing the issue. This was backed by evidence and global examples of how the problem has manifested. The brief also breaks down the problem into a set of specific root causes. This was used to structure the conversation during the online sessions and helped to solicit suggestions that were in response to those specific issues.

Each brief also included questions for discussion addressed toward government partners as well as the experts. For example, the problem brief on testing strategies[5] describes three challenges related to testing: (1) Designing and sourcing test kits; (2) Determining whom to test and how; and (3) Collecting and sharing data. For each of the three broad problems, the brief then describes 4–5 specific root causes (for example, "shortage of test kits" or "the public may not know how to obtain a test"). Identifying these issues is important because it

provides a structure to the discussion and it also brings in people with diverse expertise like logistics and communications, who likely have valuable inputs to offer.

Prior to the online session that brought together all the experts, The GovLab team also shared a "regional context brief" to accompany the problem brief. The former describes the actions that each of the partner governments ha already taken in response to the problem at hand, along with information regarding challenges to policy implementation in those regions. In the case of the COVID-19 crisis, the regional reports proved valuable in two distinct ways. First, it helped provide the experts with the context they needed to really understand how a global problem manifests at a local level. Second, it provided an opportunity for countries to learn from each other. A prime example of this was when a government official from Mexico described how the Mexican IMSS (social security institute) had been using employee absence data reported to them by Mexican companies to estimate emerging hotspots and outbreaks. Participating governments were able to take this strategy back to their own contexts. Experts were also able to consider how to better encourage reporting, such as through behavioral science and "nudges."

After the online advisory session, a "takeaways" document was shared with the participants to solicit additional written feedback. Based on this and one-on-one interviews wherever necessary and feasible, the ideas from the online sessions were converted into implementable recommendations and strategies. For example, to address the problem of shortages in testing supplies, a recommendation to use Pooled Testing (a statistical method of grouping testing samples to conserve testing reagents) was provided. Detailed legislative and regulatory strategies to support an expeditious implementation of this crucial technique were required. In the process of researching and developing this recommendation, The GovLab team collected and shared a list of subject matter experts that governments could consult for more specific and detailed guidance on implementing the recommendation. This included experts like Peter C. Iwen of the University of Nebraska Medical Center (UNMC) and Felipe Peixoto of Safetest (www.safetest.com.br), a startup diagnostic laboratory that aims to develop and make available rapid and precise methods for early detection of infectious diseases.

The results of this Smarter Crowdsourcing project also include a comprehensive set of knowledge tools, all publicly available on the initiative's website in three languages.[6] The tools include a catalog of challenges, problem briefs, regional reports documenting contextualized challenges, conference takeaways, and implementation memos.

Additionally, The GovLab incorporated feedback from interviews with project participants about what tools would increase the likelihood of implementation and incentivize the use of all the recommendations and strategies that were formulated. The process actually yielded 18 recommendations, and over 70 strategies for implementation.[7] These recommendations were categorized into different formats for specific audiences:

- Final report – A master report including a synthesized compilation of all the resources from the "Smarter Crowdsourcing in the Age of Coronavirus" Project. The document is divided into six chapters, one for each topic covered during the engagement – Testing Strategies, Contact Tracing, Behavioral Science, Vulnerable Populations, Monitoring and Surveillance, and Mental Health and Emotional Wellbeing. This report is available in English, Spanish, and Portuguese (Noveck et al., 2021).
- One-page executive briefs – A set of high-level briefing documents that are designed for senior government officials. There is one brief for each of the six topics available in English, Spanish, and Portuguese (The GovLab, 2021b).

- Recommendations catalog – A searchable catalog of all recommendations and strategies is available in English, Spanish, and Portuguese (The GovLab, 2021c).

What science tells us

Defining the problem: Without a clearly defined problem, participants in the crowdsourcing exercise are unlikely to have a clear focus on what is expected from them. This means both defining the topic of discussion accurately and also the action/task expected from the participants. The U.S. Federal Ideation Community of Practice posits that "defining the problem is half the battle" in crowdsourcing (Lowden, 2014).

Impact of crowd size: Large crowds work especially well where there are clearly defined "micro-tasks" (Simperl, 2021) for individuals who contribute toward some larger, collaborative goal, for example, engaging in scientific research (e.g. https://scistarter.org) and data collection through "citizen science" projects or engaging the public in mapping the location and species of trees in a city to create an inventory of urban forests.[8] On the other hand, where the goal of the crowdsourcing exercise is to find answers to problems or generate ideas, the impact of crowd size on the outcomes is less clear. In some situations large groups will often arrive at the "right answer" as suggested by Condorcet's jury theorem or by James Surowiecki in *The Wisdom of Crowds*. But as Professor Cass Sunstein suggests, when a group does not possess sufficient relevant information, "it's best to ignore their judgments" (Sunstein, 2006).

Going beyond the open call: Professor Beth Simone Noveck suggests that reaching out to experts, not just credentialed experts but those with lived experience and practical know-how, "accelerates the path to innovation and effective solutions" (Noveck, 2014). The Governance Lab has published a series of case studies providing examples of institutions crowdsourcing expertise within their own organizations to solve difficult problems (The GovLab, 2016).

Gathering diverse expertise is likely to result in more innovative ideas: Research has consistently shown that interdisciplinary collaboration can solve complex problems and interaction between experts (Chubin, 1976) from different fields ("outsiders of a given scientific community") results in more innovative solutions (Lakhani, 2006). In fact, research also shows that groups with greater diversity of skills and perspectives can outperform groups of "high-ability problem solvers" (Hong and Page, 2004)

Do's and don'ts

As with any collective intelligence methodology, there are some important rules to keep in mind while implementing the process of Smarter Crowdsourcing to ensure that the desired outcomes are achieved:

- **Conduct problem definition and curation:** If the problem is too broad, it becomes difficult to get into the details of any specific ideas during the online session. So it is important to combine intensive problem definition with curation to ensure that the participants in the exercise have the relevant (and practical) knowledge to contribute in

solving the specific problem being tackled in each online session. It also makes it possible to bring on board diverse experts into the conversation.

- **Provide contextual information to experts in advance:** In order to gather the most useful ideas, it is important to share information about practical challenges found in particular regions with experts who might be from another part of the world. Sharing information about existing projects will also aid experts to suggest improvements or even to come up with entirely new ideas. In the Smarter Crowdsourcing Coronavirus project, he GovLab team shared "regional reports" with the expert participants prior to each online session to appraise them of the existing projects in the five partner countries and the main obstacles to implementation in each country, such as healthcare infrastructure or staffing constraints and any cultural nuances that might have impacted implementation of innovative ideas in the past.

- **Enable multi–modal conversations:** Each 2-hour online session typically had 15–20 experts. The GovLab team moderated the conversation via voice and text, through the chat feature on the video conferencing platform Zoom. This allowed participants to share their ideas via audio or video. It also enabled a vibrant discussion via the group chat box, where links to real-world examples of ideas in action, articles, and videos were also shared. According to Rogelberg (2018), giving participants the ability to write their ideas (such as in the chat) before sharing them out loud yields more creative ideas than simply brainstorming. Mulgan (2017) suggests that combining multiple modes of communication leads to better learning, thinking, and collaboration.

- **Ensure access:** Since internet connectivity is a challenge in several parts of the world, participants who use other modes to connect to the online session (such as via telephone) should be allowed to easily do so. In addition, providing closed captions for those with hearing impairments and simultaneous translations for those who may not speak the main language being used during the session lowers substantial barriers to participation.

Notes

1 https://coronavirus.smartercrowdsourcing.org/files/SmarterCrowdsourcing_Report_EN.pdf.
2 This is explained in greater detail at: http://smarterstate.org.
3 For more information on GovLab's work in Quito, visit: http://cotopaxi.smartercrowdsourcing.org.
4 Available at: http://smartercrowdsourcing.org (Accessed: September 2021).
5 Available through coronavirus.smartercrowdsourcing.org (Accessed: September 2021).
6 https://coronavirus.smartercrowdsourcing.org.
7 Available through coronavirus.smartercrowdsourcing.org (Accessed: September 2021).
8 See OpenTreeMap atwww.citizenscience.gov/catalog/53 (Accessed: September 2021).

References

Chubin, D. (1976). The conceptualization of scientific specialties. *The Sociological Quarterly, 17*(4), 448–476. Available atwww.jstor.org/stable/4105548 (Accessed: September 2021)

Hong, Lu and Page, Scott E. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. Available at www.pnas.org/content/101/46/16385.

Lakhani, K.R. (2006) The value of openness in scientific problem solving. Available at: www.hbs.edu/ris/Publication%20Files/07-050_1b57659d-78f0-4686-a764-925531f05a7b.pdf (Accessed: September 2021).

Lowden, T. (2014). In crowdsourcing competitions, defining the problem is half the battle. Available at: https://digital.gov/2014/04/28/in-crowdsourcing-competitions-defining-the-problem-is-half-the-battle/ (Accessed: September 2021).

Mulgan, G. (2017). Collective intelligence as humanity's biggest challenge. Available at: www.nesta. org.uk/blog/collective-intelligence-as-humanitys-biggest-challenge/ (Accessed: September 2021).

Noveck, B.S. (2014). *Bridging the Knowledge Gap: In Search of Expertise, Democracy Journal*. Available at: https://democracyjournal.org/magazine/34/bridging-the-knowledge-gap-in-search-of-expertise (Accessed: September 2021).

Noveck, B.S. et al. (2021) *Smarter Crowdsourcing in the Age of Coronavirus: A Handbook of Innovative Political and Technical Proposals, and a Guide to their Implementation*. The GovLab. Available at: https://coronavirus.smartercrowdsourcing.org (Accessed: September 2021).

Rogelberg, S.G. (2018). The surprising science of meetings, available at https://global.oup.com/academic/product/the-surprising-science-of-meetings-9780190689216?cc=us&lang=en&.

Simperl, E. (2021). How to use crowdsourcing effectively: guidelines and examples. *LIBER Quarterly: The Journal of the Association of European Research Libraries,* 25(1), 18–39. doi: 10.18352/lq.9948

Sunstein, C.R. (2006). When crowds aren't wise. *Harvard Business Review*. Available at: https://hbr.org/2006/09/when-crowds-arent-wise (Accessed: September 2021).

The GovLab. (2016). *Smarter State Case Studies*. Available at: https://thegovlab.org/smarterstate (Accessed: September 2021).

The GovLab. (2021a). *Smarter Crowdsourcing: Coronavirus - Epidemiological Monitoring and surveillance*. Available at: https://coronavirus.smartercrowdsourcing.org/monitoring.html (Accessed: September 2021).

The GovLab. (2021b). *Smarter Crowdsourcing: Coronavirus - Executive Memos*. Available at: https://coronavirus.smartercrowdsourcing.org/executive-memos.html (Accessed: September 2021).

The GovLab. (2021c). *Smarter Crowdsourcing: Coronavirus - Recommendations*. Available at: https://coronavirus.smartercrowdsourcing.org/recommendations.html (Accessed: September 2021).

38

MOBILIZING COLLECTIVE INTELLIGENCE FOR ADAPTING TO CLIMATE CHANGE IN THE ARCTIC

The case of monitoring Svalbard's and Greenland's environment by expedition cruises

Gitte Kragh, Michael K. Poulsen, Lisbeth Iversen, Ted Cheeseman, and Finn Danielsen

"Hurtigruten Expeditions is happy to work with the scientific community, enabling an interesting and meaningful scientific program with presentations and hands-on citizen science activities for passengers, and ultimately contributing to the sustainability of the Arctic region."

– Verena Meraldi, Chief Scientist, Hurtigruten Expeditions

The story

The Arctic, one of the last wilderness areas on Earth, conjures up images of vast, seemingly barren and deserted expanses, glaciers, and rough oceans. It is one of the areas most heavily influenced by climate change and a fundamentally important region for humanity. Unfortunately, our knowledge of the status and trends of natural resources and the environment in the Arctic is limited (Metcalfe et al., 2018), making natural resource management decisions difficult.

In some Arctic regions, there are communities with a very close and often historic connection to the environment, whereas in other areas, such as Svalbard and major parts of Greenland, there are few or no resident communities. Harnessing the collective intelligence, through citizen science (CS), of resident communities and visitors, enables the generation of valuable data and information from local knowledge. Also, community-based monitoring programs may be important for better natural resource management (Danielsen et al., 2021a; Johnson et al., 2016). One challenge is how to reach remote, uninhabited wilderness areas to obtain much-needed data. This is where expedition cruises can play a crucial role.

Cruise ships regularly reach otherwise rarely visited places (Simoniello et al., 2019). Expedition cruises in particular go to many otherwise remote areas during summer months in the Arctic. Guides and guests on expedition cruises have observed and contributed observations to a growing number of individual CS projects. However, this has been done in a largely uncoordinated manner and without thought to optimizing the data collection, data management, and data sharing processes to inform environmental decision-making.

This challenge of making individual CS projects or larger CS program data collection, management, and sharing of results more effective in shaping government decisions brought together representatives of cruise operators, CS projects, local government, and scientists at the University Centre in Svalbard in March 2019. The workshop was organized by the EU project "Integrated Arctic Observing System" (INTAROS) together with the Association of Arctic Expedition Cruise Operators (AECO).[1] AECO works to ensure environmentally-friendly, responsible, and safe cruise tourism in the Arctic. Workshop participants shared and discussed lessons learnt regarding past environmental monitoring efforts by expedition cruise ships in the Arctic, as well as the potential for this data collection, management, and sharing to become more effective and feed into local and regional decision-making processes. The group collectively decided to run a CS pilot program for Arctic expedition cruise environmental monitoring in Svalbard and Greenland during 2019 to understand the potential of this kind of environmental monitoring and identify suitable approaches for enhancing data collection, management, and sharing.

Passengers on expedition cruise ships typically visit the Arctic to experience the pristine untouched nature, emptiness, and wildlife. In this project, expedition cruise operators encouraged their passengers to participate in the scientific understanding – and ultimately, the conservation – of these spaces. The biodiversity of Svalbard and Greenland is rich for the polar regions. In Svalbard, for instance, there are 1,143 species of plants and 203 species of birds recorded.[2] Marine mammals include polar bears, walruses, seals, and 11 species of whales (Søreide et al., 2021). Facilitating the participation of guides and passengers in CS projects may make the cruises an even richer experience for both guides and guests, if motivations and interests of passengers are kept in mind, providing a meaningful experience for all. Hence, it was decided to trial four CS projects, namely eBird[3] and Happywhale[4] (both free and open access platforms for bird and marine mammal monitoring, respectively, with data accessible for scientific, conservation, and personal purposes), Secchi Disk Study[5] (water depth monitoring for scientific study on phytoplankton that are the basis of marine food chains and important producers of oxygen), and GLOBE Observer Clouds[6] (free, open access, and educational cloud monitoring to support atmospheric research at The National Aeronautics and Space Administration (NASA) as well as school projects), covering biodiversity, hydrology, and meteorology to cater to different passenger interests.

Community building is a critical element of the success of CS projects. At least four factors are at play in creating sufficient motivation among a sufficiently large number of participants. First, participants often have a shared intrinsic motivation to help conserve the natural environment. Expedition guides present the CS projects in advance of the trips "as a way to contribute positively, given all the harm humanity is doing." Even among those who do not consider themselves scientifically minded, this "call to action" is often sufficient to ignite a desire to participate. Second, participants are more likely to participate in projects whose goals and methods are familiar to them. Guides sometimes bring guest lecturers on the cruises, and are often highly educated in biology themselves. By communicating to participants about the scientific and social need for this data, both before and during the trips, motivation to participate is reinforced. Third, the time required to gather data must

be low enough not to overly burden the participants. For example, the Secchi Disk process is very quick, and the bird observations are fast and spontaneous. Tracking whales, on the other hand, may require waiting for hours before taking a photo, but participants are often habituated to doing this from previous cruises. Finally, feedback from other participants – face-to-face, and through the platform – helps deepen the sense of a common endeavor and maintain motivation over time. Participants get to know one another well, sharing observations in-person and on the platforms, including surprising or interesting finds. On some platforms, such as eBird and HappyWhale, each contribution is immediately visible to the whole group, adding to the sense of common progress. The eBird platform also features friendly competitions to challenge participants to add more photographs; these challenges, plus the presence of user profiles visible to other users, help reinforce the sense of community and belonging needed to maintain motivation over time.

Biodiversity monitoring and recording through eBird and Happywhale were by far the most popular projects in the program: 705 bird checklists and 141 whale encounters were reported during 2019. This finding corresponds well with passenger interests in wildlife, though it is important to note that cruise guides are instrumental in facilitating passenger participation, so these numbers also may reflect cruise guides' areas of interest. Cruise guides also submitted observations themselves, ten guides and seven guides for eBird and Happywhale, respectively. In total, 165 persons contributed observations across the four CS projects. Only one observation was submitted to the Secchi Disk project, and only 11 observations to the GLOBE Observer Clouds project during 2019. Clearly, a challenge in collecting environmental and meteorological data through CS programs is that participants contribute on a voluntary basis, and therefore only within their specific areas of interest unless the cruise guides actively encourage them to collect information about other topics.

Acknowledging this issue, our findings suggest that expedition cruise passengers and guides can gather data from remote and rarely visited areas with great potential to help strengthen the basis for natural resource management decision-making, for instance, for globally threatened species such as the Atlantic puffin (see Figure 38.1). Observations from expedition cruises are relevant to management decision-making not only nationally but also internationally. Meaningful measures that could be tracked include species abundance changes, habitat use, climate-moderated range shifts, and the introductions of species outside their normal range (Danielsen et al., 2021b). Climate change and increasing human activities call for rapid environmental management responses and without field information, there may be a risk that environmental management decisions are poorly targeted and do not address critical needs.

A range of public decisions could be influenced by this data. For example, indigenous communities in Greenland have often disagreed with policymakers about the appropriate regulation of hunting and fishing when the species at issue, such as narwhals or other marine mammals, are under serious threat. From the perspective of these populations, government decisions on these questions are often based on a distorted picture of local conditions and practices. Data from CS can add a neutral and often illuminating source of information to these debates. To take another example, decisions by the Norwegian government on developing infrastructure or new petroleum projects in Svalbard can have major impacts on bird populations, but this data is very hard to gather. CS projects like eBird can give a critical source of information on how to make these public decisions responsibly. In each of these cases, intermediary organizations, such as Greenland's Hunters and Fishers Association, play a critical role in making the data from these projects accessible and usable to local people and government stakeholders alike.
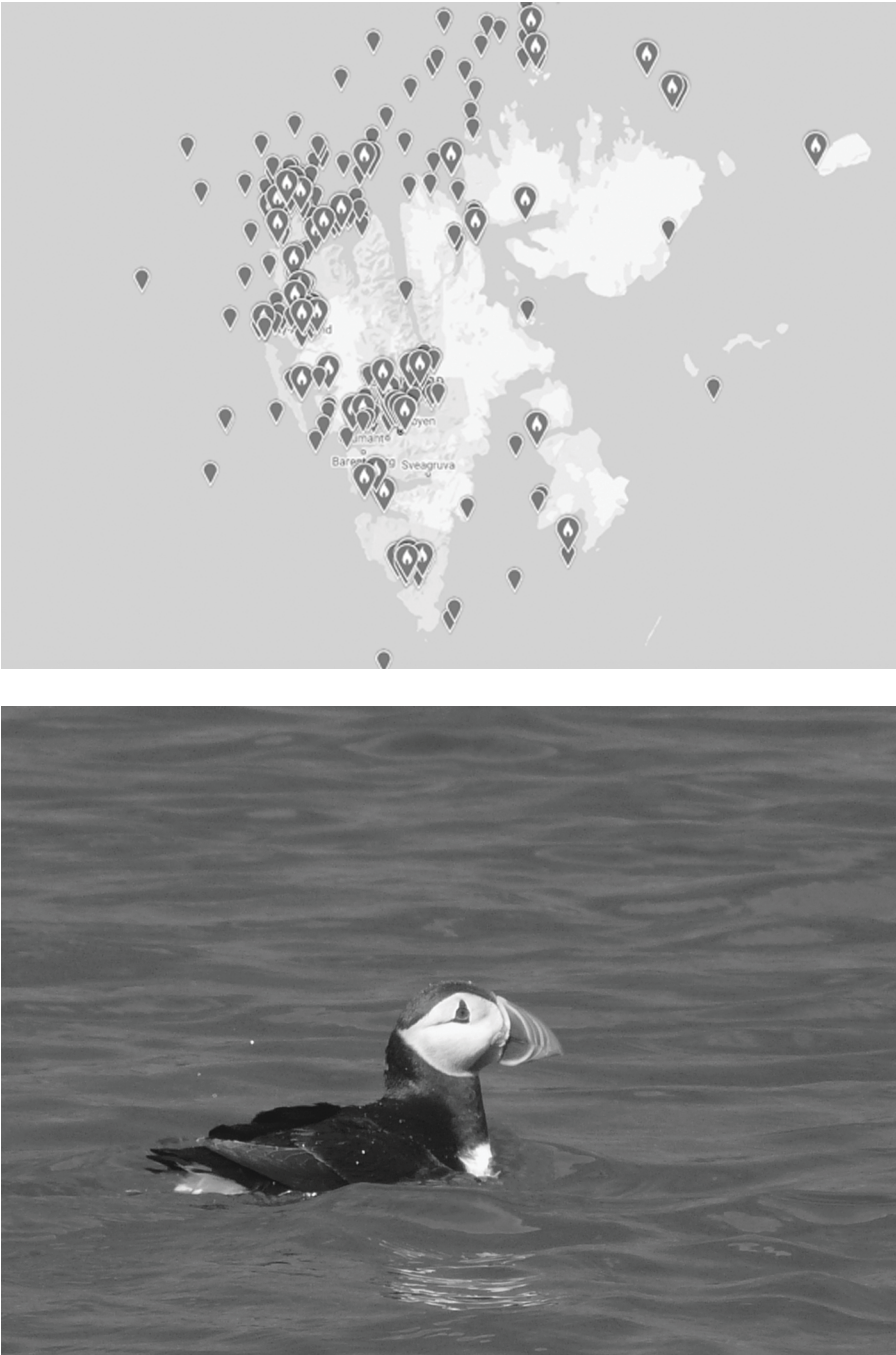
Figure 38.1   Records of Atlantic puffin *Fratercula arctica* (*n* = 622 records) from Svalbard 2002–2019 in the eBird database.

Note: This species is listed as globally threatened by IUCN in the category "Vulnerable." Records highlighted with a white flame are from eBird hotspots, areas with "many" checklists.

Source: Photo by Henrik Kisbye; map from eBird.

Unfortunately, few observations reach decision-makers. Partly in response to this, a group of social scientists decided to establish the Svalbard Social Science Initiative and develop a platform, both online and for in-person meetings, to help coordinate research activities and communication.[7] Through a series of workshops, seminars, and local mobilization activities, actors from science, local authorities, the Governor of Svalbard's office (Norwegian government representative), the business sector, non-governmental organizations, and citizens identified the main challenges which included knowledge gaps, lack of data, and lack of communication between the actors. This led to the establishment of the Svalbard Local Community Dialogue as a digital meeting place during the COVID-19 lockdown. Moreover, Hurtigruten Expeditions installed a research station on their new ship, Fritjof Nansen, where they engage scientists to coordinate and communicate with passengers, local communities, and the wider society.[8]

Data and information from CS programs and other sources are now beginning to reach the decision-makers and become more used. More initiatives such as these are sorely needed, where CS project managers, data collectors such as cruise ship guides and passengers, scientists, and decision-makers collectively discuss and address the challenges of identifying solutions to data collection issues, improving communications from data collection to decision-making, and presenting increasing quantities of robust data to decision-makers. Mobilizing the collective intelligence of visitors, staff, and local communities can make a significant contribution to better environmental decision-making in order to strengthen efforts to adapt to climate change in the Arctic.

What science tells us

All types of CS projects are encompassed within the study of collective intelligence (Rafner et al., 2022), as CS initiatives are designed to leverage the collective intelligence of participants, scientists, and potentially other stakeholders from the private sector or civil society. This complexity of CS project stakeholders affects the potential impact of CS projects, potentially making impact more challenging to achieve (Skarlatidou et al., 2019). This is particularly clear in this Arctic pilot program where, if the collected data are not communicated to and used by the local or regional decision-makers, the local benefits of the data thus collected disappear.

Monitoring the environment and biodiversity can be undertaken by both scientists and lay people as there is a spectrum of protocols with varying levels of complexity (Danielsen et al., 2021b). Monitoring by expedition cruise guides and passengers is a form of CS in ecology (Lepczyk et al., 2020) where participants are involved only in data collection as opposed to other stages of the research process. More collaborative and co-created CS approaches provide opportunities for participants to also engage in research question definition, project design, data collection and analysis, and finally use of data in natural resource management and decision-making (Danielsen et al., 2020).

Our case shows that collective intelligence is used differently at each stage of a CS program, and additional methods are required when the goal is to intervene more directly in natural resource management (through such changes as local area closure, time closure, or adjustment of trails) based on CS projects (Gray et al., 2020). Creating impact requires communication with decision-makers (Wagner et al. 2020), which may be difficult to achieve in the short timespan that many CS projects operate. In our case, this collaboration was present from the beginning with the presence of local decision-makers at the initial workshop, and with the decision to use existing, ongoing global CS projects, such as eBird

and Happywhale, that makes long-term monitoring possible. However, few data sets and findings from the pilot study initially reached decision-makers in Svalbard and Greenland, as the global CS projects were not designed to communicate directly with local or regional decision-makers. It was not until the Svalbard Social Science Initiative was established that a deliberate link to decision-makers was re-established. This highlights the importance of carefully considering how to convert an initial interest from decision-makers into sustained communication to bring these CS programs to fruition, including the voices of scientists, other community stakeholders, and policy-makers. Community-based facilitation may be an effective method of knowledge transfer for such programs, requiring facilitators with the necessary training and respect from the targeted community.

Central to the success or failure of expedition cruise-based monitoring in decision-making processes is the relevance of the observations made. Observed attributes need to be a topic of relevance to decision processes, that is to say, observations must contribute to one or more of the "key benefit areas" defined by the Sustaining Arctic Observing Network (Starkweather et al., 2021). In our case, some of the attributes observed by cruise guides and passengers are indeed relevant to decision processes in Svalbard and Greenland even in the short term. Examples include observations of whales, polar bears (Happywhale), and molting geese (eBird). In contrast, observations of attributes such as plankton density (Secchi Disk) and cloud formations (GLOBE Observer Clouds) may only be relevant to decision processes in the longer term. In addition to being a critical source of food, plankton produce 50% of oxygen in the ocean, and their population has declined 40% in the last half-century alone. By crossing the citizen-gathered data with satellite observations, scientists can better understand how new weather patterns have disrupted the fundamental health of these marine ecosystems.

Our findings suggest that although some CS is already being undertaken by expedition cruise operators in the Arctic, there remains a huge unexplored potential (Kelly et al., 2020). There will continue to be a need to make data available and accessible for local communities and decision-makers. CS projects, including those that harness the collective intelligence of expedition cruise operations, could contribute invaluable data to share knowledge and inform decisions on these issues of growing urgency for the world.

Do's and don'ts

Our CS pilot with expedition cruise guides and passengers in Svalbard and Greenland suggests that expedition cruises can generate large quantities of high-quality data on the environment and especially biodiversity, e.g., observations of globally threatened marine mammals from remote areas with species identifications documented by photographs. Data from such CS programs can be used in both research and decision-making, but success will most likely depend on good knowledge of the basics of CS and at least six key factors:

1. Citizen science encompasses a diverse range of interdisciplinary methods to tap into the collective intelligence of the general public from collecting data to involving the public more broadly in research design, resource management, and decision-making. These processes often **require a diverse set of skills** by project managers whose backgrounds are principally scientific. Many good resources on CS are available, including online knowledge-sharing hubs and repositories like the EU-citizen.science platform,[9] free online CS courses like the course offered by UCL,[10] and many excellent books on the

topic (e.g., Hecker et al., 2018; Lepczyk et al., 2020; Skarlatidou and Haklay, 2021; Vohland et al., 2021).

2. **Successful monitoring with expedition cruises depends on the existence of suitable CS projects**. Community members, scientists, and decision-makers in Svalbard identified a need for photo-documentation of cultural and historical sites which are increasingly under threat in the Arctic, yet it was impossible to find a suitable existing CS cultural heritage project. This is in sharp contrast to the multitude of CS projects dealing with biodiversity and the environment. It is important to note that natural science CS has been ongoing for decades, e.g., bird observations (Greenwood, 2007), whereas cultural heritage CS has only more recently started to gather traction (Dawson et al., 2020). Natural science CS projects have therefore had longer to establish themselves. Another important aspect is that CS projects require sufficient time and resources to operate effectively. They require somebody to lead them, design, and implement the public engagement and research aspects, manage volunteers, and ensure appropriate data management and analysis. Funding for CS projects can be difficult to obtain in the first place to frame the initiative, and subsequently to keep the projects up and running. Therefore, CS program organizers would be wise to tap into already existing CS projects to minimize costs and overcome potential issues of data reliability and validity through the use of existing well-proven protocols, provided that the CS program organizers have access to the CS project data for local and regional use.

3. **Careful consideration of participants' interests**: Some observation tasks are more appealing and interesting to participants than others. Taking Secchi depths or photographing clouds may be less likely to generate the same enthusiasm among visitors to the Arctic as observing and photographing puffins, whales, or polar bears.

4. **Prompt feedback to participants in an appealing and informative way** is critical to maintain motivation for quality data input and continued participation (van der Wal et al., 2016). Two of the CS projects used in our case, eBird and Happywhale, have effective digital platforms that immediately provide feedback on how new records correspond with other observers' records of the same attributes in the same area. Other CS projects relied on observers submitting their observations by email to the CS project coordinator and only obtaining feedback after a while. The CS projects with advanced digital platforms are, however, very costly to maintain (Johnson et al., 2021), and it is unlikely that it will be possible to establish and sustain advanced digital platforms developed specifically for observing the Arctic. There are large benefits from building on existing global projects and programs rather than developing new Arctic-specific ones. An example of another CS project with an effective digital platform that may be highly useful in the Arctic is iNaturalist.[11]

5. Observations are more likely to be used by decision-makers in the Arctic if **records are analyzed and interpreted with a view to informing decision processes** and if the findings are communicated to decision-makers in appropriate formats (Danielsen et al., 2021a). Typically, scientists will prefer data in its most disaggregated form whereas decision-makers need a synthesis that describes the bigger picture, what the data show about the topic of interest, how strong the evidence is, and therefore what needs to be done, by whom and when. The transformation of raw data into interpreted information is a job that requires trained staff and adequate funding.

6. If the collective intelligence engaged in CS programs is to contribute to decision-making – and thus improved natural resource management – there is **a need for an**

intermediary organization to facilitate the dialogue between operators, CS projects and programs, and decision-makers (Eicken et al., 2021). The Svalbard Social Science Initiative is an example of a knowledge exchange initiative and can provide an important facilitation role, but organizations with dedicated, funded staff for this purpose are also needed, for instance, AECO or the Polar CS Collective.

Acknowledgments

Notes

1 https://intaros.nersc.no/content/cruise-expedition-monitoring-workshop.
2 https://whc.unesco.org/en/tentativelists/5161.
3 https://ebird.org.
4 https://happywhale.com.
5 www.secchidisk.org.
6 https://observer.globe.gov.
7 https://svalbardsocialscience.com.
8 https://hurtigrutensvalbard.com/no/om-svalbard/svalbardbloggen/dap-for-ms-fridtjof-nansen.
9 https://eu-citizen.science.
10 www.ucl.ac.uk/short-courses/search-courses/citizen-science-and-scientific-crowdsourcing-intro duction.
11 www.inaturalist.org.

References

Danielsen, F., Adrian, T., Jensen, P.M., Munoz, J., Shirk, J., Burgess, N.D. 2020. Current Approaches to Citizen Science. In Lepczyk, C.A., Boyle, O.D., Vargo, T.L.V. (Eds.), 2020. *Handbook of Citizen Science in Ecology and Conservation.*

Danielsen, F., Enghoff, M., Poulsen, M.K., Funder, M., Jensen, P.M., Burgess, N.D., 2021b. The Concept, Practice, Application, and Results of Locally Based Monitoring of the Environment. *BioScienc*e 71, 484–502. https://doi.org/10.1093/biosci/biab021

Danielsen, F., Johnson, N., Lee, O., Fidel, M., Iversen, L., Poulsen, M. K., Eicken, H., Albin, A., Hansen, S.G., Pulsifer, P.L., Thorne, P., Enghoff, M. 2021a. *Community-based Monitoring in the Arctic.* University of Alaska Press.

Dawson, T., Hambly, J., Kelley, A., Lees, W., Miller, S., 2020. Coastal heritage, global climate change, public engagement, and citizen science. *Proc. Natl. Acad. Sci.,* 117(15), 8280–8286. https://doi.org/10.1073/pnas.1912246117

Eicken, H., Danielsen, F., Sam, J.-M., Fidel, M., Johnson, N., Poulsen, M.K., Lee, O.A., Spellman, K.V., Iversen, L., Pulsifer, P., Enghoff, M., 2021. Connecting Top-Down and Bottom-Up Approaches in Environmental Observing. *BioScience* 71, 467–483. https://doi.org/10.1093/biosci/biab018

Gray, S., Aminpour, P., Reza, C., Scyphers, S., Grabowski, J., Murphy Jr, R., Singer, A., Baltaxe, D., Jordan, R., Jetter, A., 2020. Harnessing the collective intelligence of stakeholders for conservation. *Front. Ecol. Environ.* 18, 465–472. https://doi.org/10.1002/fee.2232

Greenwood, J.J., 2007. Citizens, science and bird conservation. *J. Ornithol.* 148, 77–124. https://doi.org/10.1007/s10336-007-0239-9

Hecker, S., Haklay, M., Bowser, A., Makuch, Z., Vogel, J., 2018. *Citizen Science: Innovation in Open Science, Society and Policy.* UCL Press.

Johnson, N., Behe, C., Danielsen, F., Krümmel, E.M., Nickels, S., Pulsifer, P.L., 2016. Community-based monitoring and indigenous knowledge in a changing arctic: A review for the sustaining arctic observing networks. *Sustain Arct. Obs. Netw. Task* 9, 74.

Johnson, N., Druckenmiller, M.L., Danielsen, F., Pulsifer, P.L., 2021. The use of digital platforms for community-based monitoring. *BioScience* 71, 452–466. https://doi.org/10.1093/biosci/biaa162

Kelly, R., Fleming, A., Pecl, G.T., von Gönner, J., Bonn, A., 2020. Citizen science and marine conservation: A global review. *Philos. Trans. R. Soc. B Biol. Sci.* 375(1814), 20190461. https://doi.org/10.1098/rstb.2019.0461

Lepczyk, C.A., Boyle, O.D., Vargo, T.L.V. (Eds.), 2020. *Handbook of Citizen Science in Ecology and Conservation.*

Metcalfe, D.B., Hermans, T.D.G., Ahlstrand, J., Becker, M., Berggren, M., Björk, R.G., Björkman, M.P., Blok, D., Chaudhary, N., Chisholm, C., Classen, A.T., Hasselquist, N.J., Jonsson, M., Kristensen, J.A., Kumordzi, B.B., Lee, H., Mayor, J.R., Prevéy, J., Pantazatou, K., Rousk, J., Sponseller, R.A., Sundqvist, M.K., Tang, J., Uddling, J., Wallin, G., Zhang, W., Ahlström, A., Tenenbaum, D.E., Abdi, A.M., 2018. Patchy field sampling biases understanding of climate change impacts across the Arctic. *Nat. Ecol. Evol.* 2, 1443–1448. https://doi.org/10.1038/s41559-018-0612-5

Rafner, J., Gajdacz, M., Kragh, G., Hjorth, A., Gander, A., Palfi, B., Berditchevskaia, A., Grey, F., Gal, K., Segal, A., Walmsley, M., Miller, J.A., Dellerman, D., Haklay, M., Michelucci, P., Sherson, J., 2022. *Mapping Citizen Science through the Lens of Human-Centered AI.* . *Human Computation*, 9(1), 66–95. https://doi.org/10.15346/hc.v9i1.133

Simoniello, C., Jencks, J., Lauro, F.M., Loftis, J.D., Weslawski, J.M., Deja, K., Forrest, D.R., Gossett, S., Jeffries, T.C., Jensen, R.M., Kobara, S., Nolan, L., Ostrowski, M., Pounds, D., Roseman, G., Basco, O., Gosselin, S., Reed, A., Wills, P., Wyatt, D., 2019. Citizen-science for the future: Advisory case studies from around the globe. *Front. Mar. Sci.* 6, 225. https://doi.org/10.3389/fmars.2019.00225

Skarlatidou, A., Haklay, M., 2021. *Geographic Citizen Science Design: No One Left Behind.* UCL Press.

Skarlatidou, A., Suškevičs, M., Göbel, C., Prūse, B., Tauginienė, L., Mascarenhas, A., Mazzonetto, M., Sheppard, A., Barrett, J., Haklay, M., Baruch, A., Moraitopoulou, E.-A., Austen, K., Baïz, I., Berditchevskaia, A., Berényi, E., Hoyte, S., Kleijssen, L., Kragh, G., Legris, M., Mansilla-Sanchez, A., Nold, C., Vitos, M., Wyszomirski, P., 2019. The value of stakeholder mapping to enhance co-creation in citizen science initiatives. *Citiz. Sci. Theory Pract.* 4, 24. https://doi.org/10.5334/cstp.226

Søreide, Janne E., Pitusi, Vanessa, Vader, Anna, Damsgård, Børge, Nilsen, Frank, Skogseth, Ragnheid, Poste, Amanda, Bailey, Allison, Kovacs Kit M., Lydersen, Christian, Gerland, Sebastian, Descamps, Sébastien, Strøm, Hallvard, Renaud, Paul E., Christensen, Guttorm, Arvnes, Maria P., Moiseev, Denis, Singh, Rakesh Kumar, Bélanger, Simon, … Węsławski, Jan Marcin. (2021). Environmental status of Svalbard coastal waters: Coastscapes and focal ecosystem components (SvalCoast). In SESS report 2020 – The State of Environmental Science in Svalbard – an annual report (pp. 142–175). Svalbard Integrated Arctic Earth Observing System. https://doi.org/10.5281/zenodo.4293849

Starkweather, S., Larsen, J.R., Kruemmel, E., Eicken, H., Arthurs, D., Bradley, A.C., Carlo, N., Christensen, T., Daniel, R., Danielsen, F., Kalhok, S., Karcher, M., Johannson, M., Jóhannsson, H., Kodama, Y., Lund, S., Murray, M.S., Petäjä, T., Pulsifer, P.L., Sandven, S., Sankar, R.D, Strahlendorff, M, and J. Wilkinson. 2021. Sustaining Arctic Observing Networks' (SAON) Roadmap for Arctic Observing and Data Systems (ROADS). *Arctic* 74(5), 56–68. https://doi.org/10.14430/arctic74330

van der Wal, René, Nirwan Sharma, Chris Mellish, Annie Robinson, and Advaith Siddharthan. 2016. The role of automated feedback in training and retaining biological recorders for citizen science. *Conservation Biology: The Journal of the Society for Conservation Biology* 30(3):550–561. https://doi.org/10.1111/cobi.12705.

Vohland, K., Land-zandstra, A., Ceccaroni, L., Lemmens, R., Perelló, J., Ponti, M., Samson, R., Wagenknecht, K. (Eds.), 2021. The Science of Citizen Science. *Springer Nature*. https://doi.org/10.1007/978-3-030-58278-4

Wagner, P. M., Hughes, N., Bourbonnais, P., Stroeve, J., Rabenstein, L., Bhatt, U., ... & Fleming, A. (2020). Sea-ice information and forecast needs for industry maritime stakeholders. *Polar Geography*, 43(2–3), 160–187. https://doi.org/10.1080/1088937X.2020.1766592

39

USING COLLECTIVE INTELLIGENCE TO ASSESS THE FUTURE WITH THE PANDEMIC SUPERMIND

Annalyn Bachmann, Adriana König, Robert Laubacher, and David Kong

The story

In early 2020, the COVID-19 pandemic threw the world into turmoil. Many grew ill, many lost lives and loved ones, and many others found themselves turning to virtual tools to meet everyday needs. As governments struggled to respond, we began to recognize how the policies in place were insufficient to uncover the most critical unmet needs – from vaccine manufacture and storage to contact tracing and Personal Protective Equipment supply. And as this public health crisis unfolded, our vulnerability to future such crises became painfully clear.

In May 2020, the MIT Center for Collective Intelligence (CCI), MIT Media Lab's Community Biotechnology Initiative (CBI), and MilliporeSigma (the life science business of Merck KGaA based in Germany) convened more than 180 experts and global leaders in science, healthcare, public policy, and other sectors to address this challenge: "How can we develop pandemic resilience—the ability for society to recover quickly from global disease outbreaks—both in resolving the Covid-19 pandemic and in building public health infrastructure to prepare for future pandemics?"

The use of information and communication technologies (ICTs) can be, as the COVID-19 crisis reaffirmed, a critical way to facilitate collaboration through virtual mediums. Collaborative tasks that once needed days of in-person meetings, workshops, interviews, and other physical interactions are now regularly accomplished asynchronously online through crowdsourcing. The MIT CCI aimed to harness the power of expert-based crowdsourcing, leveraged to develop scenarios for the future, as well as to spur critical conversations about unmet needs. Could these virtual collaborations imposed on so many by the COVID-19 crisis also help uncover policies to address the next crisis before it arrived?

To answer this question, the MIT CCI leveraged an open-source platform called xCoLab to combine the practice of expert-based crowdsourcing with problem solving and scenario planning. Scenario planning is a planification method based on identifying key drivers

shaping the future and developing different plausible development scenarios based on those. We effectively used two approaches:

(1) Assessing critical unmet needs resulting from the Coronavirus pandemic (called the "Pandemic Supermind Activation" initiative), and
(2) Sourcing scenarios for the future concerning public trust in healthcare and medicine ("Trust CoLab").

Through two applications, namely the Pandemic Supermind Activation and the Trust CoLab, collective intelligence emerged in ways previously unseen.

To realize this collaboration, the consortium activated an expert network or "Supermind" – "a powerful combination of many individual minds" (Laubacher et al., 2020; Malone, 2018). This "Supermind" conceived ideas on how to address this public health challenge across five domains:

(1) Diagnostics and monitoring
(2) Viral transmission control
(3) Therapies and vaccines
(4) Validating, sharing, and communicating scientific insights, and
(5) Pandemic preparedness.

Assessing Strategies with the Pandemic Supermind

Using software-enabled discussions, the Pandemic Supermind was activated as a crowdsourcing platform for collective thinking. The platform engaged participants online over a three-week period. During the first two weeks, experts were asked to submit contributions to the platform that outlined important research, ideas, or themes within the pandemic. A Natural Language Processing (NLP) algorithm then clustered all contributions into 15 "meta-topics," subsequently reviewed by the organizing team.[1] In the final week, participants were asked to vote on the most important contributions from the previous two weeks, now clustered into thematic areas.

Over the duration of the exercise, experts submitted more than 200 contributions within the five domain areas. They also voiced their virtual support ("liking" numerous contributions submitted by others), suggested improvements in comment threads, and cast over a thousand votes on what contributions they found to be most impactful and feasible.

Examining comments and likes, it appeared that participants tended to like and comment on contributions outside their own specialty. Thus, we found significant cross-pollination between sectors, a result often difficult to achieve in traditional meeting formats.

The most impactful and feasible contribution, in the opinion of the network as a whole, concerned strategies for rapidly testing vaccine safety and efficiency. In essence, the experts agreed that the effective global distribution of safe vaccines would be the most important policy step in mitigating the COVID-19 crisis. Some experts suggested that using population-level statistics for clinical trials could be one approach to achieving this goal (Kong & Bachmann, 2020). In addition to this insight, the program team was able to report on a variety of further important critical unmet needs and approaches to creating pandemic resilience that could eventually be delivered to decision-makers to help inform approaches to the pandemic (Kong & Bachmann, 2020). This report was released online,[2] and was featured prominently in a series of public events with policymakers, scientists, researchers, industry

leaders, and members of the community to discuss how we can implement these findings at scale.

Anticipating challenges with the Trust CoLab

Preparing his community against the threat of fires, Benjamin Franklin once advised his fellow Philadelphians that "an ounce of prevention is worth a pound of cure."[3] Similarly, it may prove far less costly to anticipate public health challenges before they mushroom into a global crisis (Wimmer et al., 2012). Our hypothesis was that policymakers in the public health sector could benefit from forward-thinking analysis that considers external variables and trends in order to produce insights that can help make our systems more resilient against future threats (Laubacher et al., 2020). And as we observed during the COVID-19 crisis, the level of trust between citizens and public actors can have a dramatic impact on the effectiveness of public health measures, for good or for ill.

To begin to reflect on the future of trust in healthcare, U.S. Pharmacopeia (USP) and MIT CCI jointly launched Trust CoLab. This online platform engaged more than 100 global experts from a broad range of disciplines to collectively develop scenarios for potential futures and address the following questions: "What developments will shape people's health between now and 2040, and how will trust be critical in making sure these developments help people everywhere live longer and healthier?"

USP and MIT CCI guided the expert participants through a four-week exercise between October and November 2019, which was structured according to the four steps of scenario planning: (i) select the issues; (ii) analyze the areas of concern; (iii) organize the scenario around a logical concept; and (iv) focus the scenario (Schoemaker et al., 1992).

During the initial phase, the expert network was asked to identify drivers of change that could shape people's health and the future of trust in medicine and healthcare between now and 2040. Two hundred seventy-eight individual contributions were then clustered using a similar NLP process as the Pandemic Supermind Activation, employing a word-2-vec method,[4] and was done by the Trust CoLab organizing team with oversight from issue experts. Following this, participants were presented with 29 groups of drivers that had been organized into four overarching categories – external forces; non-healthcare technologies; healthcare trends; and new therapies – and asked to give their feedback and vote for the areas of greatest potential impact on public health by 2040. In total, 18 highest-priority items were selected by the network.

In step 3 of the scenario planning process, the future scenarios were developed. Participants' voting and comments on the groups of drivers served as a basis for 14 different scenario axes. All participants commented on the uncertainties described by the axes and indicated their support for the actions they thought could produce the most valuable scenarios. Based on that input, organizers chose two axes that had attracted the greatest attention from participants and also showed potential to serve as the basis for an interesting set of scenarios. They arrayed those two uncertainties onto orthogonal axes, thereby outlining four potential future worlds that could emerge by 2040. The first axis/uncertainty concerned big data and artificial intelligence (AI), and how these technologies could facilitate radical medical advances in personalized medicine, gene-based prevention, diagnostics, and treatment. At one extreme, these anticipated innovations would deliver on their promise; at the other, the future would bring disappointments and slower-than-expected advances.

The second axis/uncertainty related to how broadly distributed new medical advances and access to care will be in the future. At one end of the spectrum, the future would

bring widened health disparities, with the most advanced treatments available only to the privileged; at the other extreme, the future would bring widespread, relatively equal access.

The other scenarios sketched out three potential futures:

1. Dangerous uncertainty: Problems with big data and AI lead to devastating healthcare failures, and the unequal distribution of access leads to a fragmentation of trust.
2. A world of difference: Successful application of big data and AI leads to rapid medical advances informed by genetic information, but disparities in access perpetuate a "haves" vs. "have nots" dynamic.
3. Solving tomorrow's problems: Advances in big data and AI help create effective, inexpensive genetic diagnostic tools and treatments that are broadly distributed (please see Figure 39.1 Scenarios developed in the Trust CoLab exercise below).

Ultimately, these scenarios highlighted potential future outcomes that, according to this diverse crowd of 100 experts, could enable strategic planning in a new way. The results were shared at TEDMED, a large conference held in Boston, MA for healthcare professionals, in 2020 with hopes that they would spur further conversations about the future of healthcare and medicine. Utilizing this type of expert-based crowdsourcing before global health crises arise would enable communities to anticipate and build policy mechanisms to respond before it is too late. While the Pandemic Supermind Activation showed us how to bring together a community to formulate a crisis response, Trust CoLab exhibits a forward-thinking approach to anticipate potential problems before they devastate the globe.
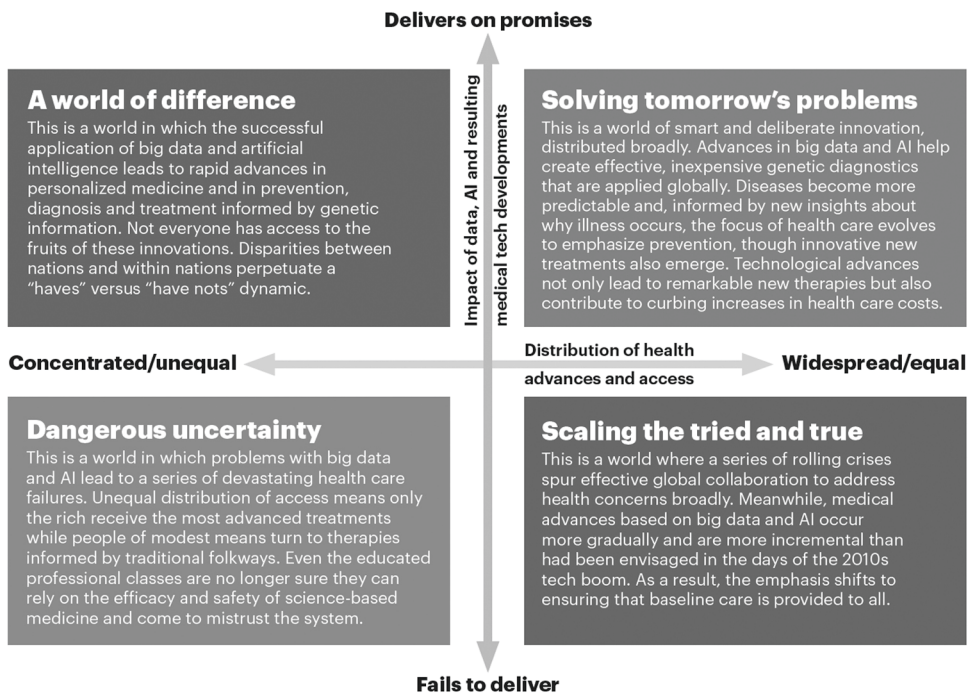
Figure 39.1 Scenarios developed in the Trust CoLab exercise.

What science tells us

Supermind – A Supermind is a group acting together in a way that is intelligent (Malone, 2018). Examples of Superminds can be found around the world within companies, governments, and markets. In essence, a Supermind is a collectively intelligent system (Malone, 2018).

Expert-based crowdsourcing – While many tasks can be solved by the knowledge of a broad and diverse crowd, some real-world problems require more technical or specialized knowledge (Retelny et al., 2014). One way to solve this type of problem is expert-based crowdsourcing. This particular form of crowdsourcing has already found its way into healthcare, and will continue to play a pivotal role in the future of healthcare advancement. For example, experts have been engaged to determine the relevance of genetic variants for different diseases (Griffith et al., 2017; Martin et al., 2019) or to design a system which supports the diagnosis and development of recommended actions for people (prone to) suffering from depression and their personal support network (Laubacher et al., 2020).

Scenario planning – In some cases, engaging experts can help to achieve insights about what might happen in the future. Scenario planning is a structured process to crowdsource the wisdom of experts in order to generate potential scenarios for the future. Scenarios are not exact predictions. Rather, they provide narratives about what *could* happen, recounted in detailed, alternative versions of the future (Laubacher & Star, 2020; Schwartz, 1991). This approach intends to open up people's minds and expand their thinking about the possibilities on the horizon. The underlying purpose of the exercise is that envisioning future possibilities more clearly can improve decision-making in the present (Laubacher & Star, 2020). In this sense, scenarios combine facts with the perceptions of potential decision-makers to produce insight (Wack, 1985b).

Natural Language Processing (NLP) – NLP is a type of AI that enables computers to analyze and summarize patterns found in spoken or written word (IBM, 2020). NLP is used to understand patterns in a variety of different fields, but it can serve an integral role within collective intelligence methodologies by allowing a quicker analysis of contributions. In instances of asynchronous collective intelligence activities before the widespread use of NLP, analysis of contributions was often done manually by organizers. With the help of the NLP methods described in the aforementioned exercises, organizers were able to visualize patterns of contributions quickly. This allows them to dig deeper into themes that could have been missed or would have taken far longer to find and analyze. NLP does not replace the need for all manual analysis in these activities, but rather, complements the organizers and provides process efficiency.

Do's and don'ts

Maximize diversity and accessibility – The fact that The "Pandemic Supermind Activation" Initiative and "Trust CoLab" were able to assemble over 100 experts from around the world is an unusual success. Organizers of similar activities should include experts from a variety of areas to increase the diversity of ideas and facilitate cross-pollination across disciplines. Additionally, the asynchronous nature of conversation allowed for experts across many time zones to participate when it suited their schedule. The platforms were very active, which shows the accessibility of these processes even when they involve professionals in demanding,

senior-level positions. Additional features such as liking or commenting on contributions can further increase engagement by lowering the time required of each individual.

Organizers need to ensure this flexible use of the platform through a low-touch process with intuitive features. Such features could include the following: making voting simple through a one-step button click, having a simplified comment or chat feature that doesn't require participants to log into the platform frequently to monitor responses, and creating templates for the contributions that are 200 words or less. The most important user design element is to ensure that participants can log on quickly and seamlessly from whatever location and device is convenient for them. In both use cases, experts were added to the platform by program management through a customized link sent to their inbox rather than going through the process of creating an account for themselves. The participants would stay logged into the platform throughout the duration of the exercise, as long as they were on the same device. The goal should be to make it as easy as possible for participants to log on and contribute in a couple of minutes.

Plan ahead for impact – In both exercises, The "Pandemic Supermind Activation" Initiative and "Trust CoLab", policymakers took part in the conversation at the conclusion of the process. These exchanges are only helpful, however, if they can be transformed into tangible action items for decision-makers. The potential to develop new strategies and highlight unforeseen areas of risk through scenario planning could enable us to foresee healthcare-based challenges before they wreak havoc on our societies. This future-oriented thinking could have positive downstream impacts on populations because it allows for a full risk analysis rather than rushed, reactive legislation. Nevertheless, these processes are only useful to the degree that policymakers are engaged at an early stage and manifest their commitment to take the resulting recommendations into account.

Expand to global systems – An underexplored area of opportunity for global policy lies at the systemic level: thinking about how the interdependencies of the health sector, the economy and society interact to enable new policy responses to global challenges. With the emergence of COVID-19, we witnessed the inability of current political institutions to create such a holistic plan of action. Collective intelligence methods such as platform-enabled expert crowdsourcing can provide the basis for more holistic and effective responses that, by operating on the level of complex systems, could better serve public needs.

Notes

1 The clustering was done by using natural language processing (NLP), producing 15 meta topics and using two NLP methodologies: (1) topic modeling which looks at the frequency of words and phrases used and clusters them according to semantic patterns; (2) word to vector ("word-2-vec"), that takes a large corpus of text, and by noting which words occur close together, represents each word as multi-dimensional vectors. It can take new strings of text and assign them a position in the multi-dimensional space. Text strings can then be clustered with like groups based on their proximity. The NLP analysis was subsequently reviewed by individuals.
2 cci.mit.edu/pandemic-response-programs.
3 www.cam.ac.uk/research/news/ounce-of-prevention-pound-of-cure#.
4 According to Wikipedia (accessed April 22, 2022):

Word2vec is a technique for natural language processing published in 2013. The word2vec algorithm uses a neural network model to learn word associations from a large corpus of text. Once trained, such a model can detect synonymous words or suggest additional words for a partial sentence. As the name implies, word2vec represents each distinct word with

a particular list of numbers called a vector. The vectors are chosen carefully such that a simple mathematical function (the cosine similarity between the vectors) indicates the level of semantic similarity between the words represented by those vectors.

References

Brabham, D. C. (2013). *Crowdsourcing.* MIT Press.

Evangelista, L., Steinhubl, S. R., & Topol, E. J. (2019). 'Digital health care for older adults'. *The Lancet, 393*(10180), 1493.

Griffith, M., Spies, N. C., Krysiak, K., McMichael, J. F., Coffman, A. C., Danos, A. M., ... & Barnell, E. K. (2017). 'CIViC is a community knowledgebase for expert crowdsourcing the clinical interpretation of variants in cancer'. *Nature Genetics, 49*(2), 170–174.

Howe, J. (2008). *Crowdsourcing: How the power of the crowd is driving the future of business.* Random House.

IBM. (2020). 'What is Natural Language Processing?' *IBM Cloud Education.* Retrieved from www.ibm.com/cloud/learn/natural-language-processing,

Kong, D.S. & Bachmann, A. (2020). 'Pandemic supermind activation first findings'. *MIT Center for Collective Intelligence, MIT Media Lab Community Biotechnology Initiative, and MilliporeSigma.*

Laubacher, R., Giacomelli, G., Kennedy, K., Kong, D. S., Bachmann, A., Kramer, K., ... & Malone, T. W. (2020). 'Using a supermind to design a supermind: A case study of university researchers and corporate executives co-designing an innovative healthcare concept'. *MIT Center for Collective Intelligence, Massachusetts Institute of Technology.*

Laubacher, R. & Star, J. (2020). 'Trust or Consequences 2040: Will innovations in health and medicine deliver?' *US Pharmacopeia.*

Malone, T.W., Nickerson, J.V., Laubacher, R.J., Hesse Fisher, L., de Boer, P., Han, Y. & Towne, W.B. (2017). 'Putting the pieces back together again: Contest webs for large-scale problem solving'. MIT Center for Collective Intelligence Working Paper, 2017–001.

Malone, T. W. (2018). *Superminds: The surprising power of people and computers thinking together.* Little Brown and Company.

Malone, T. W., & Bernstein, M. S. (Eds.). (2015). *Handbook of collective intelligence.* MIT Press.

Malone, T. W., Laubacher, R., & Dellarocas, C. N. (2009). 'Harnessing crowds: Mapping the genome of collective intelligence'. MIT Center for Collective Intelligence Working Paper, Cambridge, MA, February 3, 2009. *MIT Sloan School of Management Research Paper* No. 4732–09.

Martin, A. R., Williams, E., Foulger, R. E., Leigh, S., Daugherty, L. C., Niblock, O., ... & Thomas, E. (2019). 'PanelApp crowdsources expert knowledge to establish consensus diagnostic gene panels'. *Nature Genetics, 51*(11), 1560–1565.

Nagendran, M., Chen, Y., Lovejoy, C. A., Gordon, A. C., Komorowski, M., Harvey, H., ... & Maruthappu, M. (2020). 'Artificial intelligence versus clinicians: systematic review of design, reporting standards, and claims of deep learning studies'. *BMJ, 368.*

Retelny, D., Robaszkiewicz, S., To, A., Lasecki, W. S., Patel, J., Rahmati, N., ... & Bernstein, M. S. (2014, October). 'Expert crowdsourcing with flash teams'. *Proceedings of the 27th annual ACM symposium on User interface software and technology* (pp. 75–85).

Schoemaker, P.J. & van der Heijden, C.A. (1992). 'Integrating scenarios into strategic planning at Royal Dutch/Shell'. *Strategy & Leadership, 20*(3), 41–46.

Schwartz, P. (1991). *The art of the long view: Planning for the Future in an Uncertain World.* New York: Doubleday Currency.

Shell International (2008). *Scenarios: An explorer's guide.*

Wack, P. (1985a). 'Scenarios: Uncharted waters ahead'. *Harvard Business Review, 63*(5), 72–89.

Wack, P. (1985b). 'Scenarios: Shooting the rapids'. *Harvard Business Review, 63*(6), 139–150.

Wimmer, M.A., Furdik, K., Bicking, M., Mach, M., Sabol, T., & Butka, P. (2012). 'Open Collaboration in Policy Development: Concept and Architecture to Integrate Scenario Development and Formal Policy Modeling'. *Empowering Open and Collaborative Governance*, 199–219.

World Health Organization (2019). *WHO guideline: Recommendations on digital interventions for health system strengthening.* Available at: http://apps.who.int/iris/bitstream/handle/10665/311941/9789241550505-eng.pdf?ua=1.

USING POLITICAL BOTS AND ARTIFICIAL INTELLIGENCE TO FACILITATE THE INTERACTION BETWEEN CITIZENS AND LAWMAKERS

Cristiano Ferri Soares de Faria

The story

"Me escuta, Deputado!"[1]

In a turbulent political era, Brazil's Congress has been, perhaps surprisingly, a laboratory of innovation.

These innovations have responded to two main challenges. The first challenge is how to bring citizens more fully into the lawmaking process. In the last decade, a range of methods have been piloted by the Chamber of Deputies in collaboration with the hacker and civic technology communities in Brazil: collaborative drafting of laws, online hearings, and feedback polls on proposed legislation, among other initiatives. Each of these innovations has been led at the institutional level, managed by civil servants and drawing in elected officials from a range of parties.

A second challenge concerns the relationship between elected officials and their constituents. How can citizens create an ongoing dialogue with their representatives, based not on favors and personal connections, but on ideas, information, and trust?

In some ways, the potential for such a dialogue has never been greater. In recent years, lawmakers have greatly intensified interaction on social media platforms such as Facebook and WhatsApp, opening up the possibility of direct communication with thousands of their constituents who may never have met their representative in person. While these platforms have shown some success at mobilizing popular support or opposition to individual pieces of legislation, or holding individual members accountable for their actions, officials themselves have mainly used them to publicize their own initiatives and causes (Braga, Rocha and Vieira, 2015; Barros et al, 2021). The use of digital technologies to create a two-way

dialogue, exchanging reliable information and answering citizens' questions, remains largely unexploited.

Meanwhile, the time investment of elected officials in these communications has increased dramatically. In addition to the traditional face-to-face interactions of officials with their constituents – at their office and in the community – a range of new channels have been added. Brazilian citizens can now send messages to their representatives through their official Congress emails, through the Congress Ombudsmen, at online hearings, and on Congress's digital participation platforms.

In addition to these institutional channels, the time costs of managing social media accounts have also skyrocketed.[2] This is not only due to the rise in the number of users on the platforms, but also to the abundance of fake news and misinformation in Brazilian public life. In order to avoid the negative reputational impact of fake news, lawmakers invest their team's time and energy to monitor and remove posts of speeches that have been taken out of context, misleadingly edited video clips, and fake news articles, created with the intention of denigrating their image for ideological reasons or to generate revenue through clicks. Responding, clarifying, and disseminating their own versions of political events requires intense effort by public officials and an extra cost to create and disseminate responses to these attacks. To survive in this challenging information environment, many members of parliament ask their staff to manage a social media multichannel system (Barros et al., 2021). Nevertheless, the quality and structure of communications on these platforms have left much to be desired.

Chatbots are artificial intelligence (AI)-supported online applications to facilitate conversations via text or text-to-voice, in lieu of providing direct contact to a live human interlocutor (Adamopoulou and Moussiades, 2020). The objective of the chatbot is to provide relevant information to the user in the most efficient and natural way, giving users freedom to pose questions in their own words. Developed in the context of customer service for corporations, experimentation with chatbots in government is on the rise. Early use cases of chatbots in public service have tended to resemble those of the private sector, with chatbots answering inquiries from citizens on the status of their benefits or taxes (Makasi et al., 2020).

Could chatbots, or "virtual assistants" as they are sometimes called, help enhance the quality of interactions between citizens and their representatives? Could elected officials benefit from the collective intelligence of their constituents with the help of this AI-enabled tool? Could such a tool also lower time costs to the representatives and allow them to re-invest that time in higher-quality forms of engagement? These were the research questions that motivated the present study.

The goal of this study was to create and test a prototype chatbot with elected representatives to the Brazilian Chamber of Deputies and civil servants in the Congress. The chatbot would be called *Miscuta*, a pun in Portuguese which translates roughly as "Hear me out, representative." The prototype chatbot would serve as a basis to explore, in collaboration with these public officials, the desirability of creating a chatbot system for the Congress, as well as identifying key questions that would need to be answered for such a system to be feasible. The study was coordinated by the HackerLab team at the Chamber of Deputies, led by lab director Paulo Henrique Araujo and executed by the author with the support of Luis Claudio de Lima Nobre and Diego Cavalcanti Cunha of the HackerLab team.

The study unfolded as follows. In November 2018, the HackerLab team approached several deputies who had been "early adopters" of new collective intelligence tools in the past. Two deputies agreed to test the *Miscuta* prototype with their teams and, following the test, to

take part in a series of facilitated discussions with the HackerLab team. The Director General of Information Technology (IT) for the Congress, and several members of the Congress's media team, also agreed to take part in the tests and interviews.

To create a working chatbot prototype, the AI algorithm needs to be programmed with answers to frequently asked questions, as well as certain phrases that "signpost" the progress of the conversation (from "Hello? How can I help?" to "Did this give you the information you needed?"). The HackerLab team worked with the offices of the two deputies from November 2018 to February 2019 to create the content needed for the *Miscuta* chatbot to function. The teams used a Google-suite tool called Dialogue Flow to design possible conversations on a range of needs or questions that a citizen might raise, including inquiries about the representative's positions on major issues, to requests for individual support like access to benefits, public jobs or letters of recommendation. Each of these prospective conversations was transformed into a "dialogue mindmap" by the HackerLab team, representing the potential paths of conversation in a clear and graphically pleasing way.

By the end of February 2019, the *Miscuta* chatbot was ready to test. In early March 2019, the HackerLab team held a workshop with the two deputies and the Director General of IT. The deputies played the role of citizens and, without any preparation given to the project team, asked questions to the chatbot that citizens had asked them recently. This first test was largely considered a success by the deputies, with conversations flowing easily and without obvious bugs.[3]

Following the live test, from March to May 2019 the HackerLab team facilitated a conversation with these stakeholders on what they thought of the chatbot and what constraints would need to be addressed to make the system workable for them. The results of these conversations, and the subsequent recommendations of the HackerLab team, are given in the final section below.

What science tells us

The HackerLab's innovation process at the House of Representatives involves concepts that are usually related to citizen laboratories.[4] Among these concepts are those of failure and experimentation (Faria and Santos, 2019), meaning that several experiments are promoted to assess what works best for innovation purposes. This is unusual in the political context. Based on the author's 16 years of experience working with parliaments, lawmakers and staffers normally take a long time to accept and incorporate innovative practices in their routine. They need to carefully evaluate the benefits and risks of any new approach of communication with citizens. In this risk-averse environment, a "test and learn" mindset and the ability to make mistakes are far from universal. Creating a structure for careful experimentation and distributing the risk of adopting innovative tools across the institution as a whole are principles that have allowed the HackerLab to thrive in a highly contested political environment in Brazil.

In private enterprise, there are experts in dialogue design, a new skill that is increasingly appreciated and valued by companies providing chatbot-based services (Cahn, 2017). The goal of dialogue design is to ensure that any anticipated content (questions posted by citizens and answers from lawmakers) included in a chatbot is prepared in a dialogue format that resembles the flow of a conversation between two humans as closely as possible. An illustration of a typical dialogue between citizen and lawmaker can be seen in Image 1 below. From this first phase of the experiment, it was possible to move on to the next step, the curation of data and content.

Another competence deemed necessary for the implementation of this pilot project was that of someone who could perform content curatorship, meaning the selection of content most likely to serve the needs of a given user base. Reviewing the rise of chatbots in a range of domains, Følstad et al. (2018) have proposed a typology that addresses key characteristics that differentiate current chatbots, including the duration of the user's relation with the chatbot (short-term vs. long-term), and the locus of control for user's interaction with the chatbot (user-driven vs. chatbot-driven). These design choices, in turn, affect the scope and quantity of content that must be available for a given chatbot algorithm to create appropriate responses at each stage in the dialogue.

In the context of the Brazilian pilot, this meant that basic answers on the most diverse subjects that would be received by citizens had to be carefully prepared in order to be automatically used by a Congress virtual assistant. Thus, the collaborators of the *Miscuta* experiment had to prepare these answers in a language accessible to all, and in a dialogue format, using both content curation and dialogue design best practices gleaned from the deputies, their teams, and the civil servants, each of whom had years of experience facilitating dialogue with citizens in Brazil's particular context.

In this fashion, the collective intelligence of a community of public servants is a necessary input to the AI of the chatbot algorithm. This essential interdependence of CI and AI was elaborated on at length in the 2019 report, "AI + CI: Introducing the Future of Minds and Machines," by the NESTA Centre for Collective Intelligence Design, based in the UK. In our experience as well, even when automation and scale are the visible outcomes of these civic technologies, collective intelligence is critical to make the system work.

Do's and don'ts

Based on the interviews and workshops with the stakeholders in the Brazilian Congress during the *Miscuta* pilot, as well as the author's experience in developing innovation in parliaments, further development of a virtual assistant service for lawmakers and citizens will likely require the understanding of four relevant dimensions: **(1) technology, (2) governance, (3) human resources, and (4) ethics**.

Although these issues are not exhaustive, nor can the results of a single pilot be seen as conclusive, these four dimensions are likely to be essential starting points to face the complexity in developing and implementing this type of innovation for legislative bodies.

1. Technology

The technological dimension looks at the intrinsic elements that cause a chatbot system to succeed or fail. We focus here on algorithm requirements and human resources that underlie the chatbot's AI.

AI can be developed at various levels of autonomy with respect to the interaction between programmers and the machine. The first level is called supervised learning, which implies a high degree of human control and intervention over the curation of content that will compose the database for the chatbot (Tegmark, 2018).

From our interviews, we note that sensitive issues are likely to arise in relation to the Brazilian Congress's communication with society, notably regarding biases, prejudices, and other distortions that could negatively affect certain interest groups and/or protected minorities. For instance, the formal or technical language used on parliamentary websites can

turn out not to be efficient in a chatbot as a way to support interaction with a citizen who is expressing their needs using the words and idiomatic expressions of a regional dialect.

A long period of supervised learning is recommended, therefore, before starting the natural progression to a less supervised stage. For this research, though, the possibility of assessing unsupervised machine learning remained undefined for the future purposes of the project.

If chatbots are to be deployed to facilitate communication with a large body of citizens, a legislative body will need to develop sophisticated and auditable algorithms that can comprehend diverse forms of speech, accents, regionalisms, as well as identify common errors of spelling or syntax. Only then will the chatbot accurately identify the meaning of a citizen's request, regardless of their location, education level and communication style, taking into account the wide differences in vocabularies among different regions of Brazil.

Algorithm requirements

The training requirements of any machine learning software are crucial (Mueller and Massaron, 2016; Tegmark, 2018). In other words, this technology implies a software code which comprises an algorithm, that is, a set of automated and sequential instructions with the purpose of achieving a certain desired result.

From the perspective of the public administration, certain principles need to be met in any code developed or hired, in view of the continual need to meet the public's greater interest.

As part of our study, the *Miscuta* posed questions to the different government stakeholders regarding the code requirements. For example, one of the questions raised concerned copyright issues of the code itself: should it be developed or contracted in open source – and if so, should the code be freely published so that it could be useable and modifiable by third parties for commercial purposes?

If the code is produced for the government by a contracted third party, can the hired company claim that it is unfeasible to open-source their code, or even to provide transparency concerning the code as this may hinder business and the free exercise of competition, or reduce incentives to bring in new companies to this growing field?

Our stakeholders generally agreed that it is reasonable for a company to strive to stand out among competition and not lose the fruits of their labor, just as it is also reasonable for it to sell the same software to other public agencies. This is the known formula for incentivizing the creation of a product with high development costs. However, would this be feasible considering the context of a chatbot created for a national legislature? Or could the possible requirement of an open-source code result in an even greater cost burden for the public authority, since they would be obligated to develop the code in-house?

Another issue concerns the transparency and auditability of the code. If publishing the code and making it available with a broad degree of transparency are not an option, what kind of protocol should be created for its audit, that is, so that the regulatory agencies can verify the purposes for which it was intended? What if there are, for example, certain biases that favor specific pressure groups in lawmaking?

Are the regulatory agencies technically prepared for this type of complex software audit? To what extent will social control also find it difficult to contribute to the process of assessing quality and competency? These are crucial questions that emerged during the prototyping phase of the *Miscuta* platform*,* and which should be debated openly in the coming years.

Human resources

While developing the *Miscuta* experiment, a need for new key organizational capabilities (i.e., strategic, technology, data, and security capabilities) was identified. More specifically, new competencies of dialogue design between citizens and congressmen, content curatorship of congressmen responses, bot training or preparation, and algorithm supervision are some of the skill sets mapped through the experiment (Reim et al., 2020). What stems from this work experience is the evident need for such functions to be performed by multidisciplinary teams, which bring together varied communication, technology, design, social participation, data management, lawmaking and, of course, knowledge of the current political context and existing policies.

Nevertheless, the development of capacity and competency in AI, especially in machine learning (the most advanced stage in which AI manifests itself), has proven indispensable for the conception of this chatbot prototype. As such, regardless of the technology model employed, that is, either through internal development or external contracting, the mastery of AI expertise within the legislature's IT team must be understood as a potential strategic investment by members of the Congress that intend to have the full support of this type of automated service.

3. *Governance*

Governance "(...) represents the norms, values and rules of the game through which public affairs are managed in a manner that is transparent, participatory, inclusive and responsive."[5] The concept of governance presently applied takes on a corporate perspective, referring to the set of rules in place or that should be created to govern an innovation process when considering the project and experiment at hand. From this perspective, governance also encompasses the way a public institution organizes itself administratively in relation to this innovation process, such as in the management of data created on the platform.

There is a possibility that a chatbot tool for interaction between congressmen and citizens will stimulate the production of a large amount of data from those who actively engage with the service. As an example, information such as preferred public policy topics, peak times of interaction, location, professional affiliation are examples of data that may become available for the Chamber of Deputies.

What data from the chatbot service is in the public interest to share? And what information cannot and should not be shared? There will be, for example, strategic information on how Brazilian citizens interact with Congress on public policies. Is this information and data of public interest? Which data sets? Is there sensitive or personal data, such as the tax ID number and e-mails, that should be stored separately, and if so, how will this be done? Will storage be outsourced to a company specifically hired for this purpose, or will the public institution itself oversee data storage? What are the costs involved in this type of service? Will public agencies with fewer resources afford to protect their data? Does it require a cloud storage system?

These were all key questions that emerged from this study, that should condition future exploration of a chatbot system for a national legislature.

4. Ethics

As these are matters concerning data on citizenship and because they involve an inter-action between a lawmaker and a citizen with some degree of potential impact on legislative decision-making, the idea of an intelligent chatbot should conform to certain ethical precepts.

First and foremost, how will the chatbot algorithm be contracted or developed? As previously addressed in the technology item, will the algorithm be auditable? Should it be completely transparent, that is, can any citizen or interested party read and analyze the technology code? In case of problems affecting the democratic process, for example, who should be held liable for consequences arising from code itself? (Bostrom and Yudkowsky, 2011; Doneda and Almeida, 2016; Magrani, 2019)

Alternatively, could this have unforeseen negative effects on the workings of Congress? For example, by knowing how a chatbot works, can interest groups take better advantage of this type of interaction to take over the conversation to the detriment of other less digitally skilled groups? Can an algorithm generate a certain bias in favor or against the participation of certain interest groups?

Several past experiences highlight the risk of unsupervised machine learning, as intelligent chatbots have proven vulnerable to biased learning from racist, xenophobic, and misogynistic groups, as was the case with TAI, Microsoft's Twitter chatbot. TAI, an AI profile created by Microsoft to interact with teenagers on social networks, was removed less than 24 hours after being activated (Misselhorn, 2018). The bot began to reproduce racist messages and other negative elements in only a few hours of interaction with Internet trolls. This of course should be a priority concern for chatbot developers in legislative arenas since, in principle, legislative discussions should be open and accessible to all interest groups rather than to favor certain groups over others.

In sum, our experiment with supervised AI technology between congressmen and citizens in the Brazilian Chamber of Deputies, was embryonic, but it created important lessons for how such a service could be applied in the Brazilian Congress or any other legislative body. Within the Congress and with the support of the HackerLab team, the pilot led to reflections on crucial issues that should prepare – and if appropriate, circumscribe – the use of such technology for the public in general, with respect to the interaction between public agencies and citizens.

The experiment is relevant, we hope, in that it points to important research questions and hypotheses for the future and not because it draws definitive conclusions of effectiveness or impact. We were able to observe that there are at least four essential dimensions that must be considered from this perspective: technology, governance, human resources, and ethics, as highlighted throughout the chapter. This means that realizing the potential benefits of a large-scale communication system based on political virtual assistants will demand a rigorous organization to work properly. If such rigor is applied, AI-assisted tools may indeed become a standard form of communication between government and citizens in the near future. Parliaments should prepare for it.

Notes

1 Literal translation: "Hear me out, Representative!".
2 This became evident during a workshop held by this author with legislative advisors from the Brazilian House of Representatives. The advisors were invited to answer the following survey, the preliminary results of which can be viewed here (in Portuguese): <http://bit.ly/2YbStBL>,

published on 03 December 2019. The conclusions show that 65% of the offices adopt specific strategies for each type of social media, although there is a wider principle, which is the constitution of multi-networks, in a coordinated and complementary way. Within these strategies, the disclosure regarding the parliamentarian's own actions and the agenda of their electoral bases is prioritized over institutional legislative activities (Barros et al., 2021).

3 A video demonstration of the experiment was recorded. It can be accessed here (in Portuguese): <https://youtu.be/2Ze-FaZMgv8>. Accessed December 2, 2019.

4 For more information, see http://Labhackercd.leg.br/. Accessed February 27, 2020.

5 According to UNESCO's International Bureau of Education (2019), available at www.ibe.unesco.org/en/geqaf/technical-notes/concept-governance.

References

Adamopoulou, E., & Moussiades, L. (2020). An overview of chatbot technology. In *IFIP International Conference on Artificial Intelligence Applications and Innovations* (pp. 373–383). Springer, Cham.

Barros, Antonio; Bernardes, Cristiane; Busanello, Elisabete; & Faria, Cristiano (2021). Digital mandates and their management: Strategies for usage of social media by Brazilian Federal Legislators, Parliamentary Affairs. Available at https://doi.org/10.1093/pa/gsab046.

Bostrom, Nick; & Yudkowsky, Eliezer (2011). A ética da inteligência artificial. *Fundamento: Revista de Pesquisa em Filosofia*, 1(3), pp. 202–203.

Braga, Sérgio; Rocha, Leonardo; & Vieira, Fabrícia (2015). "Americanização" da representação política virtual? Um estudo comparado das estratégias de comunicação digital por parlamentares de diferentes sistemas políticos. Article presented in the 39° Annual Conference of ANPOCS GT 04/Ciberpolítica, ciberativismo e cibercultura.

Cahn, J. (2017). CHATBOT: Architecture, design, & development. University of Pennsylvania School of Engineering and Applied Science Department of Computer and Information Science.

Doneda, Danilo; & Almeida, Virgilio A. F. (2016). What is algorithm governance? *IEEE Internet Computing*, 20(60).

Faria, Cristiano; & Santos, Pierre (2019). Como hackear um Legislativo: o caso do Labhacker da Câmara brasileira. Available in 26 de julho de 2019 at www.ipea.gov.br/portal/index.php?option=com_content&view=article&id=34783:inovacao-e-politicas-superando-o-mito-da-ideia&catid=420:2019&directory=1.

Følstad, A., Skjuve, M., & Brandtzaeg, P. B. (2018). Different chatbots for different purposes: Towards a typology of chatbots to understand interaction design. In *International Conference on Internet Science* (pp. 145–156). Springer, Cham.

Inter-Parliamentary Union-IPU, *World e-Parliament Report 2020,* available at: www.ipu.org/resources/publications/reports/2021-07/world-e-parliament-report-2020

Magrani, Eduardo (2019) *Entre Dados e Robôs: Ética e Privacidade na Era da Hiperconectividade*. Porto Alegre, Arquipélago Editorial.

Makasi, T., Nili, A., Desouza, K., & Tate, M. (2020). Chatbot-mediated public service delivery: A public service value-based framework. *First Monday*, 25(12).

Misselhorn, C. (2018). Artificial morality. Concepts, issues and challenges. *Society*, 55(2), 161–169.

Mueller, J. P., & Massaron, L. (2016). Machine learning for dummies.

NESTA Center for Collective Intelligence Design (2019). AI + CI: Introducing the future of minds and machines. NESTA report, available at www.nesta.org.uk/blog/aici-future-minds-and-machines/.

Reim, W.; Åström, J., & Eriksson, O. (2020). Implementation of artificial intelligence (AI): A roadmap for business model innovation. *AI*, 1(2), 180–191. https://doi.org/10.3390/ai1020011

Tegmark, Max (2018). *Life 3.0: Being Human in the Age of Artificial Intelligence*, Ed. Vintage, EUA.

41

TURNING ORGANIZATIONS INTO INNOVATION ECOSYSTEMS

The Hexagon of Public Innovation model

Raúl Oliván and Pilar Balet

"You were right, innovation is all about conversations."
A participant of the systemic co-creation session organized
by the Spanish Agency for International
Development Cooperation (Guatemala, 2021).

The story

It seemed like all of Spain was on the street. By May 2011, the government's austerity plans – including massive cuts to education and social benefits – had unleashed a social movement that seemed to involve everyone, newcomers and activists alike. Frustrated by a two-party system that had mismanaged a financial crisis, and inspired by the young protestors that had toppled corrupt regimes in Tunisia and Egypt, the *Indignados* Movement (roughly, "the indignant ones") seemed to mark a turning point in Spanish politics. A country whose older generation had grown up under dictatorship, in the early 2000s Spain had been the European Union (EU) country with the highest support for democratic institutions. In the wake of the financial crisis of 2008–2009, unemployment had skyrocketed to the highest levels recorded in Europe; more than one in five Spaniards of working age was out of work, and the rate was much higher for young people. As austerity programs continued, activists created an online forum "¡Democracia Real YA!" (Real democracy now), with spaces on all major social media platforms, calling for massive mobilization to protest the government's policies. In the wake of these protests, three new political parties were founded – Podemos, Ciudadanos, and Vox – that disrupted the two-party system from both the right and the left.

By 2018, Spain had gone from the EU country with the highest level of trust in democracy to the lowest.[1] In this time of disruption and doubt for national politics, local and regional governments began experimenting with ways to win back their citizens' trust. Thus, the Laboratorio de Aragón Gobierno Abierto[2] – LAAAB (the "Aragon Open Government Lab") was launched at the beginning of 2018, as an evolution of the Citizen Participation

Service of the Government of Aragon in the North of Spain. LAAAB's mission was three-fold: prototype and experiment with new models of public action; use collective intelligence to build these solutions; and, most importantly, recover the trust of Aragon's citizens that their government is working for them. The metaphor of a laboratory was critical: in a lab, you can experiment without fear and make mistakes – in fact, you almost always need to "break something" in order to innovate. Labs also do not think in terms of election cycles; they are seeking to invent something that can transform our understanding of a problem and create solutions for the long term.

The LAAAB is the evolution of Aragon Participa and took inspiration from many projects such as Medialab Prado, GovLab, Laboratorio de Chile, and Zaragoza Activa, a local social innovation and entrepreneurship ecosystem. Started in 2008 by a team of civil servants who came from the city council's area of civic participation, Zaragoza Activa had sought to generate new local development and entrepreneurship opportunities by means of collective intelligence. Social innovation projects were developed including La Colaboradora[3] (a Eurocities 2016 award winner), Made in Zaragoza,[4] redZAC, or Semillero de Ideas.[5] Citizen laboratories in Latin America also provided excellent learnings for the LAAAB team. Starting in 2018, with the strong support of the regional government, the LAAAB has brought citizen deliberation into a range of public processes, from drafting a law or rehabilitating a park, to a strategic plan for developing a town. It is made up of an ecosystem of projects related to participation, transparency, or social innovation, such as Open Kids[6] (digital and local participation of children), Social Impact Academy[7] (accelerator for young social leaders), Aspasia[8] (gender perspective and edit-a-thons of women's profiles on Wikipedia), CVOL[9] (digital platform for volunteering and making an impact on the SDGs), and Visual GOB[10] (real-time accountability), among many others.

In the first days of the COVID-19 crisis in 2020, the LAAAB team came to a realization. From what they were hearing and seeing, a "tsunami of social energy" existed in Spain, an energy that could surge and dissipate, or that could be organized and channeled to help in this crisis. The LAAAB team remembered an oil spill on the Galician coast 15 years earlier, where thousands of young people simply showed up and offered to help. Organ donation rates in Spain are among the highest in the world. Recent history had taught that Spain's collective intelligence could take a highly energetic and self-organizing form, but so too could the initial passion to contribute fade away if the right structures were missing (some had thought this to be the case in the Occupy movement, for example). The LAAAB team felt a sense of duty to create an *ad hoc* instrument, sponsored by the government but fueled by citizens, to channel this energy against the threats of the pandemic. But what form should this instrument take?

The Hexagon of Public Innovation

The Hexagon of Public Innovation (HIP, *Hexágono de Innovación Pública*) is the outcome of learnings from more than a decade of accompanying innovation in public administrations. Technocratic or solutionist approaches to governance have resulted in outcomes such as spending billions on unvisited websites, creating departments that fail to communicate efficiently and, above all, sowing frustration and apathy among citizens whose inputs were not taken into consideration. These challenges form the context for the HIP model of organizational change, based on the power of distributed knowledge, community and opportunity networks for a more just and equitable society.

The HIP model was inspired by three principal sources:

- The hacker ethic (explored below);
- The science of networks; and
- An analysis of 105 tools and methods described by Bas Leurs and the Innovation Skills team at NESTA in the UK.[11]

We were interested in identifying common denominators in all of these approaches. The HIP model was designed as a synthesis of these approaches, demystifying innovation by enacting it in diverse forms of conversation.

Innovation depends on human skills such as creativity, critical thought, teamwork, and emotional intelligence. Consequently, it cannot be systematized without a margin for error. Innovation is not a linear, predictable, or precisely measurable process; intangibles and trials and errors are part of its DNA. As a result, the HIP does not aim to predefine the process of innovation for its participants. Instead, it seeks to put in place certain environmental conditions that are common to places where innovation has taken hold.

But why a Hexagon of Public Innovation and what for? Many organizations claim to understand the need to renew their programs and adapt their products and services to an increasingly changing situation. But, on most occasions, these organizations lack the practical tools and know-how to achieve this. Leaders who support innovation collide with team cultures that tenaciously hold to "the way things have always been done." Public servants may rationally conclude that innovation, far from being rewarded, will involve extra work and the risk of failure. The HIP is a model that makes it possible to rethink teams, activate internal strengths that all public and social organizations have, by connecting them in turn to external opportunities and building bridges with their stakeholders. As stated by a Save the Children representative during a LAAAB workshop, "the strength of the Hexagon model is that it can be easily adapted to any organization."[12]

Combining the network properties that an ecosystem weaves and the study of the flows and dynamics of NESTA's 105 innovation methods, we created the following model of six vectors of public and social innovation (see Figure 41.1):

OPEN, conceived as a conversation between internal and external actors that intentionally blurs the line between them. This conversation serves to expand the organization and transform diffuse energies from the social environment into a public asset (Innerarity 2011).

TRANS, the principle of connecting those who tend not to speak to one another. A conversation that goes through departments and compartments in the organizations, and invites us to mix with others, hybridize or rearrange our ways of working. This inevitably leads to new combinations of ideas that had never been tried.[13]

FAST, conversations that ramp up the natural rates of forming trusting and productive relationships. A series of immersive exchanges where people coexist in the same space and time to conceive and iterate projects together.

PROTO, conceived as a way of passing from the complex universe of words to the more intuitive and natural world of objects, in the form of a model, an app,
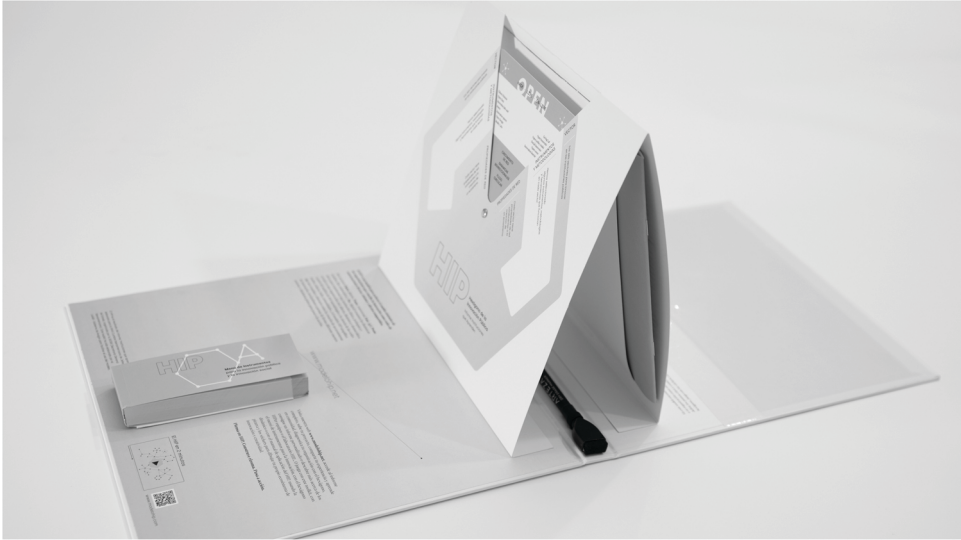
Figure 41.1 The HIP toolkit.

Source: LAAB.

a landing page, a blueprint with post–its (maps of services), or a minimum viable product (MVP).

CO, designed as a group conversation that includes and integrates. It invites participants to be more like producers and protagonists rather than mere consumers and spectators, rejecting strong hierarchies and questioning any monopolies on useful knowledge (Fernández, 2018).

TEC, understood as a type of extended conversation, potentially ubiquitous and asynchronous, which enables us to multiply forms of interaction that create new skills and knowledge. A conversation that can assemble large groups via avatars, and soon too into metaverses.

The HIP is not a map with a clearly defined beginning and end, but rather a navigation chart that, along with a Toolkit,[14] makes it possible to apply the model to any organization in 12 steps. After using this framework, a teacher at Alpartir School, part of a "Teacher Generation" project run by the Princess of Girona Foundation, explained, "The HIP helps us to think about schools as ecosystems and strengthen the community vision." The COVID-19 crisis prompted the LAAAB team to make adjustments based on new frameworks of thought and action founded on reciprocal trust and the capacity to adapt to a fast–changing environment.

From theory to practice: **Frena la Curva** *("Bend the Curve")*

On March 12, 2020, as the COVID-19 crisis intensified, the LAAAB launched its collective intelligence initiative *Frena la Curva* ("Bend the Curve"), using the HIP model of systemic change.[15] All across Spain, we were hearing about different grassroots projects to help

neighbors and keep daily life going – art and music projects as well as help with groceries and home care. But how could people find and join projects in their neighborhood, or learn from other similar projects happening across the country? How could we help make sure that these projects all benefited from the latest public health information on how to fight the spread of the virus and keep the most vulnerable people safe? All kinds of information, both basic in relation to health and the official indicators, as well as recreational, cultural, or labor indicators had to be grouped together into a single space.

These challenges called for action. The LAAAB team decided that the first practical element implemented in *Frena la Curva* would be an open forum of citizen initiatives (HIP vector: *Proto*). This space grew substantially in the first weeks and hosted 1,000 initiatives organized by category that made it easier to find them: education, culture, care, and more. The forum became an open repository of citizen initiatives against the crisis with hundreds of thousands of visits (*Open, Co*). In a few days, we realized that it was not just important to list these initiatives that came flowing in from citizens across Spain, but that many of these proposals and activities were happening near one another, and perhaps their organizers did not even know. That was the next great leap: the creation of a map that visualized in one place all the offerings and the needs that were arising from the lockdown put in place in the first wave of the COVID-19 pandemic (*Co*). This tool was used to connect people in vulnerable situations to volunteers and organizations who could support them.

Launched on March 20, 2020, the *Frena la Curva* map,[16] included over 10,000 color-coded pins with offerings, requests for help with and without intermediation and public service information. This system of collective intelligence made it possible to channel the solidarity between residents, and between social organizations and public institutions, into an accessible and intuitive platform that received more than 500,000 hits within four weeks of its launch.

In the second month after the launch of *Frena la Curva*, several countries contacted us to create replicas of the initiative. "Work hubs" – spontaneously organized teams of volunteers – began to pop up in Mexico, Colombia, Ecuador, Argentina, Brazil, and Portugal, among others. These were often begun through friend networks. For example, the first people to launch a "work hub" in Colombia had met the LAAAB team at a civic innovation lab five years before. Our job was to facilitate and be transparent, sharing our code along with accessible documents that detailed the evolution of our steps with the aim of making the most of the lessons learned and adapting the project to each local context.

Two months later, *Frena la Curva* was in 22 countries. We implemented *Desafíos Comunes* (Shared Challenges) (HIP vectors: *Proto, Co,* and *Open*), a call for projects to be developed collaboratively that would tackle the challenges of the immediate future. We received 140 projects from across the world in just 48 hours, ten of which were selected to provide support and mentoring to. In just 50 days, *Frena la Curva* created a digital community that incorporated more than 2,000 activists, nongovernmental organizations, hackers, entrepreneurs, and laboratories from other areas of Spain and Latin America; 100 interdisciplinary teams working on many other prototypes; a map with thousands of neighborhood solidarity pins; and a strong network of alliances between companies, activists, social organizations, volunteers, and social innovation laboratories. *Frena la Curva* became a great example of a digital social innovation ecosystem, shaped as a network, distributed, agile, open, transdisciplinary and collaborative, incorporating public, private, and social initiatives.

The results of *Frena la Curva* were visible every day and, at the same time, very challenging to measure. Because we were spending so much time coordinating and supporting the network, we had very little time left over to ask for project data in a rigorous way. We were still
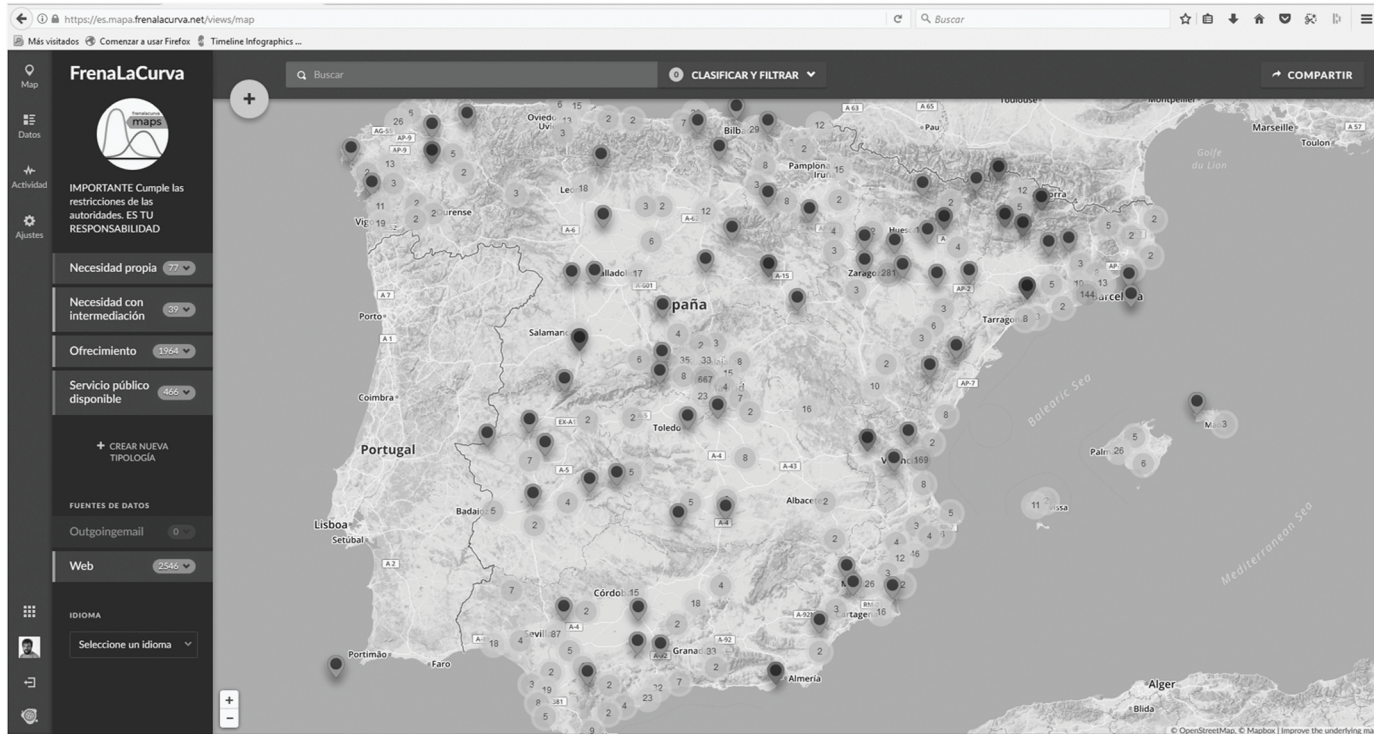
Figure 41.2   Frena la Curva map of initiatives.

Source: Frenalacurva.net.

able to measure the spread of the network day by day, and documented the astonishing range of citizen projects to fight the pandemic. For example, we learned that due to the network, over 100 prototypes of various kinds of equipment were developed by open laboratories in Brazil, Colombia, Mexico, Chile, and Spain, among others. Many of these accelerated quickly from the idea stage to deployment in the community, as in the "community sinks" prototyped in Guatemala to make handwashing more accessible in poorer neighborhoods. Many others likely did not make it past the prototype phase, but possibly inspired others to take their ideas further. A citizen project we followed closely was *Libros Que Unen* (Books that Unite) in the Aragon region. According to our data, more than 11,000 children in the region had severe challenges with distance learning due to the lack of high-quality internet where they lived. The "Libros Que Unen" project was launched by a self-organizing coalition of volunteers, librarians, teachers, illustrators, designers, and logistics companies. The goal was to design and deliver seven different books to the doors of these children, texts such as "Don Quixote" that were no longer under copyright, in versions specially adapted to the different education levels of the kids.
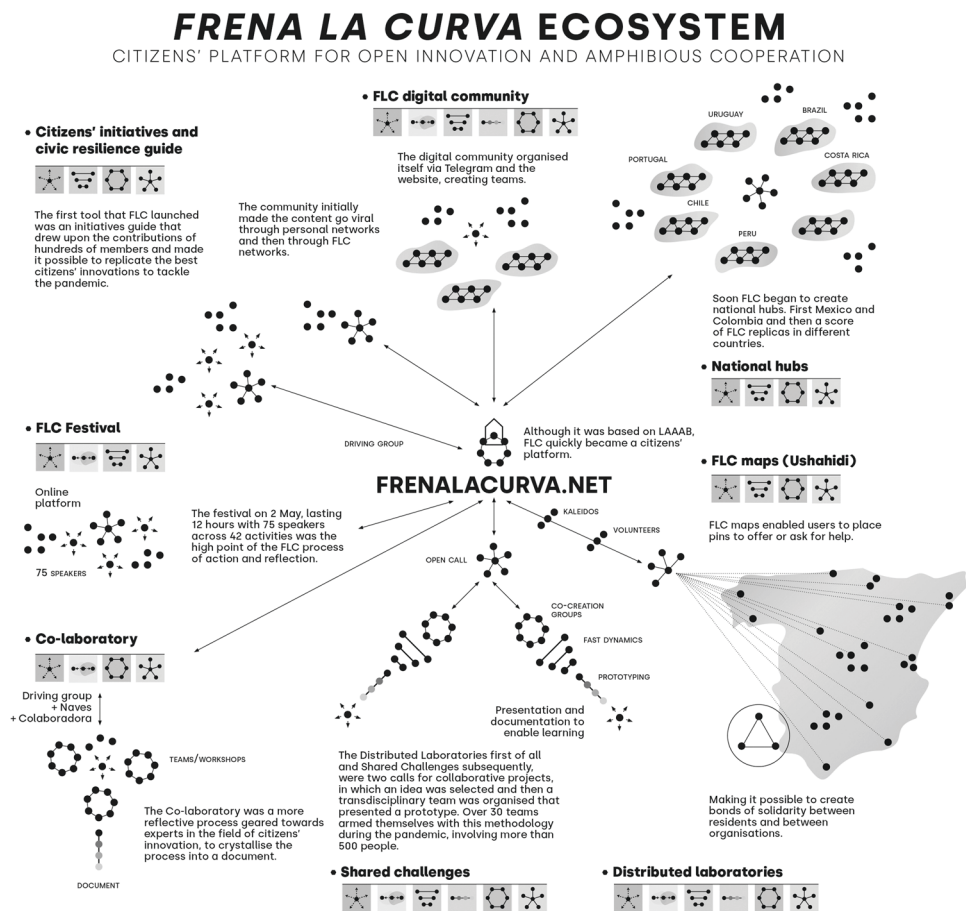
Figure 41.3   Infographic of Frena la Curva's ecosystem.

Source: Frenalacurva.net.

Over 500 people collaborated in "Libros Que Unen" during the COVID-19 crisis, and more than 11,000 books were printed and delivered. Volunteers not only designed and delivered the books but stayed in touch with the kids they had met, calling them regularly to chat about what they liked in the books, and also about their life and family situation, their feelings and needs. As this project showed, efforts supported by a regional government but inspired and led by citizens can have a major effect on the quality of people's lives during a crisis. During such a time, the simple and heartfelt solidarity of everyday people may be one of the greatest assets a society could have.

What science tells us

Innovation is often associated with the sudden breakthrough, the private revelation or great spark of an idea by an exceptional person who, by the strength of their singular talent, can bring something astonishing into the world. However, our experiences in the field have shown that "to innovate" is a verb rarely conjugated in singular form (Balestrini, 2021). Rather, the innovations we have accompanied are essentially the result of facilitated interactions among many actors and factors. Group composition is key, but so too are physical spaces, cultures, contexts, and places. As new studies in "situated cognition" and "extended cognition" have affirmed (Paul, 2021), the collective intelligence needed for innovation is principally a function of connections among people and between people and their environments.

The HIP draws from three main sources:

1. Network science, and in particular the pioneering works of Deleuze and Guattari (1975), Ricardo Solé (2016), and Duncan J. Watts (2004), which defined key principles on the diffusion of ideas and information across complex systems.
2. The compendium of 105 innovation methodologies produced by NESTA's Innovation Skills team (2018), as well as the cases cited in Johnson and Lundvall's studies of innovation and institutional learning (Lundvall, 1992).
3. The spirit of the "hacker ethic," as theorized in Himanen (2004) and expanded by Oliván (2021). The hacker ethic departs from the idea that the "Protestant work ethic" on which capitalism is based became the most widespread "operating system" in the world (Kirkpatrick, 2002). Nevertheless, many people disagree that the values it asserts – working harder, producing more, and earning status through money – are the best for humankind. The "hacker ethic," arising from the early internet but now extending well beyond technology circles, is based instead on the values of community, on shared resources, on social impact, and playing with or subverting the systems imposed by those in power. A primary example of this ethic is how Wikipedia, a collaborative swarm of editors and contributors, has displaced paper encyclopedias to become the most important knowledge product in the world, and arguably in human history.

The theory of networks points toward anarchy in appropriate doses, in the sense that random variations are just as essential for innovation in human culture as they are at the genetic level for evolution (Csikszentmihalyi, 2015). In this regard, the HIP also provides a certain level of randomness with the objective of introducing elements that break the *status quo* and open up organizations, creating new channels of conversation that, in turn, can increase the ultimate productivity of the teams.

The quality of these conversation flows can increasingly be measured. The studies of Hong and Page (2004) and Anita Woolley (2010) have pointed to the need for diverse "cognitive repertoires" in solving complex, multi-dimensional problems. The cognitive repertoire of any individual includes her bases of domain knowledge and life experience, as well as mental models and heuristics she brings to solving a given problem (Page, 2017). Woolley et al. (2010) have pointed to interpersonal skills such as active listening, reading the emotions of others, and sharing speaking time as critical factors in the collective intelligence of a team. These "soft skills" pay great dividends in an innovation challenge in that they help bring tacit technical knowledge to the surface and motivate others to share new and potentially risky ideas.

Do's and don'ts

These are the best practices we consider the most essential from nearly 20 years of experience facilitating collective innovation.

1. **Create a margin of randomness.** People can only innovate if they have the chance to give shape to their ideas and build them under certain "margins of randomness" far from the regulated, compartmentalized, and hierarchical spaces. Creating environments of freedom where practicing, testing, failing, scaling up, replicating, and so on is essential.
2. **Innovation depends on trust.** The single most important environmental factor in innovation is the trust between people. Trust is the core of meaningful relationships and an alignment of shared visions and destinations that culminate in the creation of communities. A sense of belonging, collective identity, synchronization and synergies, are preconditions for the consolidation of an innovation ecosystem.
3. **Planning can obstruct innovation as well as enable it.** The regulations, strategic plans, sets of indicators, performance evaluations, quality programmes, organizational structures, manuals of duties of each position – these are all well-intentioned tools that can be easily used to obstruct change. There are powerful forces that want everything to remain the same, that use bureaucracy as a trench in which to take refuge and protect the status quo. Innovation can create losers as well as winners. Our model tackles the concentration of power, bottlenecks, endogamy, and pyramid structures, and invites us to open, equitable, diverse, and plural systems.
4. **Create complementary roles.** We designed the six vectors of the HIP model to help teams identify and assign the roles that can promote the flow of decisive conversations: the Communicator, Philosopher, Time Steward, Designer, Connector, and Digital Lead. As noted above, a blend of "cognitive profiles" (Page, 2017) that integrates technical and interpersonal skills may be a critical factor in team innovation.
5. **Expect resistance (and welcome it).** Discomfort and uncertainty are endemic to innovation. The HIP model pushes institutions to leave the world of responses, protocols, plans, and inaugurations, and moves them toward the world of questions, prototypes, temporariness, and flows. Resistance should not be ignored or silenced; rather, it should be named and welcomed as a normal part of the cycle of organizational growth. Keep lines of communication open and show resisting parties how they can benefit, finally, from the greater health and effectiveness of their organization.

The HIP model is not the only way to innovate, nor the easiest, nor even the fastest, and it may pose just as many questions as the answers it provides. Nevertheless, the *Frena la Curva*
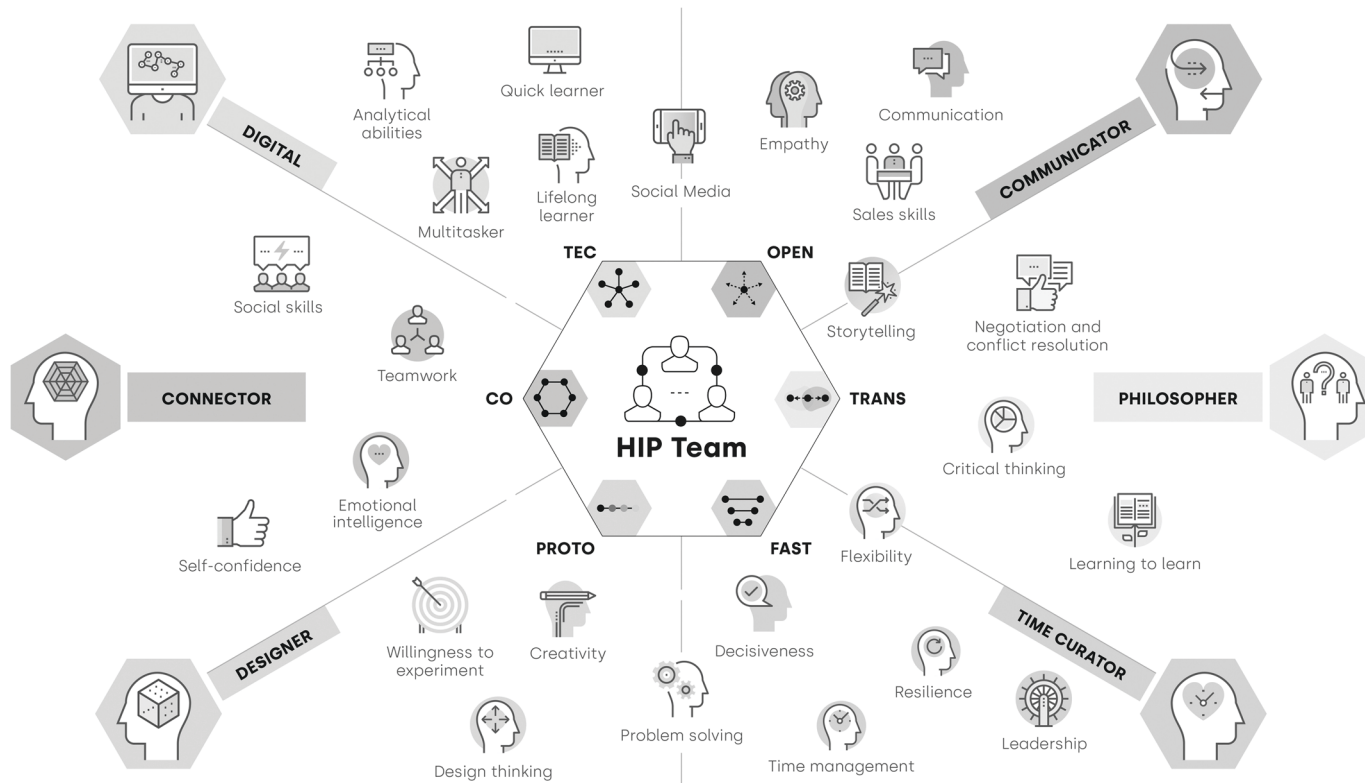
Figure 41.4   Roles and soft skills for an HIP team.

Source: LAAB.

project showed the power that lies in gathering people together in a new way, challenging them and inviting them to form part of something bigger, exercising their human right to create, to design, to imagine and to innovate. And to do this together to create a community, and feel that we can be more than the sum of our individual lives.

Notes

1 ESTEFANÍA, J. (dir.) et al. (2010), Informe sobre la democracia en España / 2010, www.fundaciona lternativas.org/las-publicaciones/informes/informe-sobre-la-democracia-en-espana-2010-la-erosion-de-la-confianza-y-el-bienestar-contra-la-desafeccion.
2 www.laaab.es/.
3 www.youtube.com/watch?v=ZBmh5hNpuJo.
4 madeinzaragoza.es/.
5 www.facebook.com/semillerodeideaszgz/.
6 www.laaab.es/categoria/open-kids/.
7 www.laaab.es/categoria/social-impact-academy/.
8 www.laaab.es/comunidad-aspasia/.
9 www.laaab.es/categoria/cvol-voluntariado/.
10 https://transparencia.aragon.es/transparencia/visualgob/.
11 www.nesta.org.uk/blog/landscape-of-innovation-approaches/.
12 At the moment, work is also being done in the Spanish Agency for International Development Cooperation (AECID), to transform its training centers, in CIDEU, a network of Ibero-American cities, in the rural schools by means of the Princess of Girona Foundation and many other projects that are cropping up as we write this.
13 Vivero de Iniciativas Ciudadanas, El País, 2014, *"Extituciones. Las nuevas instituciones ciudadanas".*
14 https://modelohip.net/.
15 More can be found at: https://festival.frenalacurva.net/archivo/. There is also a documentary about *Frena la Curva*: www.youtube.com/watch?v=ErumhHWvZhM.
16 www.youtube.com/watch?v=B5PLJ2_EdNk.

References

Balestrini, M. (2021).*"Diagnóstico urgente de la innovación en España"*, El Pais, 15 April, 2021, available at https://elpais.com/opinion/2021-04-15/diagnostico-urgente-de-la-innovacion-en-esp ana.html

Csikszentmihalyi, M. (2015). *The systems model of creativity: The collected works of Mihaly Csikszentmihalyi*. Springer.

Deleuze, G. and Guattari, F. (1975). *Rhizome*. Les éditions de minuit.

Fernández, J. (2018). Cómo construir comunidades de emprendimiento e innovación social. Hacking Inside Black Book, available at www.laaab.es/hackinginside/

Himanen, P. (2004). 19. The hacker ethic as the culture of the information age. *The Network Society*, 420.

Hong, L., and Page, S. E. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *Proceedings of the National Academy of Sciences*, 101(46), 16385–16389.

Innerarity (2011). La democracia del conocimiento. Paidós. Barcelona. (Spain).

Kirkpatrick, G. (2002). The hacker ethic and the spirit of the information age. *Max Weber Studies*, 163–185.

Lundvall, B.-A. (1992). *National systems of innovation: Toward a theory of innovation and interactive learning*. Pinter Publishers.

NESTA (2018). Landscape of Innovation Approaches, available at www.nesta.org.uk/blog/landscape-innovation-approaches-introducing-version-2/, accessed May 9, 2022.

Olivan, R. (2021). La influencia de la ética hacker en los ecosistemas de innovación social. Un análisis del caso de Frena la Curva y el modelo HIP. Dissertation for the Master's degree in Philosophy of Contemporary Challenges (Universitat Oberta de Catalunya).

Page, S. (2017). *The diversity bonus*. Princeton University Press.

Paul, A. M. (2021). *The extended mind: The power of thinking outside the brain*. Eamon Dolan Books.

Solé, R. (2016). *Redes complejas: del genoma a Internet*. Tusquets Editores SA.

Watts, D. J. (2004). *Six degrees: The science of a connected age*. WW Norton & Company.

Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., and Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, 330(6004), 686–688.

42

CO-INITIATING, SENSING, PRESENCING, CREATING, AND SHAPING

How the Scottish government applied Theory U for collective leadership against COVID-19

Keira Oliver and Karen Lawson

The story

How can we be collectively creative and brave and be productive during a crisis? That was the question the Collective Leadership for Scotland (CLS) network worked on during the COVID-19 lockdown.

Every year, CLS draws together roughly 5,000 participants from public service and civil society to help them collaborate on complex, systemic issues. This work extends beyond traditional hierarchies within public institutions and emphasizes leadership while engaging with the whole system. Openness, learning, and willingness to take collective action are at the core.

The work is led by a small core team within the Scottish government along with its partners. CLS develops skilled facilitators from public service to work with groups of leaders. In-depth spaces for connection, conversation, sense-making, and insight are created, enabling leadership to emerge at personal, interpersonal, group, and systemic levels. It also stretches participants' knowledge by allowing them to learn from diverse partners.[1] Margaret Wheatley describes the work as: *"an exemplar for how leaders need to be trained for this time"* and *"a community of like-minded and motivated leaders, learning to think systemically, focused on innovation, contribution and service"* (Collective Leadership for Scotland, n.d.)

CLS has hosted an annual Fire Starter Festival since 2016, which invites inquiry into societal problems and challenges. It creates a space where alternative discourses can be raised and discussed by hosts and participants, particularly highlighting where there are pockets of the future in the present; the idea that seemingly radical changes can often already be in existence in some settings.[2] The Festival was ignited through the work of u.lab and the practice of Theory U,[3] beginning as a prototype and growing gradually over five years.[4]

The work with CLS became particularly relevant when schools, colleges and universities in Scotland were closed almost overnight due to the COVID-19 lockdown. Suddenly,

thousands of children and young people were at home full-time with parents and carers, who were themselves adjusting to working at home or having no work at all. Many felt the pressure to take up the role of "teacher" to ensure their children's education was not disrupted. But some people saw this as an opportunity to experiment, to be creative and to be brave.

A group of educators, parents, designers and creative people hosted a Fire Starter Festival event on the future of education, two months before the UK went into lockdown. They then began meeting regularly online with members of the CLS team to make sense of what was happening and consider what might be emerging for young people's learning. This space to come together to explore the unknown was at first mainly cathartic, but then an opportunity fell into the group's lap: the annual Scottish Learning Festival was canceled due to COVID-19 restrictions. Suddenly, a spark ignited: what if that space was filled with an online festival of learning where parents, carers, young people, educators, creative people, and policy experts could come together to reimagine the future of education to really prepare our children for a complex, uncertain future? Like many education systems, the Scottish system is linear, age-staged, with a prescribed curriculum, and although aspirational with its "Curriculum for Excellence,"[5] many learners and educators were unprepared for working in a self-directed and challenge-based manner.

Through an online launch, the group invited others to join them in imagining what could be done together; to gather stories and examples of brave and creative educational practices already happening that could inspire others.

Supported by the collective leadership approach of using action inquiry, the core team started formulating and exploring their own questions as follows:

- How can parents, carers, young people, and employers be involved in developing learning experiences that place creativity, well-being, kindness, and care at its heart?
- How can people work collectively to ensure that learning is meaningful to each learner?
- What acts of creative bravery need to be taken to provide space to learn, now and in the future?
- What are the new and emerging roles needed for this?

The core team drew on the inspiration of a summer festival, encouraging a range of virtual tents, bonfires, look-out towers, and tool-sheds with each of these spaces hosting different events and resources.[6] Weekly "campfire" meetings became a place for interested people to come up with an idea and create their own event or "tent" for the festival. They also brought Myron Roger's maxims[7] to life, particularly that "those who do the work, create the change and start somewhere, follow it everywhere."

The festival ran in September 2020, just three months after launching the idea, lasting 7 days with over 100 events and 100 online resources. Over 7,000 visitors joined in from more than 80 countries. A particularly poignant event was the first public tribute to best-selling author and education specialist Sir Ken Robinson.[8]

Participant feedback focused positively on how a collective can bring about transformational change, and the connection between individual action and the wider system. The outcome for one participant was the realization that "an amazing group of like-minded individuals who truly care about the future can design, motivate and inspire the current and next generations through their creative imagination and collective skill-sets." Another key takeaway was that "meeting with like-minded people to challenge preconceptions and norms in a safe environment creates energy, positivity and a shared desire to make things happen."

The core team learned a lot about what it means to work as a collective, questioning our tendency to default into traditional perspectives, learning to slow down and listen, to support each other through errors and to use humor. Many of the ideas and projects showcased at the festival have continued to flourish; for example, connections between the Agora Schools[9] in the Netherlands and a school in Scotland, where the pupils are experimenting with designing their own curriculum. The campfires continue to provide a reflective and creative space and the festival itself returned in October 2021, with a presence at COP26 in November, that highlighted young people's challenges to learning and climate change.

What science tells us

Collective Leadership for Scotland uses an Action Inquiry approach, defined according to William Torbert as

> a lifelong process of transformational learning that individuals, teams, and whole organizations can undertake… to become: increasingly capable of listening into dangers and opportunities of the present moment from which the future emerges; and increasingly capable of [acting] in effective, transformational, and sustainable ways… The source of both its difficulty and its potential is that action inquiry requires making ourselves, not just others, vulnerable to inquiry and to transformation.
>
> *(Torbert, n.d.)*

Theory U is an action inquiry framework developed by MIT Professor Otto Scharmer. It invites us to tap into "the interior conditions", the sources from which we operate both individually and collectively… to the quality of relationships that we have to each other, to the system and to ourselves…" Theory U identifies four ways that action and attention come into the world, depending on whether they arise from a quality of awareness that is (1) habitual, (2) ego-systemic, (3) empathic-relational, or (4) generative eco-systemic" (Scharmer, 2018, p. xi). As our intention within CLS is to shift leadership in complex issues from ego-systemic to regenerative eco-systemic, Theory U has influenced much of our practice.[10]

The action inquiry "shape" is expressed as a U rather than a cycle to depict a process[11] of slowing down and going deeper for longer before "acting in an instant." While not as linear in practice as suggested below, Theory U has five stages and corresponding group outcomes.

- Co-initiating to reveal the power of shared intentions of what you want to create as a core group, building a foundation of curiosity, compassion, and courage with critical questions to explore.
- Co-sensing, where, for a time, you suspend fear, judgment, and cynicism in order to see reality from multiple perspectives, especially the edges of the system. Outcomes can include insights and understanding of what shapes the system and barriers that keep it stuck, a revised set of core questions, personal connections into opportunities, deeper group investment, and improved capacity for building generative stakeholder relationships.
- Co-presencing, where we ask ourselves "what is my personal leadership challenge? What is my work?" Outcomes include ideas and energy for specific actions, an emerging leadership narrative, the story of "us" now.

- Co-creating outcomes such as prototypes or actions that generate meaningful feedback, connections with crucial stakeholders and partners, enhanced leadership and innovation capacities, team spirit, and creative confidence.
- Co-shaping, the final phase, allows the group to embody the new. Outcomes include reviewing actions, shared learning, decisions on what to take forward to widen the scope to include more of the system, a new narrative that links the work to societal renewal (Scharmer, 2018).

Do's and don'ts

If you use an action inquiry approach like Theory U to build capacity for collective leadership, we suggest you:

- Take this approach particularly with cross-boundary groups working on complex or "wicked" societal issues (Grint, 2008).
- Have a clear appreciation of the power and importance of relationships. We can't foster collective leadership by telling people to do it. It is not always obvious how we need to work together and people can inadvertently try to impose, or look for, hierarchy within a collective (Covey, 1992). As a facilitator, it's essential to notice and name this when this happens, for the benefit of the group.
- It can take time for a group to be ready to work together; this investment in readiness is crucial for future success.
- Make a commitment to support colleagues to do the work *where they are*. Facilitators trained in complexity theory (e.g., through the "Facilitating in Complexity" program[12]) and a well-developed understanding of group dynamics are crucial so that issues that are difficult or avoided can be addressed in the moment.
- Find meaningful ways, for example using learning logs and action inquiry groups, to reflect and record the learning as you go, individually and as a group.[13]

Table 42.1 Core characteristics of systems leadership

Deep listening	Listen to learn and temporarily suspend judgment.
Awareness of systems	Understand communities, organizations, and groups as adaptive, changing systems to gain a fuller perspective of the situation and expand and refine your options for action.
Awareness of self	Be aware of your motivations, feelings, and beliefs to help you to make effective decisions about how to behave.
Seeking diverse perspectives	Respectfully include all voices so that conflicting opinions become a potential resource, helping to sharpen thinking and generate innovative options for action.
Suspending certainty, embracing uncertainty	See beyond your habitual frame to get a broader and potentially more accurate view of what is going on.
Taking action in complexity	Learn from everything you do, take time to recognize patterns and reflect on their meaning before jumping to a solution, balance an inclusive, deep listening approach with a bias towards action.

Source: Adapted from University of Minnesota and Life Science Foundation (University of Minnesota, n.d.).

- Create and strengthen connections with what others are doing: the established sectors, passionate individuals, and organizations committed to engaging differently.
- Invest in the self-reflection work required to support you when it gets difficult. The group will get frustrated and sometimes this may be directed at the facilitator. Table 42.1 highlights the personal leadership capabilities we support teams to work on together (Bakken, n.d.).

Notes

1 For more detail, see our website at www.collectiveleadershipscotland.com.
2 A concept drawn from the three horizons model of transformation change. For info see www.internationalfuturesforum.com/three-horizons.
3 u.lab was launched in 2015: a free, online platform delivered by the Presencing Institute and MIT to learn and apply Theory U to changes participants wanted to make in their personal, organizational, and community lives. The Scottish government supported a nation-wide initiative called u.lab Scotland which encouraged people to participate and form in-person "hubs" to learn and take action together. To date, over 1,800 people in Scotland have taken part across all sectors including the national health service, non-profit and non-governmental organizations, local and central governments, and business (see Oliver et al. 2020).
4 The festival grew from 7 events and 100 participants located in Scotland, to 110 events and 3,750 participants internationally. For more information, see www.firestarterfestival.com.
5 For more info see: https://education.gov.scot/education-scotland/scottish-education-system/policy-for-scottish-education/policy-drivers/cfe-building-from-the-statement-appendix-incl-btc1-5/what-is-curriculum-for-excellence.
6 You can get a sense of the festival and see recordings of the events and other resources at www.creativebraveryfestival.com.
7 Myron Roger developed six maxims to simplify the overwhelm that can be felt with working with the complexity of living systems: www.heartoftheart.org/?p=1196.
8 Sir Ken Robinson, author of "Do Schools Kill Creativity," died in August 2020. According to his personal website, Ken "worked with governments, education systems, international agencies, global corporations and some of the world's leading cultural organizations to unlock the creative energy of people and organizations. He led national and international projects on creative and cultural education in the UK, Europe, Asia, and the United States. The embodiment of the prestigious TED Conference and its commitment to spreading new ideas, Sir Ken Robinson is the most watched speaker in TED's history" (source: http://sirkenrobinson.com/about/).
9 https://hundred.org/en/innovations/agora#956c04be.
10 Many of the tools we use or have adapted from Theory U such as the levels of listening, dialogue walks, and case clinics are available here: https://collectiveleadershipscotland.com/areas-of-work/supportive-practices/.
11 For more detail, see Scharmer, C. O., 2018. The Essentials of Theory U. First ed. Oakland: Berrett-Koehler Publishers Inc.
12 Leadership and Facilitation Programme – Collective Leadership for Scotland (collectiveleadershipscotland.com)
13 For further ideas, see Sharp (2018). Available at: https://collectiveleadershipscotland.com/wp-content/uploads/2019/03/collective-leadership-where-nothing-is-clear-and-everything-keeps-changing-february-2019.pdf.

References

Bakken, Earl E. (n.d.). "Whole Systems Leadership." University of Minnesota: Driven to Discover. Retrieved from www.csh.umn.edu/education/whole-systems-healing/whole-systems-leadership.

Collective Leadership for Scotland (2020). Collective Leadership for Scotland Progress Report. [Online] Available at: https://collectiveleadershipscotland.com/wp-content/uploads/2020/12/Collective-Leadership-Progress-Report-2020-Final.pdf [Accessed 17 December 2020].

Collective Leadership for Scotland (n.d.). [Online] Available at: https://collectiveleadershipscotland. com/ [Accessed 17 December 2020].

Covey, Stephen (1992). *Principle-Centred Leadership*. Simon and Schuster.

Grint, K. (2008). 'Wicked Problems and Clumsy Solutions'. *Clinical Leader,* 1(2), pp. 54–68.

Oliver, K., Winther, A. & Deacon, K. (2020). 'Moving Towards Collective Presencing on a National Scale through u.lab Scotland' in Gunnlaugsson, O. & Brendel, W. *Advances in Presencing Volume III: Collective Approaches in Theory U.* Trifoss Business Press, pp. 43–66.

Scharmer, C. O. (2018). *The Essentials of Theory U* (1st ed.). Oakland: Berrett-Koehler Publishers Inc.

Sharp, C. (2018). Collective Leadership: Where Nothing Is Clear and Everything Keeps Changing. Available at https://collectiveleadershipscotland.com/wp-content/uploads/2019/03/collective-lea dership-where-nothing-is-clear-and-everything-keeps-changing-february-2019.pdf

Torbert, B. (n.d.). *Action Inquiry.* [Online] Available at: www.williamrtorbert.com/action-inquiry/ [Accessed 16 December 2020].

Torbert, William and associates (2004). *Action Inquiry - The Secret of Timely and Transforming Leadership.*

University of Minnesota (n.d.). *Center for Spirituality and Healing.* [Online] Available at: www.csh.umn. edu/education/whole-systems-healing/whole-systems-leadership [Accessed 17 December 2020].

Closing Thoughts

CONCLUDING DIALOGUE

Collective intelligence and democracy, today and tomorrow

Lex Paulson

To conclude the handbook in a collaborative spirit, the editors convened a "virtual dialogue" bringing together four rising stars in the field of collective intelligence, each from a different continent. This dialogue was created in phases: we interviewed each participant individually, compiled their reflections, and shared them with one another for further thoughts and responses. The product is the "virtual dialogue" that follows.

   Participating in this dialogue were:

Oumar Ba, the Director of Senegal's Agency of Reforestation and the Great Green Wall.[1] Trained in Information Technology in the United States, he previously served as counselor to the Prime Minister and to President Macky Sall from 2017 to 2022.

Helen Liu, Professor in the Department of Political Science and the Graduate Institute of Public Affairs, National Taiwan University (NTU). Her primary research interests are in interorganizational networks, social service provision, collaborative governance, crowdsourcing adaptation, and nonprofit management.[2]

Cristiano Ferri Faria, former Director of the "Hacker Lab" of the Chamber of Deputies of Brazil. He has worked on projects related to the lawmaking, the quality of laws, legislative transparency, digital democracy, and open parliament innovations. He earned a PhD in political science and sociology from the University of the State of Rio de Janeiro, and was associate researcher of the Ash Center for Democratic Governance and Innovation at Harvard University.[3]

Ksana Nechyporenko, a founding partner of Global Office, an NGO aimed at fostering informational, political, economic, cultural, and social integration of Ukraine into the global community.

Lex Paulson: I thought we'd begin, as Socrates liked to do, with trying to define the key word of our discussion. What is your understanding of collective intelligence, and where did you first see it in action?

Oumar Ba: I grew up in a herding culture in Senegal. Where I come from, we give children responsibility very early. So from when I was very small I was taking part in community tasks, watching the adults and older kids, seeing how people interacted as they solved problems, how they could correct and build on each other. Collective intelligence also took the form of storytelling, sharing the wisdom of the past. I was a very competitive kid, and I remember one of the things my grandfather used to say to me: "Alone, one runs faster. Together, we run further."

Many years later, as my agency is trying to build a "Great Green Wall" of trees to prevent desertification, this proverb still drives my view of CI. But – and this is a key point – collaboration isn't just about dividing up the work and then summing it up later. That kind of aggregation can give insights from a research perspective, but for the problems I work on in Senegal, we take a different approach.

I'll give an example. My first major experience of collective intelligence in action was Barack Obama's first campaign for President in 2008. I was living in Baltimore, and I got involved as an organizer, helping reach out to voters in my neighborhood and as far as Pennsylvania and Virginia. If the campaign had been simply about dividing up tasks – a thousand volunteers contacting ten people each, say – it wouldn't have worked. Instead, the campaign challenged its organizers and volunteers to really think together. How do we adapt Obama's national messages to our neighborhood? Which alliances do we need to build? How can we bring out the best in each other to get the job done? That's the mindset that we used to create the largest campaign in US history, 2.2 million volunteers. And it was just like what I had learned back home.

Helen Liu: Oumar's story sparked a memory from my childhood in Taiwan. In our elementary school, I remember the teachers would tell us, "Three stooges are better than one Zhuge Liang." I should explain this one. (Laughs). Zhuge Liang was a famous military strategist during the Three Kingdoms period in China. The idea behind the saying is that if three stooges – meaning not geniuses, people like you and me – can put their heads together, they can often come up with ideas better than the very best person can do by himself.

Later in my studies, it seemed like there was this wave of interest into what scientists and journalists were calling the wisdom of crowds. There was Surowiecki's book, of course ["The Wisdom of Crowds", 2004], but also some really interesting studies of open-source software communities, like Wallich's paper, "The best things in cyberspace are free" [Scientific American, 1999]. I was struck by how these intuitive concepts from elementary school were being studied – and in many cases, validated – by major scientists. And of course, that governments – including the Obama Administration's 'We the People' and open innovation initiatives – were starting to draw on crowd wisdom to set the agenda and generate new ideas.

Cristiano Ferri: My first contact with CI was as a student. I had been interested in politics, but in my experience to that point, most "citizen consultations" I had heard of were just that – consultations. Nothing really changed, and the politicians did what they were going to do anyway.

Then I read this article about participatory budgeting in Porto Alegre, a city in the south of Brazil. Starting with a change in city leadership in 1989, people from the poorest neighborhoods were given real power to decide where to put public money. With this structured process involving thousands of citizens, they were choosing where to put new health clinics, getting roads paved. Women were forming cooperatives to get their products to the central market, with PB paying for some equipment and transportation. It was real power.

Having contact with the Porto Alegre experience at the very beginning of my career was mind-altering. I started working on "e-democracia" in the early 2000s, as governments were starting to engage citizens systematically using digital tools. This was the challenge: how to bring that empowering vision of citizen participation into my work. But to return to Socrates, here's my definition of collective intelligence: when a group of people can handle a problem better than even the best individual working alone. For me, I wanted to work on developing the tools and methods to make that vision a reality in Brazil at the national level, in how we made new laws.

Ksana Nechyporenko: In the winter of 2013–2014, what we called "the revolution of dignity," I was in Kyiv. Our president had taken a choice away from us whether we wanted to be part of Europe. The Euromaidan uprising started online, when thousands of us joined Facebook groups to show our values and make it clear that the Yanukovych government did not speak for us. It was amazing to see how many people thought like me, and how passionate they were.

But history was made when we went to Maidan Nezalezhnosti, Independence Square. Everywhere you looked, people – especially young people, students – were taking leadership. I saw hundreds of thousands of people acting as one organism and one body. We didn't have any single leader, no official coordination mechanism, but somehow everyone found their role. Groups formed to build field kitchens to make sure everyone was fed. Some people with military experience formed small battalions, a "special guard" to protect the protestors. Then we had crowdfunding and people from all over the country contributing supplies. We even had our own Maidan Airbnb! And when politicians showed up to join us, we insisted they "drop their flags," meaning they no longer were big shots representing a political party.

They were now a part of something bigger. We didn't have a final understanding of where it would take us in 2014. All we knew then was that someone had taken away our right of choice. I'm usually afraid of big masses of people, but I felt at home there. I thought, we are each the drops, and together we created the big ocean.

Lex Paulson: Something the four of you have in common is that you have each dedicated a huge part of your life to helping groups think together and solve hard problems. What motivated you to take on your work?

Ksana Nechyporenko: It was also during Maidan. You see, as a university student in 2005, I had also taken part in the Orange Revolution, when Ukrainians came together to protect the results of a national election. When the protests achieved their goal, I sincerely thought that our work was over, that democracy was safe now and I can go back to my own life. I went to work in a nice company, lived comfortably, enjoyed my family and friends.

Then when Euromaidan happened, and Yanukovych fled the country, I specifically remembered how I had reacted before. I had to realize that we didn't get sustainable results in 2005 because we didn't fully take responsibility. Now I had to take responsibility.

So I got a little crazy and left my nice bubble, and decided it was time to give back. My first big project at Global Office was working with volunteers from all over the world who came to Ukraine to teach English to young people. Most of them had no connection to Ukraine whatsoever, but they somehow were choosing to come be with us, working with our kids, instead of going on a nice vacation. Seeing with my own eyes how the volunteers and kids overcame language barriers, geographic barriers, cultural barriers – how could you not believe in this?

And I see now, with everything that has happened this year, that since 2014 we really have changed the country together. What continually inspires me are the teams I work with, and realizing that I'm not alone.

Helen Liu: Like Ksana, I was also struck by the power of collective intelligence in solving social problems.

In 2008, as I was preparing a lecture for my public management class, I came across the Ashoka Changemakers network. Traditionally, foundations issue a call for project proposals on an issue they care about, and then choose who gets the funding. The evaluation of whether an idea is feasible, or whether it is likely to get widespread support, is done by a small group of people working at the foundation.

Ashoka created a totally different model. They issued open calls on various social challenges, from ending human trafficking to reducing domestic violence to increasing pre-paredness for natural disasters. All the project ideas were then put online, where communities could form and comment on how to support and develop the idea. On 47 projects between 2004 and 2011, nearly 8,400 unique users from 150 countries participated in Changemakers by contributing an idea or commenting. There were over 25,000 discussions!

I was really curious to know what motivated people to share and contribute to this common pool of knowledge. When I analyzed the data with a colleague, we found[4] that the number of contributions went up when the projects were highly visible and called for specific skills instead of general appeals for support. Proposals that clearly described how success would be measured also won more support. Having been greatly influenced by Elinor Ostrom's work on collective action, I was fascinated by the effectiveness of this virtual community.

Cristiano Ferri: Virtual communities have always really interested me as well. When I started the "e-democracia" experiments in the Brazilian Congress in 2009, one of my goals was to create a virtual community of practice, so that public servants in different parties could learn from one another about how to engage citizens. At that time the issue of virtual communities was very popular in Brazil. I was working with a knowledge management expert and he asked me, "why don't we adapt this virtual community of practice to law-making and citizen participation?"

So we started to prototype a model, and in talking to some legislative advisors and lawmakers we got the contacts of some members of Congress who were considered early adopters of technology. We made an agreement with two of them: one who was a rapporteur on climate change issues, and the other a young Congresswoman who was a rapporteur for youth policy and very interested in trying new tools. We worked with their teams to set up a series of structured experiments to test which methods would produce the greatest participa-tion. One failed totally, the climate one. The other, led by this Congresswoman, was a huge success. Not only did she include the citizen contributions in her final report, her report led to new legislation that was approved by both chambers of Congress and became law.

What I learned is that we needed to connect those leaders who had the right values and energy with the best tools and support to bring citizens into the process. This is how a really new way of doing things can take shape.

Oumar Ba: As for me, after my experience on the Obama campaign, I became something of a collective intelligence addict. (Laughs.) With my training in computer science, I was simply amazed at how this sophisticated data-clustering operation could co-exist with all these field organizers and volunteers. Not only was the technology not replacing human contact, it was also assisting and amplifying it.

But what really motivated me was seeing how a well-organized movement changes the people who take part in it. I just looked at the world differently after that. When I came back to Senegal, I was able to work on the team of President Macky Sall to design a new form of collective intelligence we called "Pencum Deglu," which in Wolof means "citizen work-shop." This was a form of small-group dialogue based on the common experience of meeting together under the largest tree in a village to discuss solutions to a community problem. We designed a mobilization strategy that would create a network of trainers who could lead these dialogues across the country, connecting individual stories about local needs to the goals of the national *Plan Sénégal Emergent*.

These dialogues were the first time that many young people in Senegal had been asked for their opinion and really listened to, and I saw what it did. 25 young participants with special talent became "trainers of trainers." In six months, under our supervision, those 25 trained over 4,600 young people how to facilitate Pencum Deglu dialogues and lead voter-registration drives in every region of the country. And through these dialogues we learned new things about local security, what entrepreneurs needed, how to improve public education. It was the door-to-door spirit from 2008, working in concert with the deep intelligence of our villages and oral traditions.

I can say that the state of mind needed for these collaborations has led to deep personal changes for me and my colleagues. Really learning how to listen and integrate all the perspectives in the circle, even under stress. I came to develop skills and habits that have really helped me in my close relationships and in appreciating others.

Lex Paulson: The four of you have worked in a wide range of countries and contexts. What have you come to realize about the particularities of your own culture in how people think and solve problems together?

Oumar Ba: It's true that collective intelligence follows some universal principles, but that our cultures can follow those principles very differently, and we need to take that into account. For example, when we are doing consultations in certain regions of Senegal, we adjust our methods to reflect the strong role of religious or cultural beliefs. For example, in some places a woman will not be expected to speak openly in public about issues affecting families. In certain places, having a view different from the local religious leader can have a high social cost. We don't waste time trying to force these beliefs to change. Rather, we work around them and find creative ways for all parts of the community to contribute effectively.

That's the magic of collective intelligence for me: every problem has a solution of its own. Living in a community always comes with conflict and misunderstanding. But if you can find the right methods and compose the group in the right way, many minds will always be better than one.

Helen Liu: I would say that a particular aspect of Asian culture, especially in those places influenced by Confucianism, is the notion of respectful obedience or compliance.

This is considered one of the great social virtues, but as Confucius himself pointed out, it can be practiced well or badly. On the one hand, respectful obedience can help a large group work within common rules, completing tasks that help everyone. On the other hand, where obedience is performed from fear or habit alone, this reduces critical thinking and the intelligence of the whole. As he put it, "A proper man seeks harmony but not conformity; a vulgar man seeks conformity but not harmony."[5]

So it is not just blind obedience but thoughtful, considered obedience that is valuable. Some of the best examples of CI I have studied in Asia have been mindful of this heritage, intentionally designing processes that include opportunities for independent judgment and feedback.

Cristiano Ferri: I believe that context and culture matter a lot. For instance, participatory budgeting was created by Brazilians in the late 1980s, and it proved wildly successful and popular in many parts of Brazil. PB tapped into the deep social habits of Brazilian people, who love to meet and co-create and celebrate in so many ways.

But culturally speaking, PB was also tied to a very specific moment in Brazilian history, the end of the military dictatorship, and a specific kind of leftist ideology that emerged in its wake. Having strong champions of workers get elected to office made PB possible, but as the fortunes of those politicians declined or as they got dragged into scandal, the brand of PB in Brazil suffered – just as it was taking off in many other countries in the world. And this made it nearly impossible for a consolidated system of citizen participation to take shape.

My strategy has always been to get Congressmen of many parties and backgrounds interested in citizen participation. And this means taking seriously how we communicate with different kinds of people. My team calibrates the words that we use: with deputies from the right wing, we say, "this is how we can make the parliament more visible and more modern," or "we need new digital tools for a better system of communication." And when we talk to those on the left, we emphasize how these platforms empower everyday citizens and help them decide. This political outreach takes a lot of creativity and patience, but we're making progress.

Ksana Nechyporenko: Ukrainians are really good at collective intelligence – because we have to be.

I saw this in Euromaidan, where this massive group of people organized themselves into an effective movement. Shortly after this, I saw it again when Russia started the first stage of its war against us in the East. We didn't have our army fully prepared for this invasion, so we created this amazing phenomenon called "military volunteers." These were citizens who were not formally drafted into the army, but on their own initiatives formed groups, raised money for their own equipment, and went east to fight in support of frontline troops. The bravery of these volunteers was both astonishing and normal, part of what we knew we were capable of.

In Ukraine, volunteers have become one of the most trusted institutions in the state: the church, the army, and the volunteers. Groups of citizens have learned how to organize them-selves to cover gaps that the state couldn't fill, whether it is gaps in public services or gaps in our military strength. And now, this year, the whole world has seen it: Ukrainians are not just ready to talk about our values, we are ready to die for them.

Lex Paulson: What advice would you give to people – civil servants, elected officials, or interested citizens – who are curious to try collective intelligence methods in their work?

Helen Liu: Just do it! I often talk with people in government who are interested in including citizens but are afraid that the methods that worked well somewhere else couldn't be applied in their community. It's important to remember that every "crowd" is different; the experiences of other countries, or even our own experiences, will never apply perfectly to the situation in front of us.

This is why it's critical to build prototypes instead of programs. A prototype allows for failure and rebuilding. A formal program is often put at risk by evaluation processes that may not be measuring the right thing and can more easily be terminated for the wrong reasons.

It is a trial-and-error process. For instance, last fall, I applied collective intelligence in my teaching by creating an assignment for students to produce Wikipedia articles on public administration instead of case studies. The idea was that students from abroad whose travel was limited by the pandemic could still pool knowledge with local students through these virtual spaces. As it happened, though, the first semester was not very smooth and the final deadline had to be delayed for two weeks after the semester ended because the students were not familiar with the technological requirements of Wikipedia. So in the second semester, we organized a special on-site training for the students based on the list of problems and issues collected in the previous semester. Students were able to complete the assignment a week before the semester ended.

Oumar Ba: I try to make it as simple as possible for politicians: you just can't govern well if you aren't connected to the needs and priorities of citizens.

On the other hand, simply gathering people in one place to talk about an issue doesn't necessarily lead to effective solutions. You need a diversity of voices, not just the usual suspects. You need good facilitation that balances the voices in the room and keeps things moving. You need tools to aggregate the ideas of people who can't be in the room. You need decision-makers willing to be humble and have their minds changed. You need to create an environment where people feel safe to speak up and say how they really feel. And you need to constantly learn and adjust.

In other words, public officials need to understand the basics of collective intelligence and use it to improve their ability to interact with citizens. We live in a fast-track world where information is quickly available. When correctly used, the collective intelligence of large and diverse groups can solve so many problems for leaders – can even make them more popular and admired. The other way around will mostly lead to chaos.

Cristiano Ferri: I totally agree with Oumar, and I would take the idea of safety even further: politicians and civil servants must themselves feel safe in order to innovate.

In other words, I wouldn't start by asking them to place a big bet on citizen intelligence on a highly political question. Instead, get started quickly engaging small groups of citizens in a controlled way. The best way to build collective intelligence in public administration is to create a culture of targeted experimentation without overplanning. Turn the results of the experiments into compelling stories, and more and more people will sign on. No politician wants to be the last adopter of the next big thing.

Ksana Nechyporenko: I agree with everything that's been said, but for me it's all about finding others who share your values and are open to taking a risk on something new.

And my advice? First, don't ever think that something is impossible – just look at the challenges Ukrainian people have overcome so many times in our history. I say believe in yourself and be open to believing in others. If you want to do miracles, you have to do it as a team. And collaboration in a diverse and passionate group can be stressful – you need to keep an open mind, learn how to admit mistakes, learn how to motivate people, bounce back from mistakes, and keep reconnecting with your values. And it's great to talk about so many things, but like Helen said: just do it.

Lex Paulson: What methods and tools are you excited to try next in your work?

Cristiano Ferri: In Brazil, I'm excited about the prospects of liquid democracy and artificial intelligence applied to collective intelligence.

I really like the idea of liquid democracy because it's an attempt to experiment with new forms of representation, not just through elections, but through networks of citizen expertise. Frankly, from my experiences with open participatory processes I have seen failures come when some participants are too amateurish and get caught up in trolling or useless debates. We need full participation in some contexts, but as a complement we also need to modernize our representative system, which right now is obviously in crisis. We can't all be involved on all issues all the time, and liquid democracy is a really promising way to crowdsource expertise in an open and transparent way.

So I think we need to try much more – we are just getting started with our experiments – to develop new and robust forms of representation that can be flexible and issue-specific. Could we create a hybrid system of collective intelligence where I can participate directly on some issues, and also have different kinds of representatives working on my behalf? What if we could create a kind of "citizen dashboard" that we could manage like an investment portfolio, letting each citizen put more of their power here or there? We need to experiment, be brave and try new things.

Ksana Nechyporenko: After we win this war, I will be excited to build. Not just rebuild, not just create the second-best version of something we already had. But really build something new for Ukraine. For me and my team this is about better education, new services, and networks of support for our fellow citizens who survived this war, especially the women and girls. We will win, and then we will do whatever is needed to build a better country.

Helen Liu: Like Cristiano, I'm really interested in the kinds of hybrid intelligence we could build from combining AI and CI on a public challenge.

I also want to go further into the questions of motivation that I mentioned before, how different social structures and influences can affect the desire to contribute and the quality of contributions across a group of citizens. If we can replicate these kinds of experiments on social influence across different regions of the world, this would make any new findings more robust. So I will be very interested in building new international collaborations to explore the cultural context of CI and continue advancing our new field.

Oumar Ba: Our field is young, but I really feel a new energy that is starting to form. As Helen said, it's the international collaborations that are making me hopeful for the next wave of discovery.

During my studies at the School of Collective Intelligence at UM6P in Morocco, we learned about how insights from disciplines like cognitive science and data science are finally making their way into democracy and governance. And not a moment too soon! The question is, "can we take these data-clustering methods and prediction platforms and deploy them rapidly in a range of cultural contexts?" Here's where the kind of research Helen mentioned makes so much sense; technologists need to understand cultural differences, and leaders in those cultures need to benefit from the latest tools.

For the "Great Green Wall" project we'll be doing both: using anthropological techniques to trace the social dynamics in these communities, in order to introduce the right technologies in the right way. Oftentimes, the local people have all the knowledge they need to solve the problem of desertification – it's just dispersed and scattered. Technology can help us pull this intelligence together and put it to work.

Lex Paulson: Finally, everyone, what is the future of democracy as you see it?

Helen Liu: I think of Aristotle. In his comparative study of 300 constitutions across the Mediterranean, he concluded that

> the many, who are not as individuals excellent men, nevertheless can, when they have come together, be better than the few best people, not individually but collectively, just as feasts to which many contribute are better than feasts provided at one person's expense.[6]

It's amazing to think that the future of democracy may be about finally paying attention to what some ancient thinkers already knew.

Today we have tools to study human minds and societies that would make Aristotle jealous. We can study how social reasoning and cognitive diversity work, how deliberation can create or hinder consensus at the neurological level, and how critical thinking works better in groups. I see this scientific work as an essential vehicle to advance democracy around the world.

Cristiano Ferri: In my opinion it's very possible that several "futures of democracy" will exist side by side. Some will look like "Black Mirror" situations, with techno-feudalism methods applied by governments and corporations to manipulate and control people. On the other hand, and at the same time, I do believe that new methods for collective intelligence and representation like liquid democracy will mature and take the place of older systems.

History shows that no system of governance lasts forever, and pressures from our environment are growing. New, more adaptive systems of collective problem-solving will have a great chance to prove themselves in the years ahead.

Oumar Ba: In Senegal, like in so many countries, I'm worried that social media has overtaken and perverted how democracy is supposed to work. The "attention economy" has exploited our worst cognitive habits and eliminated the space for political nuance and compromise.

Over time, if an angry minority can hack the majoritarian system and take power, the credibility of democracy will collapse. Electing the wrong people or even electing the right people in the wrong way will sooner or later lead to disaster. This is why we need new platforms that are not based on monetizing attention and social conflict, but rather on bringing our best ideas and intelligence to light. The medium is the message. This first wild chapter of the social media age has taught us that collective intelligence is not automatic – having the right tools matters, and those tools should be open and owned by the public.

Ksana Nechyporenko: In most Western countries, you were born into the values of democracy and self-government. You were raised in those values, so they become familiar, and they fade into the background. But when you are not used to fighting for something, when you are never asked to pay a price for it, how can you possibly appreciate its value?

What we are doing in Ukraine is showing, with every fiber of our bodies, how democracy must never be defeated. What Russia is trying to do, what China is trying to do, is attack and weaken democracy everywhere. This is not a regional conflict. This is a global struggle, with Ukraine on the western front and Taiwan on the eastern front. And we need intelligence from democratic citizens everywhere to win it.

In Ukraine we believe in the long game, in staying clear-eyed and planning for centuries to come. If we believe that democracy has a bright future, maybe you should too.

Notes

1 *Agence sénégalaise de la reforestation et de la grande muraille verte.*
2 Prof. Liu wrote chapter 7 in this handbook.
3 Cris Ferri wrote chapter X in this handbook.
4 See Liu, H. & Sandfort, J. (2011). Open Source Platforms for Citizen Engagement: Examining Ashoka's Design and Implementation. *Nonprofit Policy Forum*, 2(2), 0000102202215433481022. https://doi.org/10.2202/2154-3348.1022
5 Analects 13.23, tr. Leys.
6 Politics 3.11, 1281a41–1281b2.

INDEX