

The background of the cover is an aerial photograph of a coastline, likely the Baltic Sea region, showing a complex network of islands and peninsulas. The water is a deep, vibrant green, with intricate, swirling patterns that suggest currents or perhaps a satellite view of phytoplankton. The land is a mix of green and brown, indicating vegetation and urban areas. The overall composition is dynamic and visually rich.

Situating Sustainability

A Handbook of Contexts and Concepts

Edited by
**C. Parker Krieg
& Reetta Toivanen**

HUP HELSINKI
UNIVERSITY
PRESS

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and Concepts

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Cover photo by The European Space Agency. The satellite image shows algal blooms in the Central Baltic Sea and around the island of Gotland, visible on the left. Image captured on 20 July 2019 by the Copernicus Sentinel-2 mission. Published under CC BY-SA 3.0 IGO.

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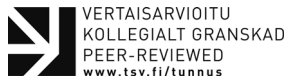
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Table of Contents

List of Figures	v
Acknowledgements	vii
Contributors	ix
Chapter 1: Introduction	
<i>C. Parker Krieg and Reetta Toivanen</i>	1
Part I: Conceptual Practices	19
Chapter 2: Interdisciplinarity	
<i>Henrik Thorén, Michiru Nagatsu and Paula Schönach</i>	21
Chapter 3: Anthropocene Conjunctures	
<i>C. Parker Krieg and Paola Minoia</i>	39
Chapter 4: Human Rights	
<i>Reetta Toivanen and Dorotheé Cambou</i>	51
Chapter 5: Education	
<i>Tuija Veintie and Johanna Hohenthal</i>	63
Chapter 6: Resilience	
<i>Henrik Thorén</i>	79
Chapter 7: Scales	
<i>Paola Minoia and Jenni Mölkänen</i>	91
Chapter 8: Nuclear Awareness	
<i>Inna Sukhenko and Viktor Pál</i>	105
Chapter 9: Eco-anxiety	
<i>Panu Pihkala</i>	119
Part II: Locating Sustainability	135
Chapter 10: Exclusion and Inequality	
<i>Reetta Toivanen and Magdalena Kmak</i>	137

Chapter 11: Governance <i>Elisa Pascucci and Niko Soininen</i>	153
Chapter 12: Disaster Recovery (After Catastrophes) <i>Marjaana Jauhola, Niti Mishra, Jacquleen Joseph and Shyam Gadhavi</i>	163
Chapter 13: Traditional Ecological Knowledge <i>Corinna Casi, Hanna Ellen Guttorm and Pirjo Kristiina Virtanen</i>	181
Chapter 14: Agroecological Symbiosis <i>Rachel Mazac, Sophia E. Hagolani-Albov and Hanna L. Tuomisto</i>	195
Chapter 15: Heritage Naturecultures <i>C. Parker Krieg, Suzie Thomas and Xenia Zeiler</i>	211
Chapter 16: Tourism Platforms <i>Salla Jokela and Paola Minoia</i>	223
Chapter 17: Extractivisms <i>Markus Kröger, Sophia E. Hagolani-Albov and Barry K. Gills</i>	239
Part III: Art as Research	253
Chapter 18: Aesthetic Sustainability <i>Sanna Lehtinen</i>	255
Chapter 19: Mapping Environmental Memory Through Literature: A Conversation with Emily Lethbridge and Steven Hartman <i>C. Parker Krieg, Emily Lethbridge and Steven Hartman</i>	269
Chapter 20: Imagining Godzilla: An Art Research Network Platform <i>Andy Best</i>	293
Index	331

List of Figures

1.1.	Screenshot of Google Ngram from English-language corpus 1900–2012	3
14.1.	The globalized food system is a complex system of connection and interconnections between the environment, economy, and society. This figure illustrates some of the many facets and connections present in the overarching global food system	199
14.2.	Major global food systems challenges, highlighting the impacts of agriculture and nutrition inequities. Planetary boundaries show the role of agriculture in all human activities as they impact or surpass safe and high-risk boundaries	200
14.3.	The idealized AES model for Palopuro village from the perspective of nutrient and energy flows	204
19.1.	Icelandic Saga Map, <i>Grettis Saga</i>	273
19.2.	William Morris' Map of Iceland	277
20.1.	Godzilla in Helsinki Harbour, 22 August 2019	294
20.2.	A ship cuts through algae blooms in the northern section of the Baltic Sea, 28 July 2019	295
20.3.	Tanker in the port of Klaipėda discharging water directly into the harbour, 27 July 2019	296
20.4.	Shipping Traffic Density in the Baltic Sea during 2019	297
20.5.	Large areas of algae are experienced when sailing in the Baltic Sea. This is between Gotland and mainland Sweden, 25 July 2018	298
20.6.	The algae particles seen underwater	300

20.7.	Eva Macali, Mohamed Sleiman Labat, and Andrew Paterson relaxing after a hard day. Andy Best and Merja Puustinen in background, 19 August 2019	302
20.8.	Gary Markle Imagining	305
20.9.	Andrew Gryf Paterson testing Gary Markle's Selkie Skin, Helsinki harbour	306
20.10.	Mohamed Sleiman Labat on Isosaari, Helsinki	307
20.11.	Selkie Skin against the Helsinki skyline	307
20.12.	Old rope found on Isosaari, Helsinki	308
20.13.	Gary Markle floating in the Selkie Skin	309
20.14.	Andrew Gryf Paterson wearing the Selkie Skin on the dock beside Godzilla, Helsinki harbour	309
20.15.	Submarine cables in the Baltic Sea	315
20.16.	Side-scan sonar image of a pipeline	317
20.17.	Godzilla's mast	321
20.18.	Images of islands created using photogrammetry	323
20.19.	Illustration of how a single 3D image of an island is created using photogrammetry technique	324

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CHAPTER I

Introduction

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Situated sustainabilities imply an awareness of the multiple ways in which sustainability is marshalled and deployed in social and political life.

Julie Sze, *Sustainability: Environmental Justice and Social Power*

Sustainability is not an object in itself but rather a quality that describes the durability of practices over time, and the mobilization and use of material beings *as resources* to support those practices. Sustainability enjoys a visibility that few other ideas today can claim. At times it serves as an implicit critique of society. At others it serves to greenwash actions that only displace the site of extraction, or that defer the inevitable transformation of useful objects into waste. For example, new consumption practices may

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serve as harm reduction. Yet unless attached to changes in the broader relationships of production, distribution, and exchange, and at scales that are appropriate to the reproduction of those relationships, new consumer trends may themselves wind up in the dustbin of discarded fashion. As a concept, sustainability has proven itself amid fluctuations in the market of ideas and has achieved a degree of durability as it bridges disciplines under the heading of a science. Part of the success of sustainability (as a concept, institutional discipline, NGO mission, or development goal) lies in the publication of books like this one, which seeks to trace and describe the uses of sustainability and its related concepts across the various contexts in which it hopes to intervene.

Situating Sustainability: A Handbook of Contexts and Concepts, introduces readers to contemporary problem-sites and conceptual approaches of sustainability studies. Often missing from scientific and policy discussions is a fundamental recognition of the deep and diverse cultural histories that shape contemporary environmental politics. The chapters in this collection assert the indispensability of humanities and social sciences for the transdisciplinary aspirations of this emerging field. The perspectives offered by these fields are needed not only for effective communication after the research is done, but they are also necessary for their ability to propose, shape, and guide research from the ground up. This includes the need to problematize and *critique* how societies understand themselves through this knowledge. As fields concerned with context, interpretation, and the historical space of meaningful action, these inquiries are uniquely attuned to the sites where concepts and practices converge (or diverge) around a transdisciplinary term with aspiring impact like sustainability.

We can begin by situating sustainability itself. As a starting point, take this Google Ngram search which tracks the prevalence of the words ‘conservation’, ‘sustainable’, ‘sustainability’, and ‘renewable’ in the English corpus since 1900. Google Ngram is notoriously messy. As a whole, it contains roughly eight million books, an estimated six percent of all books ever published, and does not

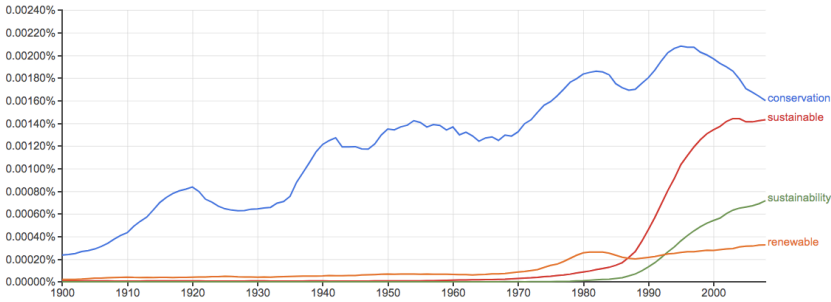


Figure 1.1: Screenshot of Google Ngram from English-language corpus 1900–2012. Source: books.google.com 2020.

distinguish between scientific publications, science fiction, environmental journalism, corporate manuals, history books, or romance novels. Moreover, this particular corpus excludes texts in languages other than English. Yet this messiness provides a snapshot of the rise in prevalence of certain words in general discourse and may thus serve as an analogue for how concepts circulate apart from contexts.

What story does it tell? We see the long rise of ‘conservation’, whose peaks correspond to major US periods of national legislation, and then it dips as ‘sustainability’ (accompanied by climate change) rises to reframe issues around anthropogenic activity. During this shift, environmental historians challenged metaphysical concepts of wilderness that provide legal protection for lands and species under threat of extractive development, even as these spaces (along with non-wilderness spaces) are made possible by the settler-colonial displacement of Indigenous societies. Often attributed to the first Earth Day and the Club of Rome’s *Limits to Growth* report in 1972, sustainability’s rising curve contains a critical imagination of future horizons. It marks the conceptual practice of projecting futures based on current material practices, namely the use of non-renewable resources. The boost we see in the following decade is often attributed to the World Commission on Environment and Development, which popularized the now contested notion of sustainable development with the 1987 Brundtland report, *Our Common Future*.

If sustainability implies a consciousness of differing historical scenarios and timescales, sustainable development opens a new front for postcolonial countries in the Global South to challenge the future of neoliberal globalization led by the North. Importantly, this highlights differences between the cultures of environmentalism in rich countries, and what Ramachandra Guha and Juan Martinez-Alier (1997) influentially describe as the ‘environmentalism of the poor’.

What story does this Ngram hide? To start with, it excludes concepts related to sustainability that are not in English; it excludes references in publications yet to be digitized; but fundamentally, it excludes traditional practices, idioms, and livelihoods that are not easily expressed in print form (or are easily translatable) and which may yet shape the future of ecological life. Here, environmental historians offer insight into potential past and future genealogies of sustainability. As Ulrich Grober argues, its diverse origins across the planet constitute a ‘world cultural heritage’, yet it was Hans Carl von Carlowitz who in 1713 employed the neologism *nachhaltigkeit* to propose a long-term strategy of forest management in Leipzig accompanied by new efficiencies across human habitation and home life (2017, 96). This recognizably modern usage highlights a moment we still inhabit, in which earthly habitation becomes a problem to be rationalized through the attendant discourses of economy, administration, and planning, all the way down to the personal economizing of lifestyle choices and ethical consumption. Despite the modernity of its construction, its specificity illustrates how embedded it is in a particular vision of development which is contested, often in the very name of sustainability.

To further appreciate the challenge of situating sustainability in its varied uses, we must consider the other meanings included in the Ngram. This not only includes opposition (from across the political spectrum), but also its growing metaphorical use. One can imagine a self-help book that uses ecological rhetoric to suggest how personal energies can be ‘sustainable’, and even promise to align one’s sense of meaning in life with a harmonious image of the cosmos which the non-human beings of nature are believed to

reflect or embody. That these harmonious images enable individuals to live with less friction in societies, while objectively participating in systems of exchange and accumulation that materially disrupt the biophysical cycles of the earth, further illustrates the need for cultural interpretation and context.

Methodological Approach

This book, *Situating Sustainability: A Handbook of Contexts and Concepts*, brings together scholars from cultural studies, anthropology, literature, law, behavioural science, postcolonial development, urban studies, design, and the arts, to reframe our understanding of sustainability through its related concepts and practices. Its scope is not limited to humanists and social scientists but also invites creative interventions that illustrate other kinds of pragmatic engagements between producers of knowledge and the world. Contributions from academic researchers are joined by artists whose public-facing work provides a mobile platform for still more artists to conduct research at the edges of performance, the production of knowledge, and commentary on the infrastructures of socio-ecological life. Taken together, they illustrate how cultural approaches to sustainability (applied and observed) provide indispensable knowledge needed at the heart of environmental policy and science.

The methodological approach to *Situating Sustainability* builds on the work of environmental justice scholar Julie Sze, whose edited collection *Sustainability: Approaches to Environmental Justice and Social Power* (2018) foregrounds the role that structural and political inequalities play in shaping environmental discourse. The book is informed by Donna Haraway's influential essay 'Situated Knowledges: The Science Question in Feminism and the Privilege of the Partial Perspective' (1988). Haraway argues that knowledge is always partial, and that to have a stronger kind of knowledge that aspires beyond its context toward universality, the perspectives that shape knowledge must also be studied. This means exploring how worlds are materially and discursively organized and produced—through political economy, gender,

racial and colonial relationships, and assemblages of non-human beings (technologies and animals, plants, fungi, etc.). Haraway's ongoing conversation with the history of science, anthropology, and materialist philosophies has had a significant impact on social sciences and humanities. It speaks to the continual need to be conscious of how environmental knowledge and sustainability are issues constituted by long-standing inequalities. This is also our point of departure.

The differing geographic scope of this volume is joined by the disciplinary diversity of the contributors and their wide-ranging areas of specialization. For us, situating sustainability cannot limit itself to the geographic borders of nations, epistemic standpoints, or to unmasking perspectives that falsely present themselves as objective or universal. We recognize that conflictual frameworks are themselves attached to particular contexts (e.g. how racial inequalities shape political meanings within US environmentalism; how the marginalization of Indigenous peoples in Northern Europe is made visible in the conservation of their homelands), and that this experience does not necessarily map onto different geo-cultural histories elsewhere. As editors, our 'situating' approach draws on the method of *articulation* developed in the field of cultural studies (Hall 1986; Slack 1996; see also Grossberg 2010). Here, situating refers to how perspectives are actively and passively shaped by practices. By this, we mean the practices through which relationships—cultural, ecological, and economic—are produced and reproduced, along with the subjects of those relationships. Our emphasis is instead on how discourses and descriptions *naturalize* certain arrangements or alternatively *denaturalize* these arrangements so as to transform the conditions that produced them in the first place. This not only includes material practices like extraction or disaster recovery, but extends into the domains of human rights, education, and academic interdisciplinarity. This will enable readers to better understand what sustainability means (or might yet mean) in their own locations, and how work in one place might support the efforts of others in other places.

One such model of this has been the emergence of the environmental humanities. Over the past decade, the field has asked

how the study of culture contributes to interdisciplinary projects of sustainability by including redescriptive, phenomenological, and affirmational, but no less committed forms of writing into their collaboration and critique (Alaimo 2012; LeMenager and Foote 2012; Johns-Putra, Parham and Squire 2017; Heise, Christensen and Niemann 2017). These modes of engagement reflect the diverse ways people experience and interact with the non-human beings, past and present. As Steven Hartman suggests, the humanities cannot simply be called upon to communicate the work of empirical scientists. ‘To turn to expert humanities researchers not for the depth of their knowledge concerning values and ethics, or historical trends in human thought and behaviour, but for their ability to translate a highly technical scientific message into the popular idiom’, he suggests, ‘is not unlike engaging an accomplished composer to tune your guitar’ (2015). For one thing, this assumes that the public and its problems merely wait to receive facts and that problems can be resolved with only the right information. Rather, the humanities and social sciences need to be included from the beginning in order to pose research problems, formulate proposals and partnerships, and offer deeper descriptions of the interpretive contexts in which the facts will be received. After all, information does not circulate in a vacuum; and ignorance, just like knowledge, is made.

The critic Raymond Williams (1958) famously declared that ‘culture is ordinary’. In other words, the ideals we have about the world or nature—the models or maps of it we carry around with us—ought to be understood in light of the way societies actually reproduce themselves. Only then can we understand *which* ideas serve to reinforce, challenge, or gesture beyond current social arrangements, along with *where* and *when*. This historical sense of ideas in contradiction with their time also has a spatial dimension. Edward Said, the Palestinian-American scholar of Orientalism, argued that ‘theory travels’ (Said 1982/2019). He describes how concepts that were initially developed to interpret events and processes in one particular setting are often carried to another location to describe or intervene in situations there. While Said

was writing about literature, one can make similar observations regarding concepts in sustainability science, where models and vocabularies from different fields are borrowed to become metaphors that illuminate phenomena and legitimate practices in others. As with any act of translation, there is a danger if this is done without care, but it is also fertile ground for the production of new knowledge and understanding.

This understanding joins a growing bulk of critical research on the United Nations' 2030 Agenda and Sustainable Development Goals (SDGs). Researchers have pointed out that the SDGs sideline culture as a dimension of development, suggesting that '[c]ulture is absent from the Sustainable Development Goals and mentioned only five times in the range of targets and indicators' (Li-Ming Yap and Watene 2019, 456). Others have criticized the 2030 Agenda for not challenging the positions of powerful actors such as big countries, international financial institutions, transnational corporations, and even international NGOs that have continued to produce and reproduce inequalities in income, wealth, and power at national and global levels, causing the very problems that the SDGs are trying to solve (Esquivel and Sweetman 2016). According to Christine Struckmann (2018), local peoples' agency does not receive enough recognition in current thinking about sustainability, particularly those in the Global South (19). In this spectrum, we can also locate the critique of sustainability policies by Indigenous peoples' movements, as they point out how little involvement there is of Indigenous peoples in matters that concern them, their lands, and their livelihoods (Cormak 2019; Dunlap 2018).

For example, the UN Permanent Forum on Indigenous Issues warns that '[t]he 2030 Agenda ... involves serious risks for Indigenous Peoples, such as clean energy projects that encroach on their lands and territories' (*Cultural Survival*). Clean energy development projects may lead to weakening of Indigenous livelihoods when windmills or dams are built on their lands, with development measured by standards that may be foreign to the local peoples. The strengthening of Indigenous rights, manifested in the United Nations Declaration on the Rights of Indigenous

Peoples (2007), has not yet been able to change unequal practices and standards of evaluation when measuring development (Li-Ming Yap and Watene 453). There is thus a real danger that if used in a framework of ‘doing good things’, sustainability may mask the power relationships at work in any given context. The traditional knowledge of Indigenous and local peoples needs to be seen together with ‘Western’ scientific understandings of sustainable and fair global solutions. Against this background, it is important that we embrace a holistic approach to the topic of sustainability and investigate key concepts in various contexts in order to understand their meanings.

This is a handbook to challenge how we think about sustainability. The project itself comes out of a series of workshops held at the Helsinki Institute for Sustainability Science (HELSUS) at the University of Helsinki in 2018. The Institute was launched in 2017 with over two-hundred affiliated researchers and faculty. Research clusters were organized around themes covering production and consumption, the Arctic, the Global South, urban studies, and theory and methodology. This final theme remained open, without a group to claim its mantle. So, we did. Sponsored by the Humanities Programme and the Environmental Humanities Forum, our roundtables invited researchers from social sciences and the humanities to discuss shared challenges and approaches as an entry-point for greater collaboration. The editors organized these conversations to develop research networks, and so that the Institute’s activities would continue to be clarified and informed by the diversity of its affiliates. One of our central interests is the training of new scholars, and this handbook was designed in part to serve as a curriculum in the MA programme in Environmental Change and Global Sustainability, and PhD programme in Interdisciplinary Environmental Science at the University of Helsinki. We hope it will travel beyond these contexts.

Outline

The book’s 19 chapters are organized into three sections: *Conceptual Practices*, *Locating Sustainability*, and *Art as Research*. Part I:

Conceptual Practices, features chapters on conceptual topics that organize practices within sustainability studies. Part II: Locating Sustainability, features chapters on contexts that inform emerging objects of study. Finally, Part III: Art as Research, contains chapters that propose artistic intervention, public, and participatory, as a key dimension of emerging transdisciplinary practice in sustainability studies.

In Chapter 2, Henrik Thorén, Michiru Nagatsu, and Paula Schönach discuss the *Interdisciplinarity* at the heart of Sustainability Science. Central to the project of this still emerging field is the ability not merely to add, but to *integrate* 'knowledge, concepts, and methods from a wide array of disciplines from the natural as well as the social sciences' (p. 21). Just how this is done depends on the context of enquiry. Drawing on the historical development of the field, this chapter offers examples of enquiry from multiple research centres. Following this discussion of interdisciplinary contexts, Parker Krieg and Paola Minoia's *Anthropocene Conjectures* (Chapter 3) contextualizes the rise of Anthropocene discourse across academic disciplines. Building on the implications of the proposed geologic era as a transdisciplinary object, this chapter provides critical examples from think tanks and Indigenous strategies of political ecology. It illustrates the pitfalls and potential offered by this new periodization of anthropogenic change, and the definition of the *anthropos* that the term calls into question. This status of the human in terms of rights and law is taken up by Reetta Toivanen and Dorotheé Cambou in Chapter 4 on *Human Rights*. Surveying the status of human rights law within the framework of the UN Sustainable Development Goals (SDGs), Toivanen and Cambou highlight the cultural context of Arctic Indigenous peoples, namely the Sámi people in Finland. The lack of legal and political agency is a barrier not only to sustainable and culturally desirable livelihoods, as the authors detail: this legal situation enables ongoing extractivist projects in the form of mining and forestry.

Remaining within the terrain of discourses and institutions, Tuija Veintie and Johanna Hohenthal's Chapter 5 on *Education*

illustrates the transformative role that national education policies can play in working toward SDGs. Offering comparative examples from the ‘pluri-national state’ of Ecuador and the ‘Northern European welfare state’ of Finland, this chapter highlights the potential of teaching languages, integrative thinking practices, and cultural alternatives to high-consumption lifestyles. In Chapter 6 on *Resilience*, Henrik Thorén pushes the concept past its popular use and abuse to consider the deeper set of concepts that shape understandings of stability and instability in ecological relationships. Here, bundles of supporting concepts, each carrying implicit values, threaten to turn a multitude of useful ideas into a mess of conflicting frameworks. Thorén argues that while resilience is a concept that developed out of the empirical grounds of ecology, it becomes, for sustainability science, a ‘term of art’ that expands to encompass the qualitative discourses of the humanistic sciences.

The final three chapters of this section address the political and even existential stakes of the conceptual and imaginative dimensions of sustainability. In Chapter 7, Paola Minoia and Jenni Mölkänen rethink *Scales* as an opportunity for sustainability studies to engage with decolonial strategies that stand ‘against the confinement of Southern studies as *local knowledge*, compared to the Western knowledge that is seen as *universal*’ (p. 91). Their examples of plurinational ‘scale-jumping’ in Ecuador and kinship networks in Northeast Madagascar redefine the ordering of scales to redress complicated histories of ecological and social colonization. Moving from political ecology to the politics of energy, Inna Sukhenko and Viktor Pál’s Chapter 8 on *Nuclear Awareness* draws our attention to a concept that arose in the wake of the Chernobyl catastrophe. Detailing the rise of post-Cold War narratives and cultural politics regarding nuclear technology, this chapter highlights the epistemic and political stakes: the almost unimaginable timetables of nuclear energy (extraction and waste) on the one hand, and the ever-present threat of instantaneous destruction on the other. The simultaneously urgent and abstract threat of nuclear catastrophe has been joined, and some have argued eclipsed, by the crises of climate change and mass extinction. In this context,

Panu Pihkala addresses the rise of *Eco-Anxiety* (Chapter 9), which manifests not only in popular individual and group psychologies, but also impacts the work of professional researchers who live on a daily basis with a knowledge of the unsustainable present. While this creates guilt, worry, and anger, Pihkala counterposes a hope for a ‘practical anxiety’, which might create a bridge between professionals and the public.

In Part II: Locating Sustainability, the topics shift their focus to the material contexts and practices that condition any discussion of sustainability. In *Exclusion and Inequality* (Chapter 10), Reetta Toivanen and Magdalena Kmak illustrate ‘how certain actions for guaranteeing a good life for one part of the population can even result in catastrophic consequences for another part of the population’ (p. 137). In the context of neoliberalism, the rhetoric of resilience is often deployed against individuals and groups who are rendered vulnerable by the same actions that produce wealth for others. Political and cultural exclusion only exacerbate inequalities that undermine efforts to achieve international goals for sustainable development. Toivanen and Kmak provide examples of migrants within the European Union and Roma peoples in Finland to illustrate this context. Following this, Elisa Pascucci and Niko Soininen’s Chapter 11 on *Governmentality* focuses on manifestations of emerging ‘polycentric and plural governance’. They draw on examples from international forced migration and city-scale climate mitigation to illustrate developments in governance structures that operate beyond the traditional nation-state. The following Chapter 12 on *Disaster Recovery (After Catastrophes)*, follows the preceding discussions on exclusion and inequality, as well as emerging forms of governance, to critically examine approaches to disaster response. Marjaana Jauhola, Niti Mishra, Jacquleen Joseph, and Shyam Gadhavi compare ‘owner-driven’ and ‘community-ownership’ approaches to recovery policy taken by two different cities in the Indian state of Gujarat following the devastating 2001 Gujarat earthquake. Each model recognizes a different compositional context of agents, temporalities, and effects, thus producing different outcomes in the lives of individuals and communities.

The next three chapters bring the material contexts into the production of knowledge and the creation of sustainable alternatives. Corinna Casi, Hanna Ellen Guttorm, and Pirjo Kristiina Virtanen's Chapter 13 on *Traditional Ecological Knowledge* argues that the concept means much more than the 'accumulated environmental knowledge and comprehension of natural phenomena' (p. 181). Rather, it is constituted by a set of evolving beliefs and practices that understands its own dynamic relationship with other beings in the environment. While not limited to Indigenous societies, the examples of Traditional Ecological Knowledge (TEK) illustrated in this chapter include Apurinã and Manchineri communities in Brazilian Amazonia, and Sámi communities in the Arctic. The following Chapter 14 on *Agroecology* explores how communities at this scale can redesign food systems so as to integrate them into the surrounding ecologies. Rachel Mazac, Sophia E. Hagolani-Albov, and Hanna L. Tuomisto offer an illustrative example of one such model in Knehtilä Farm in Palopuro Village, Finland. After providing important global context for industrial food systems and their challenge to sustainability, the authors turn to Palopuro's model of Agroecological Symbiosis (AES) as an alternative that embeds food and energy within the social fabric. This revisioning of production and consumption draws on both past practices and future imaginaries. Along this trajectory, C. Parker Krieg, Suzie Thomas, and Xenia Zeiler discuss *Heritage Naturecultures* in Chapter 15 that considers the threats posed to heritage sites by anthropogenic change. Anthropocene changes confront researchers and communities alike with a collapse in distinctions between cultural and natural heritage. This collapse carries with it the opportunity to produce new forms of material and conceptual archives, especially as heritage practices expand to include community and other 'non-specialist' participation. Examples include a recent novel, the climate strategy of the US National Parks, the material memory of the Lapland War in northern Finland, and intangible landscapes in South Asian video games that offer players an immersive encounter with aerial species (e.g. birds, insects) and mythological beings.

The final two chapters of this section address forms of development that are driven by practices that 'reterritorialize' urban

and ecological spaces for the purposes of financial accumulation. First, Salla Jokela and Paola Minoia discuss a form of *Platform Urbanism* (Chapter 16) that has emerged with peer-to-peer digital tourist platforms like Airbnb and resulted in the touristification of regions. Even though sustainable development promotes ecotourism as a way of integrating local livelihoods into transnational commerce and cultural exchange, this chapter illustrates how the movement of ‘external flows of people, capital, consumption—and narrations—into local areas’ rapidly transforms urban space and culture (p. 223). The authors draw on case studies from Venice, Italy, and Helsinki, Finland, to illustrate these dynamics. As so-called sustainable ecotourism constructs itself using the same platforms and digital technologies, the destinations in question will face similar risks. Lastly, Markus Kröger, Sophia E. Hagolani-Albov, and Barry K. Gills discuss the rise of *Extractivisms* (Chapter 17) in the material resource economy, and as a critical discourse in both activism and academe. Drawing on Kröger’s vivid fieldwork in the Brazilian Amazon, this chapter situates the extractivist turn of the global economy within national and local contexts. Likewise, by analyzing developments in these settings, this chapter offers lessons for transitioning away from economic practices that take more from these ecosystems than they could ever possibly return.

Part III: Art as Research, presents a special focus on interventionary forms of public art, design, and literary research, through illustrative examples of the uses of culture in the production and circulation of environmental knowledge. Sanna Lehtinen’s Chapter 18 on *Aesthetic Sustainability* provides a philosophical history of the categories through which people experience places and describe encounters. She asks us to consider whether what is considered attractive actually translates into the durable objects and practices needed for sustainability. Engaging the developing psychological science of ‘nudging’, Lehtinen finds a new use for design aesthetics to influence human behaviours and tastes so that decisions align with sustainability goals. Following this is an interview with two literary scholars (Chapter 19), Emily Lethbridge and Steven Hartman, whose research in Icelandic and North Atlantic

environmental history has led to the creation of new digital tools and interdisciplinary research networks. From the Icelandic sagas and place names, to new discoveries of medieval and early modern life writing, their distinct paths converge on the study of culture as both a repository and medium of environmental knowledge, communication, and cultural memory.

The final Chapter 20, *Imagining Godzilla: An Arts-Research Platform*, is an extended contribution from a collection of artists headed by Andy Best and Merja Puustinen. Best and Puustinen's project, 'Imagining Godzilla', turned their Polynesian-style sailing catamaran into a research vessel on the Baltic Sea. With other artists on board, the catamaran became a mobile platform for creative-research projects on topics ranging from undersea Internet cables, new materialist explorations of phosphate circulation, audio-visual technologies and knowledge, and performative/auto-ethnographic accounts that probe the boundaries of life on land and sea. The overview of the project is followed by short contributions from the participating artists: Gary Markle, Pekka Niskanen and Mohamed Sleiman Labat, Samir Bhowmik, Eva Macali, Till Bovermann, Tivon Rice, and Andrew Gryf Paterson. Accompanied by photographs, maps, poetry, and even audio links, this chapter offers a vivid account of how culture intervenes in the natural world, how meaning is composed of material processes, and how imaginative engagements situated in the world might generate the creativity needed for transformation.

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PART I

Conceptual Practices

CHAPTER 2

Interdisciplinarity

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Abstract

Sustainability science is fundamentally an interdisciplinary venture, but what does this interdisciplinarity imply in practice? And how can, and should, we think about interdisciplinarity more generally? These are important philosophical and methodological questions for sustainability science, the answers to which remain at least partially out of sight for a variety of reasons. This chapter has three main aims. First, it provides a discussion of various dimensions of interdisciplinarity and how it can be understood from a philosophical perspective. Second, a historical perspective

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is assumed as well, as it introduces the history of interdisciplinarity and problem-driven science governance and some previous attempts at establishing interdisciplinary fields (ecological economics and cognitive science). And third, it provides an outline of an important strategy within sustainability science, suggesting that the focus has been on institutional reform.

Interdisciplinarity

What kind of science is sustainability science? One aspect of this field that stands out is its *interdisciplinary* nature. Sustainability science has been understood from its inception as an intellectual and practical venture, the success of which is conditional on integrating knowledge, concepts, and methods from a wide array of disciplines from the natural as well as the social sciences (Jerneck et al. 2011; Kates et al. 2001; Komiyama and Takeuchi 2007; Martens 2006).

But how should this feature of sustainability science be understood, and what kind of interdisciplinarity best serves the overarching aims of the field—promoting and advancing a societal transition toward sustainability? It depends on what we mean by interdisciplinarity to begin with.

Dimensions of Interdisciplinarity

One initial issue to consider when discussing interdisciplinarity is what it is to be contrasted against. What is interdisciplinarity an alternative to? According to the most common, and simplest, taxonomy of ways in which academic disciplines interact, interdisciplinarity is placed between *multidisciplinarity* on the one hand and *transdisciplinarity* on the other (Klein 1990). Multidisciplinarity is, on this schema, the simplest and least substantive form of cross-disciplinary interaction in that it is merely an *additive* affair: the juxtaposition of knowledge claims from different disciplines. Interdisciplinarity, on the other hand, is *integrative*. Transdisciplinarity, which is comparatively more demanding, is distinguished from interdisciplinarity either by being participatory

(Lang et al. 2012; Wiek et al. 2012) or by being more global in character (OECD 1972; Bernstein 2015). However, the boundaries between these categories are less than sharp (see Klein 2010).

Another way of getting at the meaning of interdisciplinarity is to contrast it with *disciplinarity*. Following Karl Popper (1963: 88), we might think of disciplines as epistemically inert—the products of historical accident and administrative convenience.¹ In this view, dogmatism ensues when disciplines constrain science. The pivotal distinction, for those following Popper's line of thinking, is not between disciplinary and interdisciplinary science but between what is good science and what is not. All science *proper*, as it were, needs to be interdisciplinary, at least in the sense that it should remain open to the fact that most of our problems cut right across disciplinary boundaries (Persson et al. 2018; see also Jacobs 2012).

Following this argument through interdisciplinarity is not an alternative way of conducting science—again, all science proper is interdisciplinary—but an alternative way of organizing academia that is more conducive to exposing and challenging entrenched priorities and values in the disciplinary system and bringing them in line with society at large. Such reasoning informed early thinking on inter- and transdisciplinarity in general (Jantsch 1972; OECD 1972), as well as specific discussions of, for example, the environmental sciences (Brewer 1999) and sustainability science (Jerneck et al. 2011).

Another way through the thicket is to think of disciplines as actually important in structuring scientific enquiry *qua* scientific enquiry. Thomas Kuhn ([1962] 1996) famously thought of disciplines as fundamental to normal science. From a strictly Kuhnian perspective, it is intuitive to think of interdisciplinary science as extraordinary science; innovative, to be sure, but intermittent, unstable, and (crucially) non-cumulative. It is a natural part of the development of science, but only as a transient phase: today's interdisciplines are tomorrow's disciplines. The continual formation of various so-called hybrid

¹ The diagnosis of academia that approximates this position is well-represented in the literature; see, for example, Bursztyn and Drummond (2014) and Clarke and Wallace (2015).

disciplines—such as econophysics or neuroeconomics—appear to testify to this idea. Indeed, Silvio Funtowicz and Jerome Ravetz (1993) departed from what they perceived to be the limitations of Kuhnian normal science in their influential paper on post-normal science. The challenge is to retain innovation and an appropriate orientation toward societally relevant issues, but without the Kuhnian downsides.

But when focusing on interdisciplinarity in the narrower sense, further questions arise. Disciplines are complex entities with many component parts. What is to be integrated? How is integration best achieved? And what conditions are most conducive to integration? Disciplines are typically associated with certain sets of cognitive tools (Bechtel 1986)—theories, methods, models, and modelling preferences, and so on—as well as certain (epistemic) values (Kuhn 1977). What interdisciplinarity amounts to depends on what one focuses on: blending different methods, developing new integrated theories, or constructing coupled models, for example. Interdisciplinarity, furthermore, exhibits a distinct social or collaborative aspect. In practice, it is not something that happens only ‘in the head’ of individual scientists, but rather within groups of scientists with differing disciplinary backgrounds and expertise. Given that disciplines are important units of organization in scientific enquiry, another problem is to develop models and methods that structure interdisciplinary interactions in fruitful and productive ways (MacLeod and Nagatsu 2016; 2018; Thorén and Persson 2013). This, too, is somewhat contentious, as some argue that the distinguishing feature of interdisciplinarity is precisely that it represents a break with such a structure (Frodeman 2013). A third set of issues revolves around institutional arrangements.

Here there is room for thinking about interdisciplinarity, and especially interdisciplinarians, as possessing specific abilities. If the archetypical disciplinarian is a researcher with highly specific and deep knowledge, the interdisciplinarian possesses broad—but perhaps shallower—knowledge, as well as skills specifically honed on interdisciplinary contexts: what Harry Collins calls

interactional expertise (Collins 2004). Within this perspective, interdisciplinarity is not an alternative to disciplinarity, but rather strongly dependent on it, as, for example, Bengt Hansson (1999) has noted.

To conclude this section, we wish to underline two points. First, actually engaging in interdisciplinarity successfully has proved to be difficult (Brewer 1999; MacLeod 2018), and there is no shortage of barriers. Beyond the various difficulties associated with integration in practice—developing new theories, methods, and models is hard and time-consuming work, especially among researchers with relatively little in common—how academia and academic merit allocation is structured often impedes or disincentivizes interdisciplinarity. Interdisciplinary research is often risky and less prestigious than its disciplinary counterpart. For students who seek to acquire interdisciplinary competencies, how courses are typically structured around specific disciplines can be a major obstacle.

And second, there are few things that can be said about interdisciplinarity that are both generally true of the phenomenon and informative from a practical perspective. That is to say, what the specific conditions demand, the affordances they provide, and the constraints they impose are crucial in thinking about the ends and means of interdisciplinarity.

Historical and Comparative Perspectives

Scientific disciplines develop over time, and thus interdisciplinarity is also a historically conditioned phenomenon. This makes interdisciplinarity a ‘moving target’, with varying, context-dependent practices and motivations underlying it (Ash 2019). Understanding the historicity of interdisciplinarity is helpful in increasing our understanding of the current questions of interdisciplinarity, especially in the context of sustainability science. The recent history of science informs us about other fields of research with more fully developed interdisciplinarity, and a comparative perspective can enlighten us about the interdisciplinarity of

sustainability science. As two such examples, we consider ecological economics and cognitive science.

Ecological economics originated in the mid- to late-1980s and was originally defined as ‘the science and management of sustainability’ (Costanza 1991). Thus defined, ecological economics is a precursor or prototype of sustainability science. Ecological economics emphasizes that economies are a subsystem of the larger earth ecosystem, and from this perspective, derives theoretical commitments such as the non-substitutability of natural capital as well as particular valuation approaches to ecosystem services (Costanza et al. 2014). Although the focus of ecological economics on the interconnectedness between the natural and social systems has been inherited by sustainability science as its core intellectual interest, the former is distinct in its explicit theoretical confrontation with economics. In particular, it is contrasted to environmental economics, a subfield of economics that applies standard economic analytical tools to the issues of environmental protection and conservation and the management of natural resources. To use the jargon of the history of economics, ecological economics is a *heterodox economics*, or a different school of economic thought from mainstream economics (Douai, Mearman and Negru 2012). In contrast, sustainability science seems to be construed more ecumenically, including business and economics (e.g. Bettencourt and Kaur 2011). This ecumenicalism, however, implies the lack of a theoretical core, making sustainability science more like an alliance of the sciences that concern sustainability than *the* science of sustainability, as ecological economics aspired to become.

Note, however, that having a strong core theoretical idea does not necessarily end with interdisciplinary confrontation. Cognitive science, for example, emerged in the mid-1950s with a model of human mental processes analogous to computational or algorithmic models (Thagard 2017). The development of artificial intelligence (AI) was one of its main drivers, but cognitive science has also attracted researchers from fields such as psychology, philosophy, neuroscience, linguistics, and anthropology (Thagard 2005). Eventually, the computational view of the mind was widely

accepted as a fruitful way to understand the nature of mind and its relation to behaviour. As a result, it replaced behaviourism, the then-dominant position that attempted to model behaviour as direct responses to external stimuli while refraining from theorizing about inner mental processes. This change, often called the cognitive revolution, was a paradigm shift in psychology (see Gardner 1987). The sustainability scientists' idea that natural and social systems—sometimes called coupled human-nature systems or coupled social-ecological systems—are deeply interlinked is a powerful framework that could potentially reconfigure the relations between natural and social sciences, but this has not happened yet. In particular, while economists have been eager to adopt new methods—such as experimental and statistical methods, and more intensive use of data and computational power—they have been reluctant to change their core theoretical frameworks—such as anthropocentric welfare economics—in response to the criticisms of ecological economists.

Given such strong theoretical constraints on interdisciplinary theoretical integration, perhaps we should look into a different mode of interdisciplinarity that does not revolve around revolutionary theoretical ideas, but policy goals and the governance of science. In this respect, the impact of the two World Wars (plus the ensuing Cold War) on interdisciplinary practices is suggestive. First, it gave rise to the practice of teamwork science 'involving a pragmatic, sometimes rather rough and ready, blending of theories, models, and research practices with a common practical goal' (Ash 2019: 630). The project topics ranged from weapons development, troop morale, the nutritional impact of rationing, economic planning, and forced migration to the beginnings of climate science. Ash (2019) further notes that experience with these wartime collaborative projects laid the groundwork for the establishment of the interdisciplinary funding schemes and peer review systems of the post-war period in the West. The next development in science policy at the turn of the century, which is still ongoing, tried to stimulate goal-oriented interdisciplinary research through top-down programme funding (e.g. Horizon 2020 of European

Research Council) and organizational reforms. However, Ash (2019) wonders how the view ‘that more and better networked science and scholarship necessarily yields epistemically ‘better’, economically more profitable, and socially more sustainable and ‘robust’ science’ than disciplinary sciences do, has managed to become an established orthodoxy despite the lack of evidence. We suspect that the institutional memories of the ‘successful’ wartime mobilization of science are playing a role here. If we could fight (and eventually win) wars by mobilizing science, why can’t we fight climate change and other ‘grand challenges’ in a similar, but less *ad hoc* and more conscious arrangement of disciplines? This hopeful thinking seems to drive the interdisciplinarity of sustainability science, as we will see in the next section.

Interdisciplinarity and Sustainability Science

Although the history of engaging intellectually and scientifically with issues pertaining to sustainability is both long and venerable (Caradonna 2014; Kates 2012; see also Grober 2012), sustainability science as a distinct field of enquiry is relatively young. In 2001, Robert Kates, together with a set of distinguished colleagues, published a paper titled *Sustainability Science* (Kates et al. 2001) that did much to name the field and provide a first attempt at giving it an intellectual centre of gravity. It was also around this time that co-authorship clusters formed around sustainability that warranted the epithet ‘field’ (Bettencourt and Kaur 2011). Looking to the establishment of research centres devoted to sustainability, this primarily takes place—with increasing intensity—after 2000 (Soini et al. 2018).

That sustainability science needs to be interdisciplinary has been widely appreciated from its very inception (Kates et al. 2001; Jerneck et al. 2011; Komiyama and Takeuchi 2006; Martens 2006). *What* precisely this interdisciplinarity amounts to, and *how* it is best achieved, is a different matter. Is sustainability science to become a discipline? And if so, in what sense? Is sustainability science in want of a philosophy? Some seem to think so. Some have

suggested that sustainability science should be based in methodological and theoretical pluralism (Isgren, Jerneck and O’Byrne 2017; Jerneck and Olsson 2020; Persson et al. 2018); others lean toward arguably more specific philosophical frameworks such as critical realism (Nastar, Boda and Olsson 2018). Or should a common and substantive theoretical framework serve to organize the field and bridge its component disciplines? Resilience theory (see e.g. Gunderson and Holling 2001) is perhaps the most well-known such candidate. A third option, alluded to in the previous section, is that it is more a matter of practice than theory (of either kind). The considerable and growing literature on transdisciplinarity in sustainability science is at least partially committed to this idea (see e.g. Lang et al. 2012; Wiek et al. 2012).

A different approach brackets such questions in favour of institutional reform, which we might call an ‘institutions first, interdisciplinarity later’ strategy. It is an approach more Popperian in flavour in its emphasis. The central obstacle to interdisciplinary progress is the way academic institutions are structured. In short, the conventional way of organizing intellectual activities around departments and faculties disincentivizes engagement across disciplinary boundaries, regardless of what it looks like. Thus, instead of solving philosophical, theoretical, and methodological problems, the focus can be on disrupting and replacing institutional structures.

In the institutional setting of higher education, the establishment of departments, centres, and institutes has been a key activity of universities globally in response to the prevalent sustainability challenges. Through these centres, institutions direct their activities in research, education, and campus operations toward sustainability (Soini et al. 2018). Internationally, there are examples of large-scale efforts to revise incentive structures and promote interdisciplinary interactions. One frequently mentioned example is Arizona State University (see McGregor and Volckman 2011). Improving societal relevance is often an important driver of such efforts, in line with the underpinning transdisciplinary ideals, and sustainability is usually a prioritized domain.

Before we move to our main case, the Helsinki Institute of Sustainability Science (HELSUS), there are several research centres with both a pronounced interdisciplinary profile and a devotion to sustainability, even if we constrain our perspective to the Nordic countries.

One is the Stockholm Resilience Centre (SRC), which was founded in 2007 with a grant from the Swedish research agency Mistra and remains its largest commitment to date. The SRC stands out with its comparatively narrow theoretical focus—grounding governance and sustainability issues in a ‘social-ecological approach and resilience thinking’ (SRC 2012: 3). The centre comes under the science faculty at Stockholm University, but interdisciplinary integration between natural and social sciences as well as the humanities is central to its mission (see e.g. SRC 2014). The SRC has been very influential on sustainability research internationally.

Another example is the centre of excellence LUCID (Lund University Center of Excellence for Integration of Social and Natural Dimensions of Sustainability) at Lund University. This centre was established in 2008 on a long-term (10-year) Linnaeus grant from the Swedish Research Council. The centre was closed in 2018 as its support from the Swedish Research Council ended. LUCID was a faculty-independent centre that was organized around the sustainability studies department (LUCSUS) at Lund University but included a wide range of departments and divisions such as political science, philosophy, human ecology, and physical geography. Unlike the SRC, there were no particular theoretical commitments around which the centre was organized. The idea was instead to involve already-existing departments to contribute and partake in the activities of the centre. A crucial component was the recruitment of a large number of doctoral students with dual affiliations that would retain their doctoral title from their ‘home disciplines’ but maintain a strong and continual bond with the centre.

Shifting to our main case, the Helsinki Institute of Sustainability Science (HELSUS) was established at the beginning of 2018 as part

of the profiling of the University of Helsinki of its research in sustainability science. In Finland, profiling actions of universities are based on a national research funding scheme, introduced in 2015, in which governmental funding is directed competitively toward specific profiling areas of proven excellence or toward emerging scholarly fields with significance and potential for excellence. During the foundation phase of HELSUS, personal contacts—especially to the SRC—were utilized to refine the ideation for a sustainability centre at the University of Helsinki. Although some ways of working—for example, the creation of a Brown Bag lunch-format as a venue for debate and dissemination—were informed by the model of the SRC, the two centres differ in a profound way. While the SRC has been established around an interdisciplinary but theoretically focused research group, HELSUS was created as a university-wide platform, thus combining much more heterogeneous approaches to sustainability research. In this sense, HELSUS is more similar to LUCID as it lacks a theoretical core, but the former is even more decentralized as it lacks an organizational core (LUCSUS for LUCID) and instead institutionalized entirely as an inter-faculty platform.

In the case of HELSUS, a track record of interdisciplinary research played an important role in the profiling of the University of Helsinki into sustainability science, which eventually materialized in the foundation of HELSUS. Past interdisciplinary endeavours—including interdisciplinary networks around thematic entities, such as the Helsinki University Center for Environment (HENVI), Helsinki Metropolitan Region Urban Research Program (KATUMETRO), and Helsinki University Global South (HUGS) network—laid the groundwork. Also, an interdisciplinary doctoral programme, DENVI, was established at the University of Helsinki in 2014 (Prof3, 2016). The tasks of HELSUS were defined as conducting high-quality research in sustainability science and ‘build[ing] interdisciplinary research programmes’ (Rector’s Decision, 2017), among other goals. This was to be realized in part through ‘joint research facilities to foster interdisciplinary interaction ... and interdisciplinary training in methods’

and the creation of an ‘inspiring interdisciplinary research environment’, including interdisciplinary seminars and proposal-writing workshops (Profi3 2016: 23). At the core of building up interdisciplinary research, a total of 11 new tenure-track positions with an interdisciplinary approach were made available. Apart from the thematic foci of these positions, one of them was targeted explicitly toward interdisciplinary methodologies in sustainability science.

In HELSUS, physical proximity of researchers from different disciplinary backgrounds is seen as a key to allow ‘spontaneous movements between disciplines’ (Profi3 2016: 24) and thus foster opportunities for interdisciplinarity. Apart from its reliance on such serendipitous attempts to build interdisciplinarity, the Institute incentivizes researchers to strive toward interdisciplinarity through funding schemes. In granting research funding, HELSUS explicitly states ‘interdisciplinary quality’ as one evaluation criterion for competitive funding. However, it is currently not very clearly stated what kind of interdisciplinarity is anticipated in the sustainability science research conducted within HELSUS, and what understanding of interdisciplinarity it should be based on.

Concluding Remarks

Ultimately the most important question for sustainability science has to do with making progress on the goals of the field itself: namely, promoting transitions toward sustainability. Structuring the field of sustainability science to make use of existing knowledge in different disciplines, promote innovation, synthesis and intellectual progress, and support the field itself (i.e. the ‘sustainability’ of sustainability science) is a crucial step toward that substantive aim.

We wish to conclude this chapter by making a few interrelated points. First, there are interesting differences between different centres regarding how institutional reform is coupled with theoretical underpinnings. The SRC is comparatively more theoretically homogeneous than either LUCID or HELSUS, although that homogeneity should not be overemphasized. To what extent this

has contributed to the success of the centre is difficult to evaluate, as many other factors play a role, not least long-term funding.

Second, as comparisons between sustainability science and other fields show, it is important to examine not only how various disciplines impinge on sustainability science but also how developments in sustainability science have repercussions on its constituent disciplines. There are real insights to be gleaned from sustainability science. It is arguably precisely this ‘feeding back’—and thus coupling—of knowledge, questions, and answers that is the hallmark of productive interdisciplinarity (c.f. Thorén and Persson 2013).

Finally, we still lack a clear understanding of *how* exactly interdisciplinarity is carried out in practice within the field, and if templates for fruitful collaboration can be developed that may guide the field in the future. Several quantitative and bibliometric studies to assess the interdisciplinarity and general characteristics of sustainability science as a field (Bettencourt and Kaur 2011; Kajikawa 2008; Schoolman et al. 2012) have been conducted. However, we need a more practice-grounded approach to study the processes through which interdisciplinarity generates better outcomes in sustainability science. Now that several sustainability-focused centres are operating, systematic qualitative and comparative studies of these organizations and their operations should complement the ‘big picture’ studies of sustainability science.

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CHAPTER 3

Anthropocene Conjunctures

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Abstract

The Anthropocene is the proposed name for a new geologic era in which humans are held to be a defining agent of planetary history, a history that is largely the effect of fossil-fuel use in industrial societies. This periodization has itself generated a minor academic industry of publications and theoretical formulations that have alternately challenged and reinforced disciplinary perspectives. This chapter argues for a conjunctural approach to the Anthropocene concept, one that focuses on understanding its implications for discourses of sustainability in relation to the political, cultural, geographical, ecological, economic, and institutional contexts in which it is deployed. It draws on two examples—one from an

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‘ecomodernist’ institute located in California, another from the Indigenous Kichwa people of Ecuador—to illustrate how narratives of anthropogenic change are unevenly incorporated into discourses of sustainability.

A New Era?

The Anthropocene is the proposed name of a new geologic era in which measured changes in the Earth system have been caused by human intervention. While the Soviet geochemist Vladimir Vernadsky proposed a similar concept in the 1920s, the atmospheric chemist Paul Crutzen (2002) and ecologist Eugene F. Stoermer jointly proposed the term ‘Anthropocene’ for the era in which climate change is the dominant image of human planetary impact. The term has entered popular discourse, as our collective, yet unequally distributed, power to transform environments is accompanied by a growing recognition of ecological and social vulnerability. Transdisciplinary questions have arisen about the era’s start date, its causal origins, and the identity of the *anthropos* at its heart (Toivanen et al. 2017). Each field has its own set of empirical narratives for marking breaks, transitions, and continuities that shape it. This chapter draws on a cultural studies methodology to situate developments in Anthropocene discourse across disciplines, and considers how these approaches are articulated to specific political and ecological contexts within the historical conjunctures of the global economy.

As it spreads rapidly from geology into the broader cultural discourse, the Anthropocene speaks to a desire to identify a moment at which the human impact on the earth requires a redefinition of the human, nature, and culture. As the photographer Edward Burtynsky (2020) puts it, this relationship is one of ‘attraction and repulsion, seduction and fear’. The recognition of this impact produces a sublime derangement, as the effect of a few generations bear tremendously on distant human and non-human futures, while both the scale and intensity of unsustainable extraction accelerates beyond previous eras. An Anthropocene photographer

like Burtynsky, whose work is known for documenting industrial activity that deranges the viewer's sense of scale, risks aestheticizing this condition—that is, questioning art as a symptom of the very crisis it attempts to frame. According to ecocritic Timothy Clark (2012), the Anthropocene produces 'derangements of scale' at the level of reading, which means that readers must struggle to reconcile human and geological frames of meaning. Likewise, the author Amitav Ghosh (2016) refers to a 'great derangement' in contemporary literature's inability (or unwillingness) to address the global epic of fossil-fuel (and mineral, forest) extraction that produces climate change. In their own way, each testifies to the embeddedness of culture within the techno-economic processes that transform human–environment relationships. The task is to remap the relationships between knowledge, culture, and nature within the global present so as to identify sites where sustainable relationships might be made otherwise.

Researchers at the University of Helsinki, led by political scientist Tero Toivanen (Toivanen et al. 2017), refer to 'the many Anthropocenes' as a transdisciplinary challenge, each with differing implications for sustainability. These overlapping narratives of the period are each defined by their unique disciplinary concerns, yet follow four broad types: *geological*, *biological*, *social*, and *cultural*. The *geological* Anthropocene is concerned with the stratigraphic record as a register of a new period. Its 'synchronic' interest flattens human difference to its bare trace across the mineral and chemical record. Considered dates range from the industrial revolution to the atomic bomb, which has coated the earth in a thin radioactive layer. Earth System Science is central to these accounts, as it considers the planet as a system of systems, each feeding back and enabling the reproduction of processes at other scales. The *biological* Anthropocene, on the other hand, refers to a dramatic change in the biosphere, marked by the so-called Columbian exchange in the New World (Toivanen et al. 2017: 189). The transnational movement of species also precipitated the exchange of bacteria and viruses, which radically diminished human populations in the Americas. Likewise, similar accounts of

the biological Anthropocene emphasize the sixth mass extinction as a marker of anthropogenic dominance. However, the shortcomings of these strictly geological and biological accounts often arise from the exclusion of the social and cultural drivers of these biological and mineral exchanges.

The *social* and *cultural* accounts of the Anthropocene are more robust, as they provide historical context to the human practices that transform the planet. Scholars of political economy have identified a metabolic rift in the Earth system (Angus 2016; Foster 1999; Malm and Hornborg 2014). These can be grouped under what Jason W. Moore calls the *Capitalocene* (2017), which argues that modern economies of accumulation have produced a global change in the Earth system. Likewise, anthropologists like Anna Tsing and Donna Haraway have developed the *Plantationocene*, which considers the biological and biopolitical management of subject populations, bodies, and natures across the colonized world in a genealogy that includes contemporary globalization (Haraway 2015; Haraway and Tsing 2019). This is consistent with Lewis and Maslin's (2015) proposition that 1610 should mark the beginning of the Anthropocene as it coincides with a temperature drop caused by mass death following the disease and violence of European contact in the Americas.

Within this horizon, *cultural* accounts of the Anthropocene emphasize the creative and critical practices that are implicated even as they attempt to intervene by producing conceptual breaks (Toivanen et al. 2017: 192). These include historical accounts that examine how the anthropogenic era has become an allegorical narrative (Deloughrey 2019), how extinction has been imagined in art (Heise 2016), and how the non-life of geology has come to figure in the management of life and death in the sacrifice zones of 'late liberalism' (Povinelli 2016). These approaches extend to the imagination of petroleum culture, and likewise question how petroleum fuels historical imaginaries (LeMenager 2013), while also looking to the past to investigate the transmission of environmental memory (Buell 2017). Much cultural theory of the Anthropocene mirrors the speculative turn in both economics and popular

culture, in that its concepts are understood pragmatically; that is, they are seen as a cognitive means to intervene and produce the world in different ways. Thus, the Anthropocene poses a problem for sustainability studies to work through, a problem that likewise enables the telling of histories that link different cultures, species, and beings in a common, entangled existence.

These ‘many Anthropocenes’ come into conflict at the level of academic disciplines and development discourses; therefore, we resist the urge to reduce them to a single narrative. Rather, the task for sustainability studies is to develop a method for articulating, in the sense of linking or connecting, various accounts of the Anthropocene to particular contexts in which these accounts take on additional meaning as they organize practices. To situate a concept like the Anthropocene is to understand what other legitimating stories it draws on and mobilizes as this new periodization becomes a force for reorganizing (or reinforcing) geo-social power. Doing so enables researchers and activists to politically map the ways that anthropogenic change is narratively incorporated into practices of sustainability and research programmes.

Storying the Conjunctionure

We offer two examples that illustrate how differing narratives of the Anthropocene operate in different contexts. By discursively situating the Anthropocene within the conjunction—that is, within the state of affairs, events, and discourses—that defines the changing global present, we raise methodological questions regarding the concept’s use in sustainability studies. One must now ask: how is Anthropocene framing deployed by writers? What other discourses does it intersect with, connect, exclude, strengthen, or weaken? How are Anthropocene discourses implicated in certain political projects, or incorporated into national narratives of development? What alternate projects of modernity or decolonial futures does it make possible or foreclose? These are vital questions for sustainability studies in particular because concepts like the Anthropocene propose not only a new periodization

but often carry assumptions about human intervention. But what human; which intervention?

An Ecomodernist Manifesto

An Ecomodernist Manifesto (Asafu-Adjaye et al. 2015), published by the Breakthrough Institute (located in Oakland, California), is an example of how Anthropocene discourse can reaffirm the present trajectory despite calling for a break with the past. Its authors call for their readers to imagine a ‘good, or even great, Anthropocene’, within an upward history of progress led by enlightened technocrats who will mobilize the near ‘god-like’ potential of advanced societies and technologies. Their aim is to ‘decouple’ the economy from the material environment through urban densification, and to integrate rural economies through nuclear power. In their vision, specialists and technocrats, led by state finance, would maintain economic growth while separating society from the material ecosystem, radically reducing the material footprint per capita. A combination of urban densification and agricultural intensification will separate human spaces from those of a non-human nature, while the latter would be kept at a distance for the recovery of biodiversity. The Institute’s influential book, *Break Through: Why We Can’t Leave Saving the Environment to the Environmentalists* (Shellenberger and Nordhaus 2007), is predicated on a coming-of-age narrative in which perceived attachments to values of harmony or balance are rejected as romantic expressions of immaturity. Framed by the Anthropocene, this maturity narrative redeploys the very tropes of modernity that thinkers associated with the Institute, such as Bruno Latour, have elsewhere criticized for its epistemic and cultural biases (1993). Meanwhile, the philosopher Clive Hamilton (2016) finds a troublingly religious narrative—a *theodicy*—embedded in ecomodernist thought. The notion that the ‘great’ Anthropocene of the future will retroactively justify all the suffering, despoliation, and extinction that enabled such techno-political mastery appears as a just-so story that rationalizes the status quo.

The account of the Anthropocene offered by the ecomodernists not only contains long-standing religious and cultural narratives, but also its philosophy takes for granted the political economy of US power in which it is embedded. Even the rhetorical form of the manifesto has a history. As a statement that announces a break with the present order, while simultaneously calling into consciousness a new social formation or organization of beings, manifestos are politically ambivalent interventions. This neither makes them innocent nor frees them from the contexts in which their ideas are put to work.

Kawsak Sacha

In contrast to Anthropocene narratives that reinforce ontological divides between humans and non-humans, and that fail to challenge the inequalities of power that reproduce the planetary crisis, one finds alternative narratives not only in the protest movements of the Global North but also in indigenous movements in the south. *Kawsak sachá* is one such cultural and ecological concept; it is also an important political strategy initiated by the Sarayaku community in Ecuador and has spread to other Amazonian nationalities (Pueblo originario Kichwa de Sarayaku 2015). The strategy has evolved through decades of struggle and judicial action by Amazonian peoples against the state to defend their territories from oil and mining corporations that are backed by military forces. The state has granted deals to enterprises, often with legal trickery against the resident communities, with the justification that while the surface may stay under the governance of Indigenous communities, the subsoil layers and fossil resources remain state property. In light of this situation, Kichwa people have recently engaged in a more complete formulation of their needed territorial unity, not only horizontally but also into the vertical depths, as an indivisible ecology. Their negotiations are now taking the form of conservation plans, called *planes de vida*, that have as a main goal the preservation of the *kawsak sachá* from capitalist extractive violence.

The concept *kawsak sachá*, which translates into ‘living forest’, contains a narrative that human actions are a part of the world with other beings. The Kichwa cosmology of the Mother Earth, the *pachamama*, is based on the persistence of meaningful worlds that constitute the basis of all living beings in mutual ecological and spiritual relation. The earth is a sacred domain, and the *kawsak sachá* has the power to regenerate vital ecosystems. As Patricia Gualinga, the human rights defender of the Pueblo Kichwa de Sarayaku, puts it: ‘Each mountain and the larger trees intercommunicate through invisible networks of threads where the Supay, or higher beings of the forest, mobilize, and communicate throughout the rainforest’ (2019: 224). Within these networks, people maintain relations through socio-ecological ancestral knowledges, adapted organizations, livelihoods, and cultures, under the guidance of wise persons, the *yachags* (shamans), whom she describes as ‘true scientists’ (2019: 226). Thus, the notion that the Anthropocene marks a new period that challenges distinctions between culture and natural history does not come as a shock. Rather, the disruption comes from incursions of extractive industries that undo this fabric of connection by divorcing the well-being of the forest from the livelihood of its human inhabitants.

Indeed, Indigenous peoples have experienced the inconsistency of the irresponsible, depoliticized narration of the Anthropocene and its impacts on the environment. On the contrary, they recognize and name other phenomena with precise features and with a historical genealogy that lends credence to *Capitalocene* and *Plantationocene* formulations. In this context, the world-changing rupture is the Spanish colonization that started 500 years ago and continues through the white-mestizo state structures (Roitman and Oviedo 2017). The latter are based on a pervasive political economy of resource extractivism that causes deforestation and contamination as an uncounted externality. It is not a generic Anthropocene, but rather capitalism and state racism, that is the cause of this geography of deterritorialization. It creates peripheral areas and people, divided into oil blocks that serve the main centres of capital accumulation. It likewise produces

intersectional violence on multiple scales, from the bodies of Indigenous women to their villages and ancestral territories (Vela-Almeida et al. 2020).

As elaborated by Indigenous organizations, these newly defined environmental conservation plans, called *planes de vida*, embed the term *life* to emphasize the struggles of the ‘living forest’. This is positioned against and beyond the necrotized interventions that the world calls ‘Anthropocene’, but which Indigenous peoples see as the dominating mode of dispossession and disaster caused by the state and Western corporate powers. In this struggle, *kawsak sacha* is a powerful concept for downsizing the dominant image of the human compared to other beings, and for culturally delinking the socio-ecological changes from the binary views that separate human and non-human worlds. Moreover, they challenge the Capitalocene arrangements that create conditions of violence. By putting forward their own narrative of human–environment relations, they reclaim communicative agency in the struggle to decolonize environmental spaces and politics, allowing the persistence of alternative thinking and diverse forms of lives.

Conclusion

These two examples do not begin to exhaust the uses and contexts of the Anthropocene as a concept, but are meant to illustrate how similar concepts may be put to quite different ends, and even transformed, based on where they are situated and encountered in the conjunctions of politics, ecology, and culture. A single narrative of the Anthropocene may only reinforce the dominant distributions of power in the global economy. On the other hand, perhaps our hope lies in certain concepts travelling beyond their point of origin, being taken up and creatively put to new uses by those who encounter similar challenges in other locations. This is what the humanities, drawing on posthumanist geography and cultural studies, has to offer sustainability science: the understanding that, under changed conditions, concepts can turn against their old meanings and open toward new worlds.

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CHAPTER 4

Human Rights

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Abstract

Human rights are among the key concepts of sustainability science because they constitute the basis for sustainable well-being in any given society. Human rights form an understanding of a world in which individuals and peoples can trust in justice and claim rights by virtue of being human. The idea of an international human rights law is that it is not up to a specific government to decide how it treats individuals and peoples living in its territory. Thus, human rights form a discourse of emancipation with a universal outreach. They are essential to achieve sustainable development as specified in the 2030 Agenda for Sustainable Development, which indicates that the implementation of the Sustainable Development Goals (SDGs) is based on human rights. However,

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there are some tensions that continue to oppose SDGs to human rights. This is partly the case in relation to the rights of Indigenous peoples, an issue that will be further explicated in this contribution with regard to the situation of the Indigenous Sámi people.

This chapter elaborates on the concept of human rights from the perspective of sustainability sciences. It explores human rights as a concept of law and as a concept of global politics, and it analyzes its differing functions depending on the contexts in which it is applied. This contribution considers the recent interconnections of human rights with the issues raised by sustainable development and the rights of Indigenous peoples.

Human Rights as Politics and Law

Human rights form an understanding of a world in which individual people, wherever they may reside, can always trust in justice—to which they are entitled by the simple virtue of their humanity (Gibney 2016: 3). The core idea of international human rights law is that it is not up to a specific state or government to decide how it treats its citizens or peoples living in its territory (Gibney 2016: 1). Consequently, states assume obligations to act in a certain way in order to protect, respect, and fulfil human rights. The Universal Declaration of Human Rights—adopted in 1948 by the United Nations General Assembly—the two legally binding UN Covenants on Human Rights,¹ and the numerous legal instruments that have followed further codify and specify these rights and obligations. They form the legal basis of international human rights law. Jarna Petman (2012) writes that human rights seem to stand both inside and outside politics. On the one hand, they are firmly rooted in everyday practices of politics in conventions that the governments have ratified and transposed to national legislations. On the other, ‘they hold a promise of the universally

¹ UN International Covenant on Political and Civil Rights, 1966 and UN International Covenant on Economic, Social and Cultural Rights, 1966.

good that is not reducible to time and place: rights offer *hope* for brighter future, of a better and more just world' (Petman 2012: 2).

Conceptually, human rights form a discourse of emancipation that has a universal outreach. The discourse is ever-expanding and inclusive, meaning that new concerns can be addressed in the language of human rights. One prime example of this expansion is to include the concerns of Indigenous peoples in human rights issues. Ronald Niezen (2003) discusses in detail the emergence of the rights of Indigenous peoples at the United Nations. According to him:

the indigenous peoples' movement has arisen out of shared experiences of *marginalized* groups and economic *modernization* Indigenous identity has also grown largely out of the institutions of successful nationalisms themselves; the international legislative bodies of states – the United Nations and its satellite agencies – have provided the conceptual origins and *practical* focus of indigenous identity ... an international movement has led to the creation of an important new 'ism'.

(Niezen 2003: 9)

The human rights discourse has proven to be flexible and adaptable to new concerns and emerging societal issues, which have also helped to strengthen its 'inclusive universality' while embracing diversity (Brems, 2001).

However, for critical legal theorists and social scientists, the human rights discourse also contains some interesting paradoxes (Koskenniemi 2005: 604). One of these is the paradox between the emancipatory and constraining sides of human rights. In order to have the right to claim human rights, people must adapt to the normative framework of identity, which is often constructed in accordance with mainstream epistemologies (Toivanen 2004). Thus, in order to make claims, the subject of human rights (i.e. an Indigenous person) must act in accordance with the dominant presentation of indigeneity, which is how their claim and identity are conceptualized by others. It may thus be argued that human rights can favour dominant discourses and ideologies to the detriment of the voice of marginalized groups (Toivanen 2020).

For the same reason, another critique of human rights is linked to its relationship with the market society. In her work, Jessica Whyte (2019) uncovers how neoliberals have historically intended to co-opt the discourse of human rights to develop a moral framework for a market society that privileges market interests at the expense of economic, social and cultural rights. This work is aligned with other critics of human rights who have, for instance, denounced its imperialistic logics (Anghie 2004). According to its critics, some parts of the discourse of human rights therefore converge in legitimizing imperialists and neoliberal development ideologies. This convergence is, however, increasingly denounced and also reinforces the need to call into question whether human rights principles are adequately protected under the auspices of the sustainable development agenda.

Sustainability and Human Rights

It is generally recognized that human rights are essential to achieve sustainable development. This development was confirmed by the document *Transforming our World: The 2030 Agenda for Sustainable Development*, adopted by the United Nations General Assembly on 21 October 2015 (A/RES/70/1). The Agenda's main thrust is that all the policies and processes targeting the implementation of the Sustainable Development Goals (SDG) should be based on human rights. Agenda 2030 reaffirms several significant human rights commitments. In the section on 'Our shared principles and commitments', paragraph 10 states:

The new Agenda is guided by the purposes and principles of the Charter of the United Nations, including full respect for international law. It is grounded in the Universal Declaration of Human Rights, international human rights treaties, the Millennium Declaration and the 2005 World Summit Outcome. It is informed by other instruments such as the Declaration on the Right to Development.

(UN 2015: 4)

Thus, the Agenda is explicitly anchored in international human rights standards and affirms realizing human rights for all as its goal.

The development of understanding the importance of human rights in envisioning sustainability is closely connected to the new tendency to present environmental claims using human rights terminology. For instance, Heta Heiskanen (2018: 15) has, in her doctoral dissertation, studied the development of *green jurisprudence* at the European Court of Human Rights, pointing out a well-established case continuum that provides protection both for individuals and for the environment. This suggests there is confidence in the compatibility of the human rights and environmental agendas.

However, new policies and actions are necessary to shift the trajectory of global development onto a just, sustainable path for all that also realizes human rights. Additionally, there is a need to ensure that sustainable development objectives do not contradict human rights. As Kerri Woods (2010) notes, human rights and development do not always go hand in hand. This is more particularly the case in relation to the rights of Indigenous peoples. It is striking that the SDGs have little to offer to the agency of Indigenous peoples. Rather, in several development goals (2010: 23, 25, 79), everything that is said about Indigenous peoples is framed by the perspective of their vulnerability. In opposition to this approach, Estelle Ferrarese (2016) writes that the concept of vulnerability is often used in a framework of 'good feelings'. This leads to a situation in which, when something or somebody is defined as being vulnerable, it is impossible to see it as an independent political subject with its own powers to act (Ferrarese 2016). Approaching the rights of Indigenous peoples through the lens of their vulnerability therefore contradicts the emancipatory discourse of human rights that underlines the right to self-determination, including their rights to freely determine their development and to dispose of their land and natural resources. In this regard, the UN Permanent Forum on Indigenous Issues (2015) warns that 'the 2030 Agenda ... involves serious risks for Indigenous peoples, such as clean energy projects that encroach on their lands and territories'. In practice, this includes the development of renewable energy projects and conservationist policies that champion the cause of 'sustainable development' in line with the protection of the environment yet

encroach on the lands and territories of Indigenous peoples, violating their human rights.

Hence, the discourse of human rights and sustainability is fraught with tension. Nevertheless, opportunities also exist to replace tensions with a common understanding that aligns both agendas. For this purpose, the UN Permanent Forum on Indigenous Issues argues that:

to avoid negative impacts, the implementation of the Sustainable Development Goals needs to take place in conformity with the United Nations Declaration on the Rights of Indigenous Peoples It is also important that programs to implement the 2030 Agenda are culturally sensitive and respect Indigenous Peoples' self-determination as well as collective rights in terms of land, health, education, culture, and ways of living.

(2015)

In practice, this requires the states to engage communities and other concerned parties, including international organizations and business. This also requires an inclusive approach to sustainable development: an approach that does not prioritize economic growth or focus solely on the protection of the environment, but that encompasses the economic, environmental and social aspects of sustainability in order to ensure its coherent operationalization (Purvis et al. 2018) at all governance levels.

Context: Human Rights and Sustainable Futures for Sámi Peoples

If human rights is one of the key concepts of sustainability, it means that whenever a government strives to implement sustainable policies (whether sustainable development, growth, or well-being), it must take into consideration the human rights of all human beings on an equal basis. Considering that different groups of peoples—majority, minorities, and indigenous—often live in the same state, providing sustainable policies that will account for all equally may

therefore become a daunting task. In this contribution, we have decided to illustrate this issue with an example from the Arctic Indigenous peoples in Finland, namely the Sámi people.

The Sámi people are the Indigenous people of Finland and the only Indigenous people of the European Union. Traditionally, the territory of the Sámi people, Sápmi, spans the borders of the states of Finland, Norway, Sweden, and the Kola Peninsula in Russia. While the majority of Sámi today live in Norway, approximately 10,000 Sámi live in Finland (Sámediggi 2020). From a legal perspective, the status of the Sámi was acknowledged in the Constitution of Finland in 1995 (Section 14). Since 1996, the Sámi have also obtained constitutional self-government in the Sámi Homeland in the spheres of language and culture. Additionally, the Act on the Sámi Parliament (974/1995) establishes the Finnish Sámi Parliament, which is elected by the Sámi and has the mandate to protect the Sámi language and culture and matters relating to their status as an Indigenous people. This legislation also affirms that state authorities should negotiate with the Sámi Parliament ‘all far-reaching and important measures that may directly or indirectly affect the Sámi’s status as an Indigenous people’ (1995: Section 9). This includes matters relating to the management, use, and leasing of state lands as well as conservation areas and wilderness areas. Other legislations also mention the right of the Sámi to protect their culture and livelihoods, including the Mineral and Forestry Acts.

Despite the strong regulations affirming the rights of the Sámi people in Finland, their rights continue to be neglected and severely hampered in practice (Heinämäki and Cambou 2018; Mörkenstam 2019; Toivanen 2013). As noted by the UN Special Rapporteur on the Right of Indigenous Peoples, the Sámi people ‘have limited decision-making power, in particular with respect to land and resource rights’ and ‘the legal status of the lands that the Sámi people have traditionally used and occupied in Finland remains unresolved’ (UN 2016). Although some legislation, such as the Mineral or Forestry Acts, recognizes their rights, concerns continue to be raised regarding the implementation and efficacy of these laws in protecting

Sámi traditional livelihoods. In the absence of an adequate regulatory framework, the maintenance of the traditional Sámi people is thus continuously challenged.

The prejudices and concerns raised by the lack of adequate protection of the rights of the Sámi people stand in stark contrast to the commitments of Finland to sustainable development and human rights. Finland is one of the countries to have enacted a national strategy to implement Agenda 2030, with the goal of being the leading country to combat climate change. Thus, it is perhaps not surprising but disappointing that the national document *Government Report on the 2030 Agenda for Sustainable Development—Sustainable Development in Finland* does not mention the Sámi Indigenous peoples living in Finland at all. Neither does the document *Opportunities for Finland* (a joint outlook of the Permanent Secretaries of the ministries on the key questions for the upcoming 2019–2023 government term) (Finnish Government 2019).

In relation to sustainable development, there is also evidence that policies and legislations targeting the protection of the environment can hamper or hinder the rights of the Sámi to land and natural resources (Cambou and Poelzer 2022). In Finland, four Sámi anglers received criminal charges in 2017 for fishing on their traditional territory without a licence in an alleged violation of the Fishing Act. The Sámi anglers argued that the Fishing Act has been interpreted in a way that is contradictory to the Constitution and the Sámi right to exercise their culture. Judges had therefore to balance two constitutional issues: responsibility for the environment, which here mainly concerns the protection of Atlantic salmon, and the right of the Sámi to practice their culture. In 2019, the District Court of Finnish Lapland overturned all charges of illicit fishing against the four Sámi, while also asserting their rights as an Indigenous people. Even though the case is still ongoing, it clearly epitomizes how the lack of adequate regulatory framework provided at the state level for protecting the culture of the Sámi can challenge the content of sustainable development policies and legislations.

Furthermore, it is also interesting to note that states are not the only entity subject to criticism. Non-governmental organizations advocating for sustainable and environmental policies have

also been opposed for their lack of adequate concern for the rights of Indigenous peoples. The Sámi interviewed in a recent human rights research project² were, for instance, often quite sceptical toward human rights organizations such as Greenpeace. One person indicated in an interview that:

... the activists are often anyway somebody else than Northern people; of course, there are also Sámi members. But often ... they maintain a highly stereotypical understanding of Sámi culture, or who Sámi are and what Sámi do and what belongs to the culture, so I think they could as well keep away from these questions which they do not understand.³

This interviewee pointed out that organizations committed to human rights and sustainable development do not always understand the local needs of Indigenous peoples and instead try to treat everybody the same. A survey⁴ connected to the same research project also revealed that a significant proportion of people (30% (n= 86)) believed that they would be better off without international human rights treaties. More particularly, local people in Inari municipality, in northern Finland, expressed a great deal of anxiety about ILO Convention No. 169, Concerning Indigenous and Tribal Peoples. Even though

² Finnish Academy Fellow. Project on 'Glocal' Governance: On the Meanings and Consequences of the 'Vernacularization' of Human Rights Concepts, Grant number 256143.

³ This is the original citation in the interview carried out in the above-mentioned project. Glocal_inari_15female_6.2013. 'Mutta en mä sitte oikein tiää, mun mielestä ihmisoikeusjärjestöt, mitkään tämmöset nyt ei oo, tää on niinku niin silleen, itse asiassa mää vähän sanoisin, et jos on joku tämmönen iso järjestö, jonka aktiivijäsenet ovat sitten kuitenkin joitakin muita kuin pohjoisen ihmisiä tai totta kai myös saamelaisia, niin niillä on luultavasti ihan henkilötasolla erittäin stereotyyppinen käsitys saamelaiskulttuurista ja siitä ketä saamelaiset ovat ja mitä he tekevät ja mitä niitten kulttuuriin sisältyy, et ne, mää oikeastaan oisin melkein sitä mieltä et ne vois pysyä kokonaan eri, niin kun poissa niistä kysymyksistä, että kö ei ne niitä ymmärrä.'

⁴ The survey was carried out in the municipality of Inari in 2013; 297 persons responded to it.

the Convention has not been ratified by Finland, the fear expressed among local communities was that Sámi reindeer herders would be the only ‘winners’, and other local populations, including Sámi fisherfolk, would lose their current rights if the treaty were to be implemented. These interviews, therefore, illustrated not only a deep distrust toward NGOs and state agencies but also a disbelief in the discourses supported by human rights and its implementation.

In the light of these issues and paradoxes, it appears that making sustainable development for all and ‘leaving no one behind’ in accordance with human rights remains challenging. Important discrepancies remain between human rights discourses and the goal of achieving sustainable development for all. This chapter has illustrated both the theoretical tensions and practical challenges of human rights both as a concept of law and as a concept of global politics relating to the rights of Indigenous peoples in Finland.

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CHAPTER 5

Education

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Abstract

The Sustainable Development Goal on quality education aims to ensure that everyone learns the knowledge and skills necessary for promoting sustainable development and lifestyles, and global citizenship (UN 2015). This chapter begins with an introduction to *Education for Sustainable Development (ESD)*, *Global Citizenship Education (GCED)*, and *Education for Sustainability (EfS)*. The chapter then discusses how sustainability is framed locally within national educational policies in two different contexts. First, it examines the *buen vivir* (good living) principle in the context of Intercultural Bilingual Education in the Latin American plurinational, pluricultural, and multiethnic state of Ecuador. Second, it discusses how global issues and sustainability are included in the

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national curriculum in the Northern European welfare state of Finland. Based on these two examples, the article claims that both in Ecuador and in Finland, education is seen as a vehicle for social transformation toward more sustainable futures while the understanding of sustainability is shaped rather differently in these two contexts. Moreover, both cases exemplify the need for more critical perspectives toward global inequalities and power relations within education to foster alternative development paths.

Introduction

The international community has recognized education as a crucial component of a path toward a sustainable future. Investments in designing the content and improving the quality of education increase well-being and the adaptive capacity of societies effectively in the long run (Didham and Ofei-Manu 2015; Lutz, Muttarak and Striessnig 2014). The United Nations has brought the sustainable development path and education together in Sustainable Development Goal (SDG) 4, Target 4.7 of the 2030 Agenda, which aims to:

ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

(UN 2015)

SDG 4 is committed to enhancing the quality of education and learning rather than merely increasing school enrolment, which was the focus of the preceding Millennium Development Goals (Didham and Ofei-Manu 2015). At the same time, it addresses the goal to educate responsible and fair-minded citizens for society (O'Flaherty and Liddy 2018). Moreover, quality education is

a cross-cutting means to enhance achievements in several other SDGs (UNESCO 2014b, 2017).

One of the focal approaches for achieving SDG Target 4.7 is *Education for Sustainable Development (ESD)*, promoted by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The core of ESD consists of the integration of themes related to sustainable development in learning content, lifelong learning, and societal transformation (UNESCO 2017). As a sequel of the Decade of Education for Sustainable Development 2005–2014 (Buckler and Creech 2014), UNESCO generated and up-scaled ESD through its Global Action Programme (GAP) in 2015–2019. The two-fold approach of the GAP highlighted ‘integrating sustainable development into education and integrating education into sustainable development’ (UNESCO 2014c: 14). Through concrete support mechanisms, the global network of GAP key partners managed to promote the mainstreaming of ESD in education and sustainable development policies, the integration of sustainability principles into education and training, the increasing of the capacities of educators and trainers to deliver ESD, and the acceleration of sustainable solutions in local communities (UNESCO 2019).

Another approach, *Global Citizenship Education (GCED)*, also fostered by UNESCO, emerged in 2012 as a specific response to the challenges that threaten sustainable futures. According to the current definition, GCED ‘nurtures respect and solidarity in learners in order to build a sense of belonging to a common humanity and helps them become responsible and active global citizens in building inclusive and peaceful societies’ (UNESCO 2018: 2).

A wide variety of pedagogical approaches and tools applied in different fields of studies fall under the ESD and GCED. In general, measuring their impacts is difficult, but there is some evidence that the use of active and participatory learning methods enhances their positive impact in terms of increasing awareness of global issues, understanding eco-social interdependence, and critical reflection (O’Flaherty and Liddy 2018; Springett 2005). The educational interventions based on the ESD and GCED

approaches, however, vary in their depth of criticism toward the prevailing social, economic, and political systems that maintain inequalities and environmental degradation, and some of them can be rightly blamed for not truly challenging the dominant Western neoliberal development patterns (Huckle and Wals 2015; O’Flaherty and Liddy 2018).

The concept of sustainable development itself is also highly contested, for example, due to its liaison with economic growth and the dominance of Western political and corporate perspectives in the discourses (Springett and Redclift 2015). Thus, a division has emerged between those who focus on ESD and those who favour *Education for Sustainability (EfS)*. The latter is more radical in terms of questioning the agendas of the formal curricula that perpetuate utilitarian values toward nature and maintain social inequalities (Springett 2015). Scholars have suggested that EfS should build strongly on transformative learning that aims to alter the learner’s consciousness and way of being in the world, and enhancing their understanding of the prevailing power relations (Sterling 2011).

SDG Target 4.7 and ESD also entail appreciation of cultural diversity and culture’s contribution to sustainable development (UN 2015; UNESCO 2014a). With regard to GCED, UNESCO has recently observed that its core notions resonate with many already-existing local concepts, such as *buen vivir* in Latin America, *gross national happiness* in Bhutan and *ubuntu* in South Africa (UNESCO 2018). Therefore, the focus of GCED is possibly shifting from a global perspective toward understanding the common values found in the local concepts and interconnectedness between the local and the global. The recognition of cultural diversity in education is in line with the UN Declaration on the Rights of the Indigenous Peoples, which states that Indigenous peoples have a right to education and that governments should take effective measures to guarantee that education is culturally relevant (UN 2007, Ar. 14–15). Indigenous, intercultural, and bi- or multi-lingual education systems already operating in various countries aim to address the cultural diversity of the states

(de Leo 2010; UNESCO 2006). The education system in the ‘intercultural’ and ‘multinational’ (Constitution 2008/1) state of Ecuador with a ‘plurinational, pluricultural and multiethnic identity’ (Constitution 2008/380) is a case in point (see also Chapter 7 on *Scales* in this book).

Education for *Buen Vivir* in Ecuador

Ecuador adopted a particular approach toward nature and sustainability in its constitution of 2008 by recognizing nature, *Pacha Mama* (Mother Earth), as a legal entity with constitutional rights (Constitution 2008/71). The constitution introduces *buen vivir* (good living) as a transversal principle. According to this concept, people have a right to live together in diversity, in a healthy environment, and in a harmonious relationship with nature. They also have an obligation to protect the rights of nature, use natural resources in a sustainable way, and restore ecological damage (Constitution 2008/14). In the constitution, the concept of *buen vivir* discusses the well-being of people and nature alike, bringing together political, sociocultural, economic, and environmental dimensions, including social equality and inclusion, intercultural dialogue, ancestral knowledge protection, resource redistribution, nature preservation, and sustainable development.

The constitution of Ecuador notes that education is an essential condition for the *buen vivir* and outlines that:

Education will focus on the human being and shall guarantee holistic human development, in the framework of respect for human rights, a sustainable environment, and democracy; education shall be participatory, compulsory, intercultural, democratic, inclusive and diverse, of high quality and humane; it shall promote gender equity, justice, solidarity and peace; it shall encourage critical faculties, art and sports, individual and community initiatives, and the development of competencies and capabilities to create and work.

(Constitution 2008/27)

The Ecuadorian national curriculum leans on the constitution and the *National Plan for Buen Vivir* (SENPLADES 2013). The construction of a society of *buen vivir* is mentioned in many areas of the curriculum. For example, one of the objectives in chemistry is to learn how to support *buen vivir* by influencing industries and technology. In social studies, the curriculum refers to *buen vivir* as an alternative to capitalism, as a way to reach an equilibrium between human beings and nature. Furthermore, within social studies, students should be encouraged to discuss the concept of development critically, from the perspective of *buen vivir*, with an integral view of nature, humanity, and sustainability. Notably, the sections of the curriculum on biology refer to the sustainable use of natural resources or sustainable development but do not mention the more holistic approach of *buen vivir* (MINEDUC 2016).

The Ecuadorian national curriculum provides a common basis for all the compulsory education programmes in the country, including the intercultural bilingual education (IBE) programmes. Based on the constitution (2008/347), the state guarantees to support the IBE system to provide education in Indigenous languages and with methods of instruction that are responsive to Indigenous peoples and nationalities. To achieve this aim, the IBE system leans on *Modelo del Sistema de Educación Intercultural Bilingüe* (MOSEIB), a policy document that provides further aims, objectives, and pedagogical guidelines, particularly for compulsory education for the Indigenous peoples and nationalities. MOSEIB emphasizes the cultural and linguistic diversity in Ecuador and the importance of involving Indigenous languages, cultures, wisdom, and knowledge in the educational programmes (MINEDUC 2013).

The Ecuadorian law on intercultural education, *Ley orgánica de educación intercultural* (2012), states that all Ecuadorian schools, including mainstream Spanish-speaking schools, should teach at least one Indigenous language, and that all teachers in IBE schools should use the respective language of the Indigenous community as the language of instruction. However, there is little evidence that these decrees would be implemented in practice. In addition, the

schoolteachers rarely receive any in-service education related to Indigenous languages or interculturality (Rodríguez-Cruz 2018). Shortcomings in Indigenous language use inflict marginalization of Indigenous knowledge in schools since language is an essential medium for producing and transmitting Indigenous knowledge (Battiste 2002). By providing opportunities to think and produce knowledge in Indigenous languages, educational programmes could open up spaces for Indigenous epistemologies and alternatives to the dominant knowledge (Ramírez 2001; Veintie 2018) and, thus, promote decolonization of education (López 2017).

A decolonizing and transformative perspective was originally present within IBE when it emerged in Latin America from the grassroots social and Indigenous movements in the 1960s and 1970s. However, much of that radical edge has been lost with the incorporation of IBE within the realm of national government, as a national educational system, with a national curriculum (López 2017). The concept of *buen vivir* within the constitution and the national curriculum is also debatable. The Ecuadorian government did not guarantee Indigenous representation in the processes of writing the constitution of 2008. Therefore, the constitutional concept of *buen vivir* only partially reflects the original Kichwa concept of *sumak kawsay* (Salgado and Morán 2014). *Buen vivir* does not include the holistic and relational onto-epistemologies behind *sumak kawsay*, and its focus is not on collective well-being but on individuals being responsible for controlling their lives, overcoming their personal problems, and conducting their personal educational projects to contribute to *buen vivir* or development (Walsh 2010). Furthermore, the national assessments have evaluated the quality of education for *buen vivir* against Western standards, without acknowledging or supporting local cultural and epistemological diversity. Consequently, the national evaluators have questioned the quality of IBE and Indigenous education initiatives, resulting in the closure of several community schools, IBE teacher education institutes and Amawtay Wasi University, which embraced Indigenous onto-epistemologies (Mato 2016; Salgado and Morán 2014;

Veintie 2018). Thus, using terms of Indigenous origin such as *buen vivir* in the constitution and curriculum does not necessarily produce a shift in the educational policy or alter the understanding of development and sustainability.

Education and Sustainability in the National Core Curriculum in Finland

In the national curriculum reform of 2014, the Finnish National Agency for Education paid particular attention to issues related to global education, EfS and ESD. As a result, global issues and sustainability form an integral part of the core values of the current national curriculum in Finland. The Finnish Basic Education Act (1998/628 §2), as well as the national curriculum, states that one of the goals of compulsory education is to work toward equity, equality, and social justice within society. The core values presented in the curriculum set forth principles of quality education for everyone, democracy, human rights, understanding toward cultural diversities, as well as caring for the environment and a sustainable style of living. The curriculum presents basic education as a ‘driving force for a positive change nationally and internationally’ (Opetushallitus 2014), and states that basic education should teach young people to understand cultural diversity as a positive resource, to cope with a changing society, and to take responsibility for building the future. Thus, education is a vehicle to transform students into tolerant and critical agents who contribute actively toward society and further societal transformation (Wolff et al. 2017).

The terms ‘sustainability’ or ‘sustainable development’ appear in the syllabus of numerous subjects, including natural and social sciences, arts, crafts, health education, religion, and secular ethics. Additionally, the curriculum defines seven transversal competences that should penetrate instruction in all subjects. Issues related to global perspective and sustainability are involved in several of these competences, such as *participation, involvement and building a sustainable future* or *cultural competence, interaction*

and self-expression (Opetushallitus 2014). Through these transversal competences, the instruction in all subjects in basic education should support students' personal relationship with nature, help students to understand that their personal choices and ways of living affect nature and society, and encourage them to protect the environment and be active citizens, building a sustainable future. Moreover, instruction in basic education should encourage all students to build their personal cultural identities, appreciate cultural, linguistic, religious, and philosophical diversities, express their opinion while respecting other opinions, and support students in using their mother tongue and other languages (Opetushallitus 2014).

A recent survey (Saarinen et al. 2019) reveals that schools face challenges in the implementation of the transversal competence areas in the local curricula and in the instruction, as well as in the assessment of learning within these areas. In the national curriculum, the connection between objectives set within the transversal competence areas and those set for subjects is open to interpretation. This ambiguity may produce uncertainty in teachers on how to include the transversal competences into the instruction. Many teachers are also afraid to tackle controversial issues of global inequalities and injustice (Mikander 2016). Teacher education seems to have failed to provide teachers with the conceptual, theoretical, philosophical, and emotional tools to discuss sustainability and cope with the uncertainty and discomfort related to encountering diversities and personal experiences of privilege and power (Lanas 2014; Wolff et al. 2017). Furthermore, expectations toward teachers and teacher education are ambivalent as there is a growing tendency in the educational policy and national curriculum to see education from the viewpoint of economic life and the labour market. Individualized learning and entrepreneurship education goals within basic education relate to the market-oriented discourses of education as a commodity and a field of competition (Tervasmäki and Tomperi 2018), providing a contrast to the goals to foster social equality and caring for the environment.

Education for Global Consciousness and Alternative Development Paths

Themes and objectives related to sustainability and global citizenship are included in the national curricula in both Ecuador and Finland, and thus they promote the achievement of SDG Target 4.7. In both countries, the national curricula lean on core values of democracy and human rights, but their understanding of sustainability and its emphases differ. In Ecuador, sustainability is discussed through the concept of *buen vivir* and the celebration of cultural diversity. In Finland, sustainability is understood more in terms of green growth and personal lifestyles and competences.

In any context, teachers are focal actors in implementing the curriculum, and teacher education plays a crucial role in providing teachers with the crucial knowledge and skills. Recent studies indicate that teacher education in Finland has failed to provide teachers with adequate support in terms of the knowledge, skills, attitudes, and preparedness needed to tackle different aspects of sustainability and interculturality (Lanas 2014; Wolff et al. 2017). Also, in Ecuador, initial and in-service teacher education has provided inadequate support for Indigenous languages, knowledges, intercultural dialogues (Rodríguez-Cruz 2018; Veintie 2018), and for values and positive attitudes toward the environment (Medina, Alvarez and Castro 2018).

Moreover, education systems in both countries lack critical perspectives toward global inequalities, privilege, and domination between cultures and social groups globally and locally (Walsh 2010; Zilliacus et al. 2017). An ethical approach to global issues, interculturality, and sustainability would require an understanding of the global relations of power (Sund and Pashby 2018). Decolonial perspectives on education, global issues, and sustainability that challenge these power relations are needed in both the Global South and North in order to cultivate equal dialogue between global discourses and situated concepts such as *sumak kawsay*.

GCED, ESD, and EfS aim to further transformative learning toward global consciousness, solidarity, and understanding of the interconnections between local and global issues. This can

make a significant contribution against the structures of oppression, poverty, and inequality, toward widening justice and, thus, global peace (Torres 2017). Furthermore, local Indigenous movements and educational initiatives that conceptualize education, environment, and sustainability in Indigenous languages, from Indigenous epistemologies, may create conditions for good living in their respective locations and for constructing alternative views of the future (López 2017). Thus, transformative and locally framed approaches to EfS that respect the environment and support diverse epistemologies, languages, and social justice can foster alternative development paths that are detached from the ideologies of efficiency, consumerism, and economic growth.

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CHAPTER 6

Resilience

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Abstract

Resilience is a concept that is both foundational and, at the same time, relentlessly controversial in sustainability science. It is supposed to both provide a fundamental insight into how complex adaptive systems behave—an insight with substantial normative consequences—and serve as an interdisciplinary bridge linking the disparate worlds of the natural and the social sciences. Yet the concept of resilience is famously messy, along several conceptual dimensions, and seems to have become messier with time.

In order to better understand the potential and limitations of resilience in sustainability science, as well as explain why the concept has changed in the way that it has, it is useful to trace the notion back to its conceptual roots: the ecological debates of the late 1960s and early 1970s. The specific conditions under which

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the concept was deployed in that context have not persisted, as resilience has been incorporated into sustainability science. Narrow theoretical debates and formal styles of reasoning have been replaced with interdisciplinarity and solution-orientedness. The new context neither demands nor supports the fine concepts that were once so crucial for ecologists.

A Mess or a Multitude of Concepts?

To say that a system is resilient is to say something about how that system is able to handle disturbance and change. More resilient systems are less prone to collapse when faced with a change in their environment or a sudden disturbance. As a concept, resilience is foundational to sustainability science. It has been a crucial, theoretical component in formative debates about ecosystem services and strong sustainability, and it connects deeply to fundamental concerns and priorities of the field, such as the central emphases on uncertainty, risk, and the fickle dynamics of complex systems (see e.g. Levin et al. 1998). Indeed, resilience is a way of understanding sustainability itself, as resilient systems *ipso facto* also appear to be sustainable systems.

At the same time, resilience is notoriously controversial, and its usefulness in sustainability science—and social sciences more broadly—has been called into question (Chandler 2012; Davidson 2010; Hornborg 2013; Olsson et al. 2015; Thorén 2019; Thorén and Olsson 2018; Zebrowski 2013). A persistent issue is that we have ended up with what appears to be a multitude of concepts, none of which are entirely clear. Indeed, the literature reviewing different definitions and characterizations of resilience is a genre unto itself (see e.g. Brand and Jax 2007; Carro et al. 2018; Meerow, Newell and Stults 2016; Nikinimaa et al. 2020).

This multiplicity of concepts has more than one dimension. First, there are many varieties of the concept of resilience, such as *community resilience*, *social resilience*, *disaster resilience*, *individual resilience*, *urban resilience*, and so on. These are, it would seem, the application of the concept of resilience to specific systems or entities, or concerning particular types of disturbances.

Second, there are other concepts that are closely related to resilience, such as *robustness*, *complexity*, *self-organization*, *adaptive capacity*, *vulnerability*, *social learning*, and maybe *sustainability* itself. Some of these notions are, or have been used, interchangeably with resilience, or concern the mechanisms that realize resilience in specific systems. At other times they figure in definitions of resilience. Here is an example of the latter:

Resilience, for social-ecological systems, is related to (i) the magnitude of shock that the system can absorb and remain within a given state; (ii) the degree to which the system is capable of self-organization; and (iii) the degree to which the system can build capacity for learning and adaptation

(Folke et al. 2002)

At yet other times, concepts such as these occur as contrastive notions used to trace the boundaries of the concept of resilience more precisely. For example, Derissen, Quaas and Baumgärtner (2011) argue that an important difference between sustainability and resilience is that the former is a *normative* concept, whereas the latter is *descriptive*.

Third, the *term* ‘resilience’ is also used to denote more than one (abstract) *concept*. There is a fundamental difference between resilience as the ability to return to a reference state following a disturbance and resilience as maintaining some set of properties (function, identity, etc.) through a disturbance (Hansson and Helgesson 2003; Thorén 2014). This difference has occasionally been theoretically important (see below) but is lost or conflated in many contemporary definitions.¹

As Fridolin Brand and Kurt Jax (2007) have noted in a widely cited review of the concept of resilience, we seem to have moved from having a precise (and descriptive) understanding of resilience to one that is vague (and normative). Although this vagueness is not without merits—it may serve interdisciplinary aims (see below)—it appears to come at a cost. They write: ‘a scientific

¹ See Meerow, Newell and Stults (2016) for an example and Thorén (2019) for a discussion.

concept of resilience must have a clear and specified meaning that is constantly used in the same way' (Brand and Jax 2007). It is nonetheless surprising for a concept to change from precision to vagueness. As knowledge improves, should this not also be reflected in better (i.e. more precise) concepts? To fully understand this development, it is useful to go back to the roots of the concept of resilience in the context of sustainability science.

Ecological Roots

Whence sprung the resilience concept? One can find *scientific* uses of the term as far back as the late 1800s in materials science (e.g. Thurston 1874). Psychologists have used a notion of resilience since at least the 1980s (see e.g. Rutter 1985) primarily, but not exclusively, in the context of child and adolescent psychology. From a sustainability science point of view, however, it is the use of resilience in ecology—where the concept appears from the early 1970s and onward—that is the most relevant, as a strong continuum exists, both with respect to the genealogy of the concept and the individuals who have engaged with it (see e.g. Walker and Cooper 2011).

During the 1970s and the 1980s, ecology as a discipline went through a paradigm shift of sorts with respect to how to think about the dynamics of ecosystems. The received view before this time is captured by what is sometimes called the stability-diversity hypothesis (henceforth SDH; see deLaplante and Picasso 2011; Redfearn and Pimm 2000). The SDH states that more diverse (or more complex) ecosystems are also more stable, and that reducing the complexity of ecosystems—for instance, by removing species—makes those same ecosystems less stable. The idea was defended by almost all ecologists of some prominence around the middle of the last century, such as Eugene Odum, Robert MacArthur, and Charles Elton (see deLaplante and Picasso 2011).

The important theoretical problem for these ecologists was to show, and sometimes formally prove, how greater diversity or complexity in ecosystems indeed engendered more stable systems

(under specific interpretations of these concepts). The preferred model was often the food-web, or *trophic-network* (see e.g. MacArthur 1955). In such a network, each species is a node connected to other nodes through the relationship of eating them or being eaten by them.

In the late 1960s and early 1970s, some ecologists (e.g. Stuart Pimm, Robert May, and Crawford Holling) began to question many aspects of these ideas and develop more complicated ways of analyzing stability in ecosystems. The most influential work within ecology was probably May's (1973) *Complexity and Stability in Model Ecosystems*, but it is Holling who has been the primary influence on sustainability science. His 1973 essay 'Resilience and Stability of Ecological Systems' remains widely cited among sustainability scientists to this day.

The crucial distinction in the title of the essay, between stability and resilience, is developed toward the end of the paper. Holling suggests that mathematical convenience—in particular, a focus on the dynamics of systems close to equilibrium—led some of his predecessors to confuse the distinct properties resilience and stability with one another. In particular, he is concerned with conflating ideas that have to do with the dynamic responses of systems around some equilibrium with issues pertaining to 'persistence and the probability of extinction' (Holling 1973: 17). Thus Holling proposes that we should reserve *stability* for the former and use *resilience* when talking about the latter.² Stability is the ability of a system to return to some reference state after a disturbance, '[t]he more rapidly it returns, and with the least fluctuation, the more stable it is' (Holling 1973: 17). Unstable systems tend to fluctuate more and wander around in their state space. Resilience, on the other hand, is a kind of buffer capacity of a system that allows it to absorb disturbances without suffering major rearrangements of its internal relationships. '[I]t is a measure,' he writes, 'of the

² Holling would later relabel the distinction as *engineering resilience* (stability) and *ecological resilience* (resilience) (Holling 1996).

ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist' (Holling 1973: 17).³

Armed with this distinction, Holling attempts to synthesize the numerous examples, observations, and theoretical exercises that make up most of his paper. There are several central points that deserve mention. One point is that resilience and stability are not always positive correlates, but in fact are sometimes negatively correlated. Roughly speaking, highly stable systems lack the flexibility to adapt to new conditions, and strategies that seek to increase stability in ecosystems—for example, by reducing fluctuations in various ways—can effectively hollow out the resilience of the system and make it susceptible to catastrophic collapse. The preferred metaphor is that of a ball resting in a cup. The cup is the domain of attraction; however, as the system is perturbed, it acts as forces pushing on the ball. But interventions on the system not only push the ball around the cup, but also change the dynamic landscape. The cup can be made shallower, and eventually, even minor disturbances can push the ball beyond the cup and set the system off toward some new equilibrium, or, if worst comes to worst, extinction.

The distinction is thus central to Holling's reasoning. It shifts his understanding of the SDH and potentially resolves apparent conflicts between proponents and critics of the hypothesis. There

³ The stability/resilience distinction that is central to Holling's argument is common within ecology. The terms, however, are largely particular to him, and others have made similar conceptual distinctions using other terms (Grimm and Wissel 1997; Thorén 2014). Moreover, at a very high level of abstraction, Holling's distinction tracks fundamental differences between different stability concepts very closely. Helgesson and Hansson (2003) argue that there are only really three ways of understanding the umbrella concept stability. There is a kind non-dynamical or historical stability, stability as (for whatever reason) remaining unchanged. Then there are two dynamical stability concepts. One is the ability of a system to return to some reference state (Holling's stability). The other the ability of a system to keep some property, or feature, or function, fixed through a disturbance (Holling's resilience).

is no contradiction between more complex and diverse systems being more persistent in virtue of their resilience (one way of interpreting the SDH) while at the same time being less stable in the sense that they fluctuate more, as May (1973) had shown in his work.

Changing the Concepts

One should not over-state the conceptual clarity among ecologists. What the appropriate stability concepts and distinctions ultimately are is up for debate to some degree, and ecologists use an extensive, and somewhat fluid, typology for this (see Grimm, Schmidt and Wissel 1992; Grimm and Wissel 1997; Newton 2016). Nonetheless, given that Holling's work is so central to sustainability scientists, it is striking that the exact distinction upon which his arguments turn is regularly conflated. Consider this characterization offered by Sara Meerow and colleagues:

Urban resilience refers to the ability of an urban system—and all its constituent socio-ecological and socio-technical networks across temporal and spatial scales—to *maintain or rapidly return to desired functions* in the face of a disturbance, to adapt to change, and to quickly transform systems that limit current or future adaptive capacity.

(Meerow et al. 2016: 45, *my emphasis*)

If one concern is that there are *many* concepts of resilience and it is difficult to keep use consistent across contexts as, for example, Brand and Jax indicate (2007), another problem is that there are paradoxically too few concepts and that apparently, crucial distinctions become lost.

Under New Conditions, Different Kinds of Concepts

A few aspects of the discussion in which Holling originally engaged stand out. One is that the discipline of ecology was to a considerable extent *concerned* with stability. Understanding what made ecosystems stable and what could possibly destabilize them was a

central theoretical problem that was presumed to have considerable normative implications. No wonder, then, that there is interest in stability concepts generally (see Grimm and Wissel 1997).

Another aspect is the theoretical importance of the distinction itself. Making finely tuned distinctions between subtly different ways of understanding stability was a crucial part of achieving specific theoretical aims within ecology. It is precisely by distinguishing resilience from other stability concepts that the point can be conveyed; the relevant value is *resilience* and not *stability*, and, in fact, the pursuit of stability can be highly detrimental for preserving the resilience of some system, which in turn is associated with grave dangers.

A third is that these debates and discussions within ecology were carried out within a particular highly formalized and abstract space. It is theoretical work that only occasionally—and even then, quite weakly—connects to observations or data. Arguments frequently are presented as formal proofs. It exemplifies something akin to what Ian Hacking has called a *style of reasoning* (Hacking 1992). It is a way of conducting science and scientific enquiry with certain limitations and affordances, and one of those affordances is that it supports and encourages a conceptual apparatus with extraordinary precision.

Sustainability science presents itself as a different (inter-)discipline altogether. First, although this style of reasoning, or something approaching it, surely exists in sustainability science, it does not encapsulate any of the central debates in the same way. The interdisciplinary nature of sustainability science seems to prevent this from happening. Moreover, the transformative aims associated with sustainability science, and the ambition to be transdisciplinary, solution-oriented and relevant to policy (see e.g. Jerneck et al. 2011), generally mandate a different approach to, for lack of a better term, ‘the real world’. Knowledge is meant to be immediately applicable in concrete, practical situations. It is a solution-oriented science. This orientation is often taken to run counter to the values associated with sciences that heavily rely on formal frameworks; the grit of the street wears quickly on the pristine machinery of mathematics.

Second, even though there is no shortage of central debates and disputes within sustainability—consider the intellectual conflict over strong versus weak interpretations of sustainability—they are rarely as well-behaved or easily confined as the conflict over the SDH. Again, the interdisciplinary nature of sustainability science often makes it difficult to discern clear lines of conflict.

Third, resilience is an important concept in sustainability science but it is crucially secondary to other concepts, such as sustainability itself. The concept of resilience is *one way* of approaching sustainability issues and as such highlights some features of a situation while overlooking others. From an interdisciplinary perspective, two important forces act on sustainability science: one is the coalescence around some disciplinary core; the other is the expansion and inclusion of further disciplines. These may well happen at the same time but along different dimensions. Thus, as the field successively acquires the trappings of conventional disciplines in institutional terms, it can also become increasingly theoretically and methodologically pluralist as new disciplines attach themselves to the field (see Chapter 2 on *Interdisciplinarity*; see also Chapter 7 on *Scales* in this book). One consequence of this is that theoretical frameworks and concepts that functioned well under certain more limited interdisciplinary constellations become less serviceable as those constellations are altered.

Finally, as Brand and Jax (2007) point out, interdisciplinarity imposes specific requirements that may divert from what is otherwise desirable. They suggest that resilience is a *boundary object*, which functions to tie disciplines together by virtue of how it can be adapted to local needs and thus link scientific communities that may otherwise be difficult to bridge. Be that as it may, it appears one might just as well argue that, if ever conceptual precision was important, it is precisely so in interdisciplinary situations where the risks of misunderstanding are overwhelming (c.f. Thorén 2014; also Strunz 2012). What the concept undoubtedly can do, and is doing, is supply research questions and hypotheses that span disciplinary boundaries. It is a productive concept in this way. It provides tentative links between theories and phenomena that are otherwise the domain of disparate disciplines and thus can

direct attention toward, in the best of worlds, important problems the pursuit of which enrich our understanding of the world and how to make it more sustainable. In what way are social-ecological resilience, ecological resilience, psychological resilience, social resilience, and community resilience linked or distinct *as phenomena*?⁴ A consequence of thinking about the concept in this way is that it puts the onus on the phenomena rather than the concepts and thus somewhat relieves us from excessive emphasis on the latter (Thorén and Persson 2015; see also Carpenter et al. 2001).

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⁴ There are many examples of such work, two are Davidson (2010) and Adger (2000).

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CHAPTER 7

Scales

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Abstract

This contribution will focus on the politics of scales and their relevance for sustainability thinking and political action. Scales offer diverse points of observation on socio-environmental interactions and power relations. They have been traditionally conceived, by positivist science, as spatial relational levels that vary from the local to the global dimensions, in hierarchical order. More recently, poststructural interpretations have studied spatial phenomena and territoriality through more complex and dynamic articulations—in terms of multiscalarity, processual rescaling, ideological constructions, and contextual pathways for democratic, just, and sustainable transformations. This chapter focuses on two cases:

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a) on rescaling strategies deployed by Indigenous organizations in Ecuador in relation to the central powers to affirm the pluri-national identity of the state; and b) on a confrontation between standard scales produced by scientific practices in natural conservation and creation of a natural park and kinship scale based on the notion of ancestral lands, *tanindrazana*, of the Tsimihety, the main ethnic group in rural Northeast Madagascar.

Introduction

This contribution will focus on the politics of scales and their relevance for sustainability thinking and political action. The politics of scales inform sustainability science to focus carefully on peoples' institutions, territories, and territorialities as contingent levels of power interactions. Scales have been traditionally conceived, by positivist science, as spatial relational levels that vary from the local to the global dimensions, passing through intermediate levels such as the regional, national, and macro-regional scales produced by multiple practices and processes. Scales identify operational areas involving human and non-human relations across space, making special assemblages visible through artefacts, living beings, infrastructures, organizations, and symbolic meanings. More recent studies on feminist geopolitics (e.g. Smith et al. 2015) have described human bodies as smaller-scale forms of territory where agency, struggles, and violence occur. Moreover, scales have been defined not as ontological realities but as constructs: as dialectic, social, and political processes intersecting space (Delaney and Leitner 1997) and producing space (Swyngedouw and Heynen 2005). Therefore, a focus on scales is relevant to sustainability politics, inasmuch as it offers interpretations of narratives of power over people, spaces, and territories.

The discussion about scales allows us to focus methodologically on how things change across relational spaces, and to what effect, as they are rescaled by actors and institutions (Carr and Lempert 2016). The state scale has long been predominant even in contexts where state formations are characterized by multiple ethnicities, and as the level of operational power entitled to address

global challenges (e.g., climate change agreements and state-based implementation politics), although these would need diverse scales of action. Since scales reveal the operational settings of various actors, observing scales as processual and contingent levels of power interactions makes visible the relation between different institutional levels and social constituencies, and their rescaling configurations. The theme of this chapter contributes to the topic of the book by paying attention to Indigenous practices of scaling that are relevant in the making of the Ecuadorian nation-state and in creating people's own social orders, such as ancestral lands—as in the case of Tsimihety in Madagascar. The attention on Indigenous and situated scale making highlights different world views and knowledge about what people consider sustainable. The focus calls attention to power relations in planning and practices of sustainable projects and enlightens us of forms and practices of Indigenous politics.

In this chapter, we explore scaling in concrete situated practices in Ecuador and in Madagascar. First, we explore the concept of scale theoretically as a socially constructed and always ideologically and epistemologically produced concept. We continue to highlight, from these perspectives of scales: a) rescaling strategies deployed by Indigenous organizations in Ecuador in relation to the state powers; and b) a confrontation between standard scales produced by scientific practices in natural conservation and kinship scale of the Tsimihety, the main Indigenous group in rural Northeast Madagascar. Interpretations of multiscalarity, processual rescaling, and noticing ideologies of scale making provide conceptual and methodological contextualization for democratic, just, and sustainable transformations, and encourage acknowledgement that the same metaphors, such as ancestral land, can be used in various ways by different actors in different historical situations.

Theory: Scales as Hierarchical Ontology or Ideological Constructions?

Scale is one of geography's foundational concepts, but its meaning has recently developed further under the influence of

constructivist approaches in social sciences. For a long time, scale has been understood in relation to maps, as a mathematical relation between objects and cartographic representations in respect to the authority of quantification that sees calculation as a way of knowledge (Carr and Lempert 2016). In discursive terms, scale has been examined at different levels of analysis in which political processes are investigated—for example, local, urban, regional, national, and global—and organized along hierarchical orders that assign greater political and economic relevance to these levels in decreasing order from global to local. Constructivist approaches have challenged the idea of localities, regions, nations, and so on as pre-constituted objects. In other words, instead of considering the ‘ontological system of scales’ as a fix, analysts should look at their fluidity, multiplicity, and socially constructed nature, as Moore (2008) stated in his fundamental paper on scale politics as analytical concepts and categories of practice. As contingent social constructions, the observation of their processual practice allows the political constructions of scale to emerge (Delaney and Leitner 1997). Moreover, various scholars have contested the scaled hierarchies for creating ‘dubious labels or metaphorical tropes—“local”= static and authentic, “global”= dynamic and produced, etc.—to scales, and the places, actors and processes they link to them’ (Moore 2008: 212).

Clearly, scaling is not the effect of a neutral recognition but is a process imbued with ideology (see e.g. Gal and Irvine 2019). The specific scale positioning of certain actors is the contingent outcome of a process involving power relations over specific resources, areas, and peoples, and the ranking is reinforced through the institutionalization of administrative orders. As an example, the state is commonly conceived as corresponding to the national scale and to hold greater power than other regional or local administrative scales.

Feminist scholars condemn the positioning of home or the body at the lowest scale levels, especially since feminine bodies are confined within domestic spaces of householding and caretaking, considered non-political (e.g. Gal 2002); they argue that this is an

expression of oppressive patriarchy and that domestic subordination and violence are specific materializations of broader political structures and phenomena (Pain 2015). Critical scale discussions are also expressed by postcolonial scholars against the confinement of Southern studies as *local knowledge*, compared to the Western knowledge that is seen as *universal*. Against this heritage of imperialism, Chakrabarty (2000) calls for 'provincializing Europe', meaning that Europe can no longer be considered the centre of a global colonial order but needs repositioning at a lower, decentralized level together with a multitude of diverse sociospatial units. Ashish Kothari (2019) claims a necessary recognition of pluriversal knowledges and proposes a solidarity network and strategic alliance of radical alternatives to the dominant regime founded on capitalist, patriarchal, racist, statist, and anthropocentric forces.

Moore (2008) considers scales as having both conceptual functions and practical forms of political action. The former function is empowered by national and international statistics and by the consideration of local realities as pre-defined by the global positioning of the state in which they are located (e.g. in the international ranking based on GDP). No matter how global capital dominates pervasively worldwide, the international order is still politically defined as an assemblage of states, most commonly considered nation-states. Contrary to some propaganda, nation-states are not ontologically given, but contingent formations resulting from the political practice of nation making and state making, based on ideology and performed via infrastructural and symbolic efforts. The concept of rescaling, or scale-jumping (Smith 1992), defines the relationship between scale and politics as a struggle performed by certain groups to improve their political and economic positioning within a scale hierarchy. For Moore (2008), the hierarchical ontological model is politically regressive as it unhelpfully reproduces sociospatial inequalities and suffocates possibilities of resistance. In the way this model naturalizes the subordination of local administrative and other social assemblage levels to the state levels, it is used to oppose quests for political autonomy. This

same critique (of naturalized hierarchy and subordination) can be addressed to the *matryoshka* metaphor, where distinct arenas of space (containers) are mutual relations of containment, and whose relations are based upon a nesting hierarchy of ‘enveloping/enveloped’, rather than verticality (Herod 2008). Moore recalls different models such as the flat ontology of the sociospatial units proposed by the actor-network theory (ANT) and their network connections that support changes, while Ash’s post-phenomenological approach (Ash 2019) has deepened the conceptualization of space as human-world relations in their spatial appearance.

The recognition of diverse ontologies, as in mutual relations functionally delinked from other state-institutional orders, strengthens their political consistency. We will consider, as an example of flat ontology or flattened relations on an equal plane (Anderson et al. 2012), the scale politics used by the Indigenous peoples of Ecuador to decolonize the structural inequalities within the state. Moreover, we suggest looking at scales as epistemological, rather than solely ontological, realities. In another sense, scales are strategic configurations by which social groups (ethnic groups, territorial movements, political constituencies, etc.) find and communicate their common histories. As already anticipated, national scales as homogeneous identity levels are the most commonly used for political scopes.

The following sections will present two case studies based in two community areas, one in Ecuadorian Amazonia and one in Northeast Madagascar, where distinctive politics of scale are demonstrated. The two cases are situated, respectively, within the disciplinary areas of political geography and anthropology.

Rescaling of Plurinationalism in Ecuador as a Decolonial Strategy

This section presents examples of scale politics activated by Indigenous organizations of the Ecuadorian Amazonia, aimed at their territorial defence through the affirmation of the plurinational identity of the Ecuadorian state. Ecuador is a pluri-ethnic country

composed of 14 Indigenous nationalities and other ethnic groups. Their operational struggles have taken different forms: political organization, territorial claims, educational reforms, and language recognition, among other issues. In all these various areas, political activists within the Indigenous organizations have adopted *scale-jumping* and *network* strategies.

The independence of Ecuador (1821) did not mark a profound change in the sociopolitical, economic, and cultural situation of the majority of the peoples living in the country for a long time. The state remained ethnically divided, with the white-mestizos inheriting the ruling functions from their colonial predecessors, and maintaining the structures of injustice that discriminated against the rest of society. The policy of the Ecuadorian government toward Indigenous peoples was, throughout most of the twentieth century, one of cultural assimilation into what was called the 'national life' and of political and economic marginalization. The rural areas and Amazonian peripheries have been valued only as a reserve of natural resources, and the economy has invested in mining, oil, and forest extractivist projects. Territorial claims, environmental protection, and political self-determination are at the core of the struggles of Indigenous organizations and political movements. Against them, governmental policies, besides military occupation in ancestral forests, promoted the migration of many settlers from the densely populated highland and coastal regions to the Amazon, thus dispossessing the Indigenous peoples from much of their traditional lands. For the central government, the conservation of Indigenous territories was of marginal interest, less valuable than the state-project based on economic growth (Ortiz-T. 2016). Within its nationalist and modernist vision, cultural diversity was seen as a backward attribute; on the contrary, formal schooling was used as a powerful vehicle of national assimilation that led to a rapid language shift from Amerindian languages to Spanish (King and Haboud 2002).

In the 1980s, Indigenous communities began *escalating* their political strategy into national formations that finally enabled them to relate as peers to the Ecuadorian state. This strategy has been

enacted by Indigenous leaders through political relations with national leftist parties, and with NGOs and international organizations, based on the consideration that their local struggles were of global concern. Their politics of scale was multiform and combined local ancestral territoriality with national mobilization and international advocacy. Moreover, strategic rescaling was enacted at least through three strategic modalities: 1) cultural-ideological, 2) political-administrative, and 3) structural-constitutional.

The first modality has proceeded via recognition of some ethnic groups as ‘nationalities’, when they could claim specific ancestral territories, cultures, and languages. The national language passed through projects of language reconstruction: for example, with the creation, in 1981, of a standardized written Kichwa language, *Kichwa unificado*, with the purpose of increasing literacy within the Kichwa communities of the Andes and Amazonian regions. This project has supported the maintenance and revitalization of the language, although it also engendered a debate on its authenticity and the risk of losing its diversity. Another example is the UNESCO contribution to the revitalization of the Sápára language from extinction (UNESCO 2008).

The second modality, political-administrative, was performed through the creation of national confederations of Indigenous and ethnic organizations: at the regional levels (Confederation of Indigenous Nationalities of the Ecuadorian Amazon: CONFENIAE, Confederation of Peoples of Kichwa Nationality of the Andes: ECUARUNARI, and Confederación de Nacionalidades y Pueblos Indígenas de la Costa Ecuatoriana: CONAICE); and then at the national level, through the Confederation of the Indigenous Nationalities of Ecuador (CONAIE). While the collaboration of local organizations is a *horizontal-network* strategy, the CONAIE umbrella represents a *matryoshka* formation of spatial, ethnic, and political containers. Other, more strictly political formations, such as the Organization of the Indigenous Peoples of Pastaza (OPIP), have added complexity to the institutionalization arena: OPIP was important for having organized a historical march of Indigenous peoples in 1992, from Pastaza to Quito, for the

recognition of their territorial rights, and for being present in national elections and Parliament (Ortiz-T. 2016). However, CONAIE has maintained the most influential role, including in the recent national strike of October 2019.

Finally, the structural-constitutional strategy is visible in the process leading to the 2008 Constitution, in which CONAIE was able to negotiate the declaration of Ecuador as an intercultural and plurinational state with the government. Respecting this principle would involve a deeper restructuring of the state in decolonial terms, recognizing equal rights to all the diverse ethnic groups living in the country, and self-determination in the national territories. Interculturalism is also a fundamental principle in the quest of decolonizing the formal state schooling, as opposed to cultural assimilation; it implies the autonomy of district units and place-based education, carried out at the local level, as the principles of *buen vivir* would suggest. However, CONAIE and all activists claim that this principle is still on paper, and that the pathways of recognition have moved backward since 2008 because of deep political conflicts caused by a financial crisis and a re-acceleration of state-led extractivism (see Chapter 17 on *Extractivisms* in this book).

Standardized and Kinship Scales in Rural Northeast Madagascar

This short ethnographical comparison will illustrate people's engagement on an ancestral land whose scaling processes cannot be reduced into single hegemonic relations—for example, local—global or scales of nature, such as vegetational or elevational zones produced by scientific practices. In Northeast Madagascar, the 55,500-hectare Marojejy National Park was established in 1998 in order to protect Madagascar's rare and endemic species and make environmental conservation efforts economically sustainable. The park was initiated by the World Wildlife Fund (WWF) and funded by development and conservation agencies such as Kreditanstalt für Wiederaufbau (KfW), a German invest-

ment bank, and the Center for Biodiversity and Conservation of American Museum of Natural History (Goodman 2000: viii–1, Kull 2013: 146). The park area, where only paying visitors could enter, was determined by the results of a scientific inventory conducted by 25 WWF experts from Andapa and Antananarivo. People, mainly Tsimihety ethnicity, living in the vicinity of the park were recruited as assistants and porters. The scientific group carried out large-scale biological and elevational inventories and used geographical positioning systems, discussions with locals and various mapping techniques at different sites of investigation (Goodman 2000). With concepts such as topography, elevation, and temperature, the enquiry implied that the scale-making project favoured a universalized standardization system in which different places or areas could be compared based on their diversity and rareness of species that inhabited the area, determined by expert knowledge based on the natural facts of experts and scientists. This is the stabilized, standardized and objectified scale that tends to erase different knowledge and perspectives (Ellen and Harris 2000; Gal and Irvine 2019). The people living in the vicinity of the park were not sure what was going on as it was being established. Further, as the park area was enclosed and only people paying fees or working for the park could enter the area, local people were puzzled as to what the park was about.

Biodiversity discourse can be used as a resource for environmental politics, and it is one way of encompassing the local within the global, with its imperial gaze emphasizing a Euro–American nature (Sodikoff 2012: 88; Tsing 2005: 93–4, 158). Placing Madagascar’s nature on a global scale allowed the Malagasy state to attract transnational and bilateral funders who provided millions of dollars and euros through bi- and multi-lateral development and environmental conservation agencies (Kull 2014: 146). In eight years (2003–2010), Madagascar, following the guidelines of the United Nations and the IUCN, Madagascar tripled the area of environmental conservation and met the 10 percent requirement of areas under protection (Corson 2014: 193).

The Tsimihety swidden and irrigation farmers, who also cultivate vanilla and coffee, have historically moved around the inland of Northeast Madagascar in order to flee the enforcement of state policies. They have maintained their autonomy by cultivating land, building houses, and establishing clan tombs. According to one narrative, a man went to a village to visit his sister; the sister told the brother to clear some forest (*atiala*) in order to cultivate land (*tany*). In the village, the man met a woman and they had had four children together. When he died, his family buried his body in the family tomb located in another village further west from the village in which he had previously lived.

When people move to a new site, they do not lose their ties to previous places. After they have successfully established fields and houses and maintained good connections with their relatives by visiting and remembering each other, a certain place becomes imaginable as a branch of the kin group and their ancestral land (*tanindrazana*) (see also Bloch 1971; Keller 2008; Lambek and Walsh 1997: 317). The scale of ancestral land was not homogeneously occupied territory but expanded through relations with people in certain places. This required an understanding not only of physical geography but also of kinship relations: how they were created, maintained, and possibly broken. One's relations with one's ancestral land became significant in proving one's land ownership. Here the scale is not merely a strategy but a life that is lived in realities produced in political, historical, and economic processes and dynamics.

The metaphor of the 'land of ancestors' became relevant in national politics as it was used to mobilize people against the former president, who wanted to rearrange the use and ownership of the land by leasing 1.3 million hectares to the South Korean company Daewoo for 99 years. The company wanted to cultivate palm oil and maize for sale and South Korean domestic consumption. In the coup d'état in 2009, the opposition used the metaphor of 'ancestral land' and, ultimately, the project was cancelled (Vinciguerra 2013). With these acts, the opposition 'nested' all different ancestral lands into the Malagasy state and nationality.

As can be seen, a researcher must be aware of the similarities and differences when different actors refer to and use the notion of ancestral land.

Conclusion

Politics of scales inform sustainability science to focus carefully on peoples, institutions, territories, and territorialities as contingent levels of power interactions. Paying intensive attention to specific contexts of political agency allows us to observe that scalability and scale making are, in the end, world-making projects in which people scale, organize, interpret, orient, and act in their worlds (Carr and Lempert 2016; Tsing 2012: 505). These cases from Ecuador and Madagascar inform discussions on sustainability, promising liveable futures for all by demonstrating the strategies, practices, and negotiations of different people in historical and ongoing structures of political economy, power, and politics.

Sustainability studies, as a scientific effort, should pay attention to the scales on which it operates and what knowledge and scientific practices those scales enable and, conversely, hinder. As a multidisciplinary practice, sustainability science requires careful discussion on what scales promote its aim to create a more liveable world for as many as possible: humans, animals, plants, and earth beings, in diverse assemblages, locations, and processes.

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CHAPTER 8

Nuclear Awareness

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Abstract

Nuclear awareness means the critical assertion of the complex phenomenon of nuclear energy and its societal impact. Beyond academic enquiry, nuclear awareness aims to enhance critical societal assessment skills on nuclear energy-related issues in the context of sustainable development. In other words, nuclear awareness is a set of skills, related to nuclear knowledge, that is based on information or experience and triggers critical thinking on the nature of nuclear energy, nuclear agendas, and the opportunities and risks involved. This chapter argues that nuclear awareness is a multi-sided interpretation of national/global nuclear policy, the technological aspects of the nuclear industry, and the nuclear culture components. Using the narrative toolkit of the contemporary

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nuclear discourse, this chapter analyzes nuclear fiction by focusing on the Chernobyl nuclear disaster. It analyzes the apprehension of oppositional views on nuclear energy and societal responses to nuclear power challenges within the frame of the global environmental crisis and climate change.

Introduction

The study of nuclear awareness and nuclear humanities are in the heart of the humanities and social sciences aspects of sustainability studies because they study the history between humanity and nuclear energy as well as being concerned about energetic future scenarios. Similar to other important aspects of sustainability sciences, nuclear awareness studies aim to engage the public and create a discursive field about the social, political, and ethical issues related to nuclear energy and nuclear issues. Equally importantly, nuclear awareness studies aim to foster responsible decision making when it comes to nuclear energy in the context of sustainable development.

Nuclear energy has played a controversial role in recent human and environmental history, and societies' relationships with nuclear energy have been highly controversial. Over the past century, nuclear energy has created some of the most dramatic humanitarian and environmental crises, such as the Three Mile Island (1979), Chernobyl (1986) and Fukushima (2011) disasters. At the same time, nuclear energy has been incorporated into the energy mix of major industrialized nations. It is still unclear *whether* nuclear energy will contribute to sustainable development and, if so, *how* nuclear energy will be integrated with the Sustainable Development Goals. Today, one of the critical debates of the environmentally focused social sciences is how to interpret the role of nuclear energy in human cultures.

The UN 2030 Agenda for Sustainable Development is a global commitment to eradicate poverty and achieve sustainable development by 2030, and it contains 17 Sustainable Development Goals (SDGs). Several of the SDGs refer to nuclear energy and

nuclear issues. Generally speaking, the Agenda aims to generate a balanced and unbiased perspective on nuclear energy as one of the key elements in our energy-driven society (SDG 7, Affordable and Clean Energy). The Agenda also regards nuclear power as an alternative source of energy to achieve high-living standards and good health (SDG 3, Good Health and Well-Being), and to decrease greenhouse gas emissions and combat climate change (SDG 13, Climate Action). Although nuclear energy is an integral part of the SDGs and the global energy mix, it is highly contested and heavily criticized. According to the International Atomic Energy Agency (IAEA), ‘irrespective of the sustainability benefits of nuclear power, its contribution to sustainable development might be severely constrained in the absence of public support’ (Nuclear Power and Sustainable Development 2017). This is why nuclear energy and the related societal issues require critical reconsideration from the perspective of situating our energy dependence within sustainable futures.

The study of nuclear awareness aims to contribute to the essential debate about society and nuclear energy. To do so, it includes critical thinking on and understanding of nuclear technology, the nuclear industry, and nuclear politics. It studies the possible benefits, risks, and challenges of nuclear energy and contributes to a critical perception of nuclear energy issues. Nuclear awareness is a scientific tool to develop critical societal assessment skills on nuclear energy-related issues in the context of sustainable development.

The objective of this chapter is to map out a complex research field of nuclear awareness studies. This field aims to assemble knowledge on all aspects of nuclear power, such as the history of nuclear technology, lessons learned from nuclear disasters, the role of nuclear technology in sustainability, and nuclear waste management. This chapter provides an overview of the history of nuclear awareness and focuses on the role of nuclear fiction in the context of the sustainability debate. Lastly, it investigates one of the most devastating and frequently dramatized nuclear disasters in history: Chernobyl.

History of Nuclear Awareness

During the 1970s and the 1980s, a growing number of nuclear power plants were built globally, and societal debate swinging between rejection and acceptance of nuclear energy (Aref 2018) intensified in most industrialized countries. This discussion built on an already-existing societal fear and anxiety about a possible Cold War nuclear conflict between the post-World War II superpowers, the USA and the USSR. Soon, a wide array of societal actors responded to the perceived growing threat of nuclear power. Parallel to this growing societal discourse, the social sciences responded to analyze and interpret nuclear energy as a societal phenomenon via multidisciplinary discussions on a wide array of nuclear issues, including nuclear weapons, nuclear technology and nuclear energy policy (Blouin and Shipley 2014).

As part of the complex and escalating socio-scientific debate on nuclear issues, political and scientific actors emphasized the role of education in avoiding future nuclear conflicts, stressing that educational curricula should address rather than reinforce the fears that already existed, while opponents of the initiative expressed their fears that children would be exposed to leftist indoctrination and political fear-mongering. Speaking to the American Federation of Teachers in July 1983, President Ronald Reagan said the initiative seemed ‘to be more aimed at frightening and brainwashing American schoolchildren than at fostering learning and stimulating balanced, intelligent debate’ (Kreienkamp 2014).

The notion of ‘nuclear awareness’ was coined by the Durham Region community (the east of Toronto, Canada), where nuclear education was in the centre of the curriculum during the late 1980s and 90s. After the Chernobyl nuclear power plant explosion (26 April 1986), a group of activists responded to the need of the Durham Region community to discuss, learn, and share information about nuclear issues. Durham is home to the Darlington and Pickering nuclear generating stations, and this made the local community very sensitive to nuclear issues and keen on being informed about the nuclear situation in the region. Local conditions encouraged activists to raise awareness about nuclear

issues, particularly the risks faced by the communities of Durham Region as well as the possible risks to the entire Greater Toronto Area (Durham Nuclear Awareness n.d.).

The end of the Cold War and the demise of the Soviet Union changed the global rhetoric on nuclear weapons, changing the focus to nuclear technologies and nuclear energy policy. Nuclear anxieties shifted to nuclear geographies after the Chernobyl disaster in 1986, and so encompassed the experiences of nuclear accident survivors and the creation of exclusion zones. (Alexis-Martin and Davies 2017). With the dissolution of the USSR, the danger of nuclear weapons did not end completely. Although post-Cold War generations did not grow up in a hysterical climate about nuclear annihilation, the interconnection of security, disarmament, and nuclear weapons remained of importance for shaping the image of nuclear energy. Nuclear awareness and the ability to debate nuclear issues have been urgent because of the threats of nuclear weapons, the possible malfunctions of nuclear plants, and nuclear waste deposits. For example, in 1994, US Secretary of Defense William J. Perry made the reduction of the danger of nuclear weapons his top priority. Perry was especially concerned about the thousands of nuclear bombs still remaining in the area of the former Soviet Union (Perry 2013). Nuclear issues were at the core of the 2007 Nuclear Security Project, spearheaded by William J. Perry, George Shultz, Sam Nunn, and Henry Kissinger (Nuclear Security Project 2007). The goal of the project was to promote actions to reduce the number and the danger of nuclear weapons, with the ultimate goal of eliminating them. This initiative eventually contributed to the 'New START' treaty in which the US and Russia agreed to reduce the number of deployed nuclear weapons. Further this initiative was supported by two Nuclear Summits, designed to take better control of nuclear wastes. Under such circumstances, and in response to the growing threat, the emphasis was on a new initiative to raise the awareness of citizens about the nuclear dangers they face and what actions they could take to lower those dangers. Under the sponsorship of the Nuclear Threat Initiative (an NGO in Washington, DC), William J. Perry's project included a memoir, titled 'A Journey at the Nuclear Brink',

and the creation of education programmes specifically directed at younger generations, who had not personally experienced the nuclear crises of the Cold War generation (Perry 2013).

In the 2010s, as a result of the Fukushima Daiichi disaster (11 March 2011), the nuclear awareness concept attracted scholars and drew significant public attention again. While talking about the regulations of the Exclusion zones at a UN event in New York City (23 March 2013) and stating that ‘Evacuation zones/planning are inadequate all over the world’, Dr. Maureen McCue (MD, PhD, Physicians for Social Responsibility) spoke on nuclear awareness, referring to the activity of the Durham Region community about spreading the evacuation regulations in the case of a serious accident involving a large release of radioactivity. Thus, the initiative to raise nuclear awareness at both public and academic levels entered a new stage—referring to critical-thinking skills on nuclear-related issues through the means of risk communication and health communication while figuring out a new scenario of raising nuclear awareness in the digital world.

In 2013, Yuko Gulda, a musician and a peace ambassador—who, together with Friedrich Gulda, has been involved in the struggle against atomic weapons—launched the initiative of Nuclear Awareness Days to commemorate the victims of the nuclear bombing of Hiroshima (1945) and Nagasaki (1945) and to call for the prohibition of all nuclear weapons and other weapons of mass destruction. She explained the drive to launch the initiative as a need ‘to be aware of what we can and must do if we ever hope to live in a weapon-free world’, adding that neither economic nor political means have been able to achieve this (Genbaku No Hi website).

David P. Barash, an evolutionary biologist and a Professor of Psychology at the University of Washington, stated that:

Nuclear Awareness Days ... would give us an opportunity to meditate on not only the terrible reality of what transpired in 1945, but to condemn the world’s worst weapons before they are used again and even, with luck and perseverance, to generate momentum toward eventually eliminating them. Nuclear Awareness

Days is an opportunity to reflect not only on what has happened but also what might yet be achieved.

(Barash 2014)

As a continuation of the initiative, joining people around the world in celebrating the vision of a world free of nuclear weapons, raising awareness, and calling on their leaders to advance nuclear disarmament, the UN General Assembly established 26 September 2013 as the International Day for the Total Elimination of Nuclear Weapons (in commemoration of the night of 26 September 1983, when Stanislav Petrov disobeyed military protocol and probably prevented a nuclear holocaust) (Unfold Zero 2015).

Together with the UN General Assembly's first resolution (1946)—aiming to make proposals for controlling nuclear energy and eliminating atomic weapons—the International Day of Total Elimination of Nuclear Weapons was supposed to reaffirm the world's commitment to global nuclear disarmament as a high priority. This initiative was aimed at educating the public—and mainly, leaders—about the real benefits of eliminating such weapons, and the social and economic costs of perpetuating them. It was the right place to address one of humanity's greatest challenges: achieving the peace and security of a world without nuclear weapons (United Nations n.d.).

All these events emphasized the need for nuclear awareness, and enhanced public awareness and education about the threat posed to humanity by nuclear weapons and the need to reconsider the current and future-oriented nuclear and radiation related issues (Global Nuclear Awareness Program, 2021). Such steps can help to mobilize new international efforts toward achieving a nuclear-weapon-free world and using nuclear energy for a sustainable future.

Fiction in Shaping Nuclear Awareness

Nuclear fiction and nuclear narratives are critical elements of the nuclear awareness notion. Via these stories, a wide spectrum of

voices can be heard about nuclear accidents, disasters, and the human and natural drama associated with them. Nuclear fiction helps to access and deal with nuclear anxiety and to build society-wide nuclear awareness. According to Julie Williams, ‘the importance of narrative and how the stories we tell about our nuclear past and possible nuclear futures reveal how we as a society deal with the use of nuclear weapons’ (Williams 2014). The same statement is related to the narrative about the use of nuclear energy within the energetic history, where energy is the only universal currency (Smil 2017).

Regarding the semantic definition of the factual/fictional balance in any narrative, where ‘factual narrative is referential whereas fictional narrative has no reference’ (Schaeffer 2014), nuclear fiction, as a part of and a contributor to nuclear narrative, amalgamates both factual and fictional components. This amalgamation of the factual/fictional components distinguishes the nature of nuclear fiction as itself. The approach of combining factual and fictional components diminishes the distinction between ‘the fact’ and ‘the imagined event/virtual construction’ (Derrida 1984) by ‘factualizing’ nuclear fiction, which results in mistaking fiction on nuclear energy and nuclear-related issues for a factual narrative. This approach reflects the poststructuralist perspective on the fact/fiction dichotomy, where ‘every (narrative) representation is a human construction’ (Sugiman et al. 2008). According to Schaeffer, every narrative is ‘a model projected onto reality’—that is, being based on ontological realism, narrative discourse that does not disqualify ontological realism nor the distinction between fact and fiction (Schaeffer 2014).

In the case of the ‘nuclear energy’ narrative, the fictional and the factual components are so amalgamated that the factual component is the basis for making the nuclear narrative a fictional one, resulting in the process of fictionalizing facts, where the factual component is a background for storytelling (Banks and Banks 1998), but one that has the possible risk that the literary techniques may not convey the factual information (Murthy 2014).

On one hand, nuclear fiction, with its factual component as background, can be regarded as an archive of facts, based on memoirs and documents, but on the other, nuclear fiction can be a tool for providing basic nuclear literacy information (e.g., nuclear technology, nuclear policy, and nuclear risk behaviour).

Chernobyl is a symbol of nuclear annihilation and the end of humanity. This is a key notion within the global nuclear narrative because it is not only the nuclear explosion at the Chernobyl nuclear power plant (25 April 1986). Chernobyl created its own school of thought and its own field of nuclear awareness/literacy study associated with ‘the Chernobyl Syndrome’ (Novikau 2017). The disaster at Chernobyl gave birth to a nuclear narrative with a real impulse and allowed narratives to create ‘fabulously textual’ images of the nuclear correlations with a real event and a real area reference of its implementation: ‘With the cancerous proliferation of nuclear capacities, exacerbated by political rhetoric’, nuclear narrative amalgamated the fictional and factual components by making ‘the real world as its site of interrogation’ (Blouin and Shipley 2014).

The fictional writers of the post-Chernobyl Age mainly try to confirm the factual nature of nuclear events by weakening Derrida’s ‘fabulously textual’ nature (with its language coding and decoding) of nuclear narrative. They stress the commonly evident comprehension of the aftermath of the tragedy while focusing on human and societal transformations caused by the nuclear plant explosion, together with depicting the ecological problems of the region that suffered the nuclear disaster. Chernobyl fiction (Pavlyshyn 1991), where the issues of the Chernobyl accident were raised under a fictional storytelling cover, varies with the different levels of using memoirs, represented in the forms of eyewitnesses’ memoirs, reconsidered eyewitnesses’ memoirs and intergenerational trauma memory of the events (Welz 2016).

The factual component here is reconsidered by the writers covering the past event (the Chernobyl explosion and its aftermath) through the perspective of their present feelings and thoughts about the past, with an attempt to digest the contemporary ‘energy

narrative' concerning the political, social and ecological dimensions, from the position of such a traumatic experience. Used as a component of fiction, such factual inclusions are related to the eyewitness's memories, notes, and written evidence about the Chernobyl nuclear power plant (NPP) disaster and its short/long-term aftermath, represented by the writers themselves or based on rereading eyewitnesses' evidence. The distinguishing feature of such memoirs (eyewitness evidence) is the 'factual' component of a text, claiming the authenticity of narrating the past.

In the literary representation, these 'factual' components of the fictional writings depict protagonists' sympathy, fears, dreams, disappointment, uncertainty, and hopes when covering the factual information. The literary techniques allow writers to express the facts by creating a range of emotions related to nuclear energy issues. Fear and uncertainty, based on the lack of information and awareness and on the lack of crisis situational regulations ('*The invisible cloud was greeted with confusion and panic*' (Pohl 1988)), enlarged the unknown, uncontrolled danger ('*He wondered if anyone had told those firemen that it was not only heat and smoke and burns they faced, but the invisible, lethal storm of radiation that billowed up at them with the smoke*' (Pohl 1988)) and created the image of radiation as an invisible monster ('... *the invisible monster had slipped away, leaving them ignorant of its size and intensity. Their measurements revealed only its tail*' (Higginbotham 2019)).

In their amalgamation, such components of emotionally coloured 'factual' parts in a personal (even individual) perception not only represent the historical and material context of the events but also provide the coverage of social and cultural components and clarify public opinion on the nuclear accident while presenting a full picture of the event. At the same time, however, the uncritical approach to using the factual components of memoirs can be quite dangerous, although even the personalized and biased notes and comments in eyewitness memoirs can serve as a valuable source of information, revealing the premises and causes of a nuclear event, as well as the practices of shaping the false image of a nuclear event and revealing the truth. Such personal writing

practices helped to reveal what happened before, during, and after the accident at the Chernobyl NPP, despite the secrecy level of the nuclear energy sector. The nuclear fiction about this nuclear disaster is a result of amalgamating the fictional component with archives, memoirs, and interviews, which provide participants' names, pre-/post-explosion conversations, the numbers of the real death toll, the scale of the disaster's consequences, and potential health risks of radiation exposure, later followed by the nuclear phobia, distrust, and uncertainty that resulted in Chernobyl Syndrome (radiophobia, reluctance and opposition to nuclear energy stemmed from the disaster at Chernobyl NPP; Novikau, 2017). Such an amalgamation of facts, data, documents, archives, and fictional storytelling makes nuclear fiction a source of the nuclear disaster's details and its aftermath with further steps toward nuclear literacy. Accompanied by the emotionally coloured and biased storytelling about the nuclear event, this factual component makes readers believe in the factual nature of the fictional text by creating the so-called 'shared experience' of nuclear events.

This way of narrowing the factual component to the real places, dates, names, organizations—framing the 'realia' background of fictional—not only shapes the emotional and cognitive colouring of a factual nuclear narrative but also transforms fiction into non-fiction by erasing the border between them. Using a 'factual' component in nuclear fiction helps to reveal the geopolitical and ecological factors of energy policy at various levels as a step toward further rereading the energetic history of humanity. By providing the factual information, nuclear fiction on the Chernobyl NPP explosion not only frames the narrative tools to depict a landmark technological catastrophe but also allows humanity to reconsider the 'Atom for Peace' initiative against political, technological, ecological, and cultural agendas in its fictional implementation. This factual component of nuclear fiction transforms 'literary' Chernobyl into an intellectual, cultural, and international part of the world's energetic history. The spatio-temporal components of the novels shape the factual setting of the narrative—the nuclear one in this case. Including the details of the nuclear disaster and its

aftermath contribute to framing the nuclear history, fundamental knowledge of nuclear technology, and nuclear risk culture and, as a result, nuclear fiction (Chernobyl fiction, in our case) becomes not only a pool of archival data on the nuclear disaster but also contributes to shaping the readers' nuclear awareness.

On the other hand, amalgamating the fictional and factual components of nuclear narrative encourages the situation under which the narrative, framed by factual settings, needs fewer fictional details (represented by a narrator's or a protagonist's point of view) while making readers easily manipulated. However, such a subtle combination of factual and fabulous components about nuclear events is a distinguishing mark of nuclear fiction.

Conclusion

To sum up, nuclear awareness goes beyond the borders of traditional academia and reaches the public to enhance nuclear knowledge and narrate nuclear energy in its various controversial perspectives. It allows academic and societal actors to aim to be unbiased when considering nuclear power, as well as allowing the public to assemble knowledge on nuclear issues and sustainability. Subsequently, it contributes to a better understanding of global energy production and may help in reducing carbon emissions from fossil fuels by using alternative energy sources.

Understanding the narrative tools of nuclear awareness can enable critical thinking about the fictional and factual components of nuclear narratives as well as reconsideration of current nuclear agenda, and the opportunities and risks involved. The multidisciplinary approach that brings together 'nuclear knowledge' and fiction/non-fiction illustrates how narrative mechanisms and modes can contribute to shaping the system of values, preferences, behaviours, practices in energy-dependent and technology-driven societies on their way to achieving the SDGs. The focus on the literary implications of nuclear energy likewise helps to shape nuclear awareness and to understand the narrative perspective on the energetic history of humanity and future energy scenarios.

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CHAPTER 9

Eco-anxiety

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Abstract

The difficult psychological impacts of environmental problems, which are often called eco-anxiety, can be so heavy that they paralyze people and hinder sustainability efforts. The most often-discussed phenomenon of this kind is climate anxiety, generated by the threat of the climate crisis and the various pressures included in it. In this chapter, I analyze variations of eco-anxiety and climate anxiety and discuss how they could—or should—be taken into account in sustainability studies. There is a need to differentiate the various emotions linked with eco-anxiety, such as grief and guilt, since constructive encounters of these emotions require different strategies. A novel kind of national survey about climate emotions, conducted in Finland in 2019, is introduced and discussed in relation to this theme. Interdisciplinary deliberation is needed because many factors shape the experiencing and

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processing of these emotions and anxiety. At its best, eco-anxiety can function as ‘practical anxiety’, in which troubling uncertainty leads people to gather more information and re-evaluate their actions.

Introduction

I’ve definitely disengaged with environmental issues a lot over the last few months just because it’s so stressful and overwhelming as well to think about. ... I don’t see a future...

Just being involved with the issue of climate has brought about periods of depression for me. And something else that’s been hard to deal with is experiencing activist burnout and not being able to do anything. Which is really hard because that disassociates me from my identity because being an activist is where I feel like my place in the world is.

Examples of people’s comments about their
eco-anxiety (Kelly 2017: 20)

The psychological weight of the ecological crisis can be so great that people lose their capability to act, and their well-being decreases. This brings several challenges to sustainability studies. First, efforts to increase and maintain sustainability are doomed to fail if people are paralyzed by anxiety and depression. Second, those working in sustainability studies or professions belong to groups of people who have been recognized as especially vulnerable to eco-anxiety and climate burnout (van Susteren and Coyle 2012; Pihkala 2020a). In other words, to use the key terminology of this volume, the ways in which the knowledge of sustainability advocates and scholars is situated include affective dimensions that can either hinder or enhance their resilience. Thus, a greater understanding about these phenomena, and more attention to skills that enable people to live with them, are important to anyone interested in sustainability issues.

In this chapter, I discuss the psychosocial impacts of the environmental crisis, especially those commonly called eco-anxiety and climate anxiety. I analyze eco-anxiety from a multidisciplinary perspective that combines psychological and social perspectives,

which places my discussion in the field of psychosocial studies. Efforts to combine psychological and social studies in relation to the ecological crisis and the climate crisis have been on the rise since the 2010s (see Adams 2016; Hoggett 2019). I claim that the humanities have much to contribute to such studies since they have a long tradition of exploring various facets of human behaviour.

Varieties and Dimensions of Eco-anxiety

In scholarly literature, eco-anxiety has been defined as ‘a chronic fear of environmental doom’ (Clayton et al. 2017: 68) and ‘the generalized sense that the ecological foundations of existence are in the process of collapse’ (Albrecht 2012: 250). These definitions link eco-anxiety with a general worry, fear, or anxiety. Scholars point out that eco-anxiety is fundamentally not an anxiety disorder: it is an understandable reaction to the severity of the ecological crisis. However, there may be cases where eco-anxiety is so strong that mental health support is needed (Doherty 2016; Manning and Clayton 2018; Pihkala 2019a).

Eco-anxiety is a contemporary form of the phenomenon where the state of the world, sometimes called macrosocial factors, affect a person’s emotional well-being. Nuclear awareness, which was discussed in a previous chapter of this book, is an earlier example of a roughly similar phenomenon. These forms of awareness—ecological/ climate awareness and nuclear awareness—actually overlap in significant ways, as has been posited by the eminent psychologist Robert Jay Lifton (2017). Both are related to the possibility of extinguishing human life and many planetary life forms, and both require the support of ‘witnessing professionals’ (Lifton 2017)—scientists of related fields—to enable social changes.

The word anxiety is commonly used to refer to many kinds of phenomena, and awareness of these various manifestations helps us to understand eco-anxiety. Much discussion centres on anxiety as a mental health concern, often in the forms of anxiety disorders. Another strand of research focuses on existential anxiety, which means anxiety about fundamental concerns in life, such as mortality, guilt, and finding a sense of meaning. Yet another

discourse approaches anxiety as an emotion that is related to practical situations in which an individual or a group feels problematic uncertainty (Grupe and Nitschke 2013).

Eco-anxiety can manifest in any of these three forms, and it often manifests as a combination of them (Pihkala 2020b; Pihkala 2018). It can result either from direct or indirect exposure to the ecological crisis. If the results of ecological problems are experienced in the forms of intense and direct somatic and psychic impacts, such as in the case of natural disasters that have been intensified by climate change, the mental health impacts are usually more severe and sudden (see also Chapter 12 on *Disaster Recovery (After Catastrophes)* in this book). In these cases, there can be strong anxiety symptoms, as well as post-traumatic stress and other complications (Clayton, Manning and Hodge 2014; Clayton et al. 2017). The relations between cause and effect are also easier to study in these cases. However, it has become evident that mere news, knowledge, and fears about ecological problems can be enough to cause anxiety because the global environmental crisis is so threatening (Reser, Morrissey and Ellul 2011; Davenport 2017; Pihkala 2020a). For example, there can be anxiety or despair simply because the Sustainable Development Goals (SDGs) seem so difficult to reach in a world undergoing multiple crises (for a case example, see Heglar 2020; for discussion of the relation between mental health and SDGs, see Dybdahl and Lien 2017).

Many phenomena can cause eco-anxiety—for example, loss of biodiversity, climate change, and loss of certain species or places. Mental health impacts arising from damage to places that a person holds dear are sometimes called solastalgia: a combination of solace, nostalgia, and desolation. The concept was invented by Australian environmental philosopher Glenn Albrecht in order to describe the homesickness and nostalgia that a person may feel, even while still living at home if the environs of their home are damaged or destroyed (Albrecht 2019). Some scholars prefer to use the term distress to describe phenomena that others label anxiety (Randall 2019).

The most prevalent form of eco-anxiety seems to be climate anxiety: anxiety that is significantly linked to anthropogenic climate

change (Ray 2020; Pihkala 2019a; Ojala 2019). Climate anxiety is a peculiar combination of indirect and direct impacts. In many Western countries, the geophysical impacts of climate change are still mild compared to other parts of the world, although they are rapidly becoming more severe. In the Nordic countries, climate anxiety is mostly the result of indirect impacts of climate change: it is based on risk perception on the basis of scientific knowledge and media coverage (cf. Hyry 2019). However, the already-changing seasons in the North bring direct impacts and often seem to worsen anxiety (Pihkala 2020c).

There are certain factors that make a person, or a group, more vulnerable to eco-anxiety. These include young age, high exposure to physical environmental problems, and strong exposure to disturbing news about the ecological crisis. Women identify more difficult emotions than men (Hyry 2019; Berry et al. 2018; Pihkala 2019a.; cf. Clayton and Karazsia 2020). Sustainability professionals and environmental activists suffer from increased eco-anxiety, although they also have certain special resources that increase resilience, such as a sense of efficacy (Fraser et al. 2013; Pihkala 2020a).

Psychosocial factors influence people's experiences of eco-anxiety in profound ways: they may either encourage recognition of it or promote distance to it. Due to peer pressure, there may be denial or silencing of eco-anxiety (Stoknes 2015; Norgaard 2011; Norgaard and Brulle 2019). The article collection edited by Hoggett (2019) shows well the complexities and ambiguities that numerous people experience in relation to ecological emotions and climate change. For example, many sustainability professionals struggle with the threat of cynicism in the long run, and there are profound difficulties in encountering all the feelings of grief and loss that ecological literacy brings.

Emotions and Eco-Anxiety: Discussion and Case Examples from Finland

In order to understand the wider phenomena related to eco-anxiety, there is a need for a study of various emotions, affects, and moods. The study on 'ecological emotions' is a relatively new

but rapidly growing inter- and multidisciplinary field (Albrecht 2019; Bladow and Ladino 2018; Pihkala 2019b). Several emotions emerge as crucial for understanding eco-anxiety: these include fear, frustration, anger, guilt, and grief.

One of the first national surveys related to these phenomena was the Climate Emotions Survey in Finland in summer 2019 by Sitra, the Finnish Innovation Fund (Hyry 2019), and I will present case examples from it in my discussion. I personally participated in the preparation of this survey as an academic expert, together with climate psychologist Kirsti M. Jylhä. Kantar TNS carried out the survey, and over 2000 Finns were interviewed. The survey included many kinds of questions, which enables various analyses of the data, but academic research articles based on it are only forthcoming. A much longer list of various emotions was provided within the interviews than what is usually used: over 25 of them.

In this survey, 25 percent of Finns reported feelings of anxiety in relation to climate change; of the youngest segment, 15- to 30-year-olds, it was 33 percent. Climate fear was recognized by 31 percent of Finns (Hyry 2019). Indeed, the links between anxiety and fear are strong. Eco-anxiety can be seen as a manifestation of 'eco-fear' that is not encountered or is more vague than actual fear (cf. Pihkala 2019a, 2019b; Buzzell and Chalquist 2019). However, in the case of global threats, fear and anxiety are often intertwined since the threats are not always imminent (Greenspan 2004).

There are many feelings of frustration and anger related to eco-anxiety and its causes (Pihkala 2020b). In Finnish surveys about eco-anxiety and climate anxiety, frustration was one of the top emotions that people recognized (Hyry 2019; Marttinen 2019). Most respondents were frustrated about the lack of speed or power in governmental and corporate environmental action, but some respondents were frustrated about the entire discussion around eco-anxiety. These feelings are one important example of the many ways in which emotions are significant within sustainability efforts.

Three other emotions merit special mention here: guilt, shame, and grief. All three of these can manifest as anxiety if they are not

recognized and encountered in a constructive manner. There is much guilt and even shame as regards the ecological crisis. Environmental communication scholar Tim Jensen (2019) has written a major book about the dynamics of these, and he points out that environmental guilt too often remains on the level of individuals, preventing social action. On the other hand, much environmental communication results in promoting ‘species shame’ on the level of humanity as a whole, which is prone to causing paralysis.

A new interdisciplinary field of research about ‘ecological grief’ has developed (Cunsolo and Landman 2017). Guilt and grief often become intertwined in the context of the ecological crisis, making each other worse and more complicated (cf. Jensen 2019; Ray 2020). A process of ecological mourning may bring strong feelings of guilt to the fore, and on the other hand, ecological guilt may prevent a person from reaching her feelings of ecological grief. The processing of both these emotions requires support from trusted others, and an ability to live with ambivalence (Greenspan 2004; Lertzman 2015; Pihkala 2019a; Gillespie 2020). Cultural norms and power dynamics shape the ways in which people see and encounter emotions, which makes the study of such topics as the ‘cultural politics of emotion’ (Bladow and Ladino 2018; Ray 2020; Jensen 2019) and the sociology of emotions (Brulle and Norgaard 2019; Berglund 2019) very important for understanding ecological emotions and eco-anxiety.

In the Finnish survey, 34 percent of the respondents reported climate grief and 24 percent reported climate guilt. Age was a strong factor in recognizing climate guilt: of the youngest segment, 31 percent reported guilt, but of the oldest segment (over 65 years), only 18 percent acknowledge it (Hyry 2019). In the case of climate shame, this difference between age groups was even stronger: 26 percent among the youngest, 12 percent among the oldest. Discussion of the various dynamics that may influence these differences is too broad to be included here, but my hypothesis is that the emotional difficulties in recognizing guilt and shame—which are discussed by, for example, Jensen (2019) and Hoggett (2019)—are at play here.

Discussion: What to Do with Eco-Anxiety in Sustainability Studies and Efforts?

The discussion above shows that eco-anxiety and climate anxiety are significant phenomena and require more attention. I have argued that they also require careful analysis of various emotions and other phenomena that can be linked with them, such as guilt and grief, and emotional norms. Various tasks, challenges, and opportunities arise for sustainability students and professionals.

First and foremost, it is important to study the variations and dynamics of eco-anxiety and ecological emotions, and to educate students in these matters. There is a need for self-reflection about attitudes toward emotions and critical reflection about the social norms related to them. These factors shape the ways in which eco-anxiety and climate anxiety are framed and encountered. As Wallace, Greenberg and Clark (2020) argue, faculty members of especially environmental studies and sciences—including sustainability studies—should carefully examine their attitudes and methods related to ecological emotions so that they can support students better. I have personally explored the ways in which eco-anxiety could be encountered in education in a recent article (Pihkala 2020d; see also Chapter 5 on *Education* in this book). Corres et al. (2020) have argued that among the SDG competencies that educators need, more attention should be given also to emotional competencies.

Fundamentally, the challenging emotions that lie behind eco-anxiety are productive, if—and only if—they can be constructively encountered. Fear helps us to orient to possible dangers. Guilt helps us to realize that we have been part of wrong-doings and must engage in reparation. Shame tells us that we have not been the people that we should be, and that we need a new, more honourable lifestyle. Grief helps us to process the loss of things that we have cherished. Anger and indignation can give us energy to make changes, to practice civil action (Kleres and Wettergren 2017; Jensen 2019; Pihkala 2019a, 2019b; Ray 2020).

Eco-anxiety should be framed as both a problem—when it is paralyzing—and as a resource. Considering the latter, anxiety

researcher Charlie Kurth's thoughts provide some useful insights. Kurth draws from a wealth of research and delineates variations of anxiety as a biocognitive emotion. Even though Kurth does not discuss eco-anxiety *per se*, his model sheds light on its emotion-like forms. Kurth (2018) separates anxiety into three categories, which can overlap. There is a) 'environmental anxiety', albeit not in the ecological sense in his model. This is a feeling of troubling uncertainty in relation to a possible threat in the person's environment. The second category is b) 'punishment anxiety', a feeling of uncertainty as to whether the person's behaviour will cause a negative social evaluation in the eyes of others. And then there is c) 'practical anxiety', when an uncertain situation inspires such anxiety that causes a person to seek more information and to re-evaluate their course of action.

All three forms of anxiety occur in the context of eco-anxiety. There is a feeling of a threat that includes varying degrees of uncertainty (a); exact prediction of ecological problems, such as climate change, is difficult. There are many social forms of eco-anxiety (b), where a person feels uncertain about how to behave in a sustainable or socially acceptable manner. There are often conflicting norms—Kurth (2018) calls this 'norm uncertainty'—and genuine novelty. It is no wonder that the ecological crisis and climate crisis cause social anxiety.

Many people (Marttinen 2019; cf. Hyry 2019) testify that their eco-anxiety has resulted in information-gathering and changes in lifestyle (c), which points to the practical possibilities of eco-anxiety. Lifton (2017) writes of the transformation of paralyzing anxiety into 'anxiety of responsibility'. In this manner, eco-anxiety can be seen as a moral emotion (Pihkala 2020d).

Sustainability students, professionals, and educators face the tasks of building individual and community resilience in relation to the psychological toll of the ecological crisis. This maintains and strengthens well-being and capabilities (Doppelt 2016; Davenport 2017). Various emotions, including varieties of eco-anxiety, should be taken into account when designing environmental communication (Moser 2015; 2016). In such work, insights can be drawn from materials designed by psychologists and researchers.

There are guides for self-care and community-building in relation to eco-anxiety and climate anxiety (Coping with Climate Change Distress 2017; Doppelt 2016; Macy and Johnstone 2012). For example, psychologists recommend limiting media exposure to troubling information to certain times of the day, as well as organizing peer support groups. Public advocacy is an important task, and justice dimensions need special attention: often it is the already marginalized or vulnerable segments of people that also suffer the most from the mental health impacts (Berry et al. 2018; Ray 2020; see Chapter 10 on *Exclusion and Inequality* in this book).

I mention two examples of psychologically insightful approaches to sustainability efforts. The Carbon Conversations method (n.d.) is built on group discussions about both emotions and climate activities. A pioneering climate psychologist, Rosemary Randall, has had a strong role in the creation of these materials, and there is research available that has been conducted about the impacts of such work (Hoggett 2019). The Project Inside Out, developed mainly by Renée Lertzman, another forerunner in environmental psychology, offers a website full of materials designed to engage various audiences in a psychologically sensitive way (Project Inside Out n.d.). This kind of methodology emphasizes the need to first encounter the complex emotions and attitudes that people may have, including anxiety and aspiration, and only after that to move on to co-designing sustainability efforts.

Since the phenomena of eco-anxiety and climate anxiety are so multifaceted, multi- and interdisciplinary cooperation is essential. These efforts have also been started in the University of Helsinki and in the HELSUS Sustainability Science Institute, from which this book initiates. Various fields, such as natural sciences and humanities, must take the opportunity to learn from each other and to combine their strengths. The COVID-19 pandemic has made the need to maintain mental and physical health very clear, and amid combinations of ‘coronavirus anxiety’ and eco-anxiety, social support and compassion are needed to keep sustainability efforts alive. As I have argued in this chapter, there are many kinds

of eco-anxiety, and if we wish to draw from its practical potential, all hands and hearts are needed on the deck.

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PART II

Locating Sustainability

CHAPTER 10

Exclusion and Inequality

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Abstract

Within sustainability science, there are questions pertaining to how certain actions for guaranteeing a good life for one part of the population can even result in catastrophic consequences to another. The global holistic view that would address all inequalities and exclusions is one of the greatest challenges of today. In this chapter, we will elaborate on two central concepts of sustainability science that are particularly relevant to facing these challenges: inequality in access to power and exclusion from positions of power. These are both very visible acts of exclusion, often hidden in the very grain of society's structure in a manner that makes them almost impossible to study and change. Inequality and exclusion are cultural constructions of power, and it is important to see how these influence practical actions and institutional

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(hidden) practices. The practices locate certain individuals or groups of people in a more disadvantaged position than others and naturalize these inequalities with a set of actions and explanations. This chapter will present the operation of these practices with two concrete, situated examples of migrants with irregular status in the European Union and the Roma minority in Finland.

On the Terminology: What Are Exclusion and Inequality?

The 2030 Agenda for Sustainable Development defines inequality in the context of both wealth and income. In the Agenda, inequality is described as encompassing ‘inequalities in opportunities and outcomes relating to education, health, food security, employment, housing, health services, as well as in access to economic resources which also amount to failures to achieve internationally agreed human rights’ (UN Chief Executives Board for Coordination 2016: 10–11). These inequalities often affect various groups differently because of their members’ sex, age, ethnicity, disabilities, migrant/health/economic status, and so on. Therefore, the concept of inequality is intrinsically linked with both discrimination and exclusion, and is often considered to be the result of, or a contributing factor to, discriminatory or exclusionary practices (see UNDP 2013).

According to Hilary Silver (1994), one can identify three different but intertwined paradigms of exclusion: solidarity, specialization and group monopolies paradigms. For the solidarity paradigm, exclusion means the breakdown of social bonds between the individual and the society in a cultural and moral way rather than an economically interested fashion. It gives space for dualistic categories for ordering the world, defining, for example, the poor, the unemployed, and minorities as deviant outsiders. In the specialization paradigm, exclusion reflects discrimination. Socio-economic differentiation and divisions of labour only lead to discrimination and exclusion if individuals cannot move across boundaries. The third paradigm sees exclusion as a consequence of the formation of group monopolies. Powerful groups, often of distinctive cultural identities and institutions, restrict access

of outsiders to valued resources through a process of ‘social closure’. The excluded are often turned into what Jensen (2011: 65) refers to as ‘Others’, which indicates a symbolic degradation ‘as well as the processes of identity formation related to this degradation’. In consequence, *the other* is marginalized, and the superiority and the identity of the powerful affirmed (Gozdecka and Kmak 2018). The concept of exclusion is therefore inherently relational (Sen 2001). Being excluded is a matter of relational context in time and place. The exclusion must be understood in relation to the social order as a whole (Byrne 2005: 64).

Recent discussions on exclusion and inequality have become conceptualized in relation to vulnerability and resilience. For Martha Fineman (2017), vulnerability is a constant and universal condition of every subject, rather than affecting only those conceptualized as vulnerable populations or as being particularly vulnerable (see also Macioce 2018). Such an approach allows a shift from an individual-based perspective toward adopting structural arrangements that affect everyone. This contributes to resilience linked to resources (physical, human, social, ecological, and environmental) guaranteed by social structures and state institutions (Fineman 2017: 146).

Resilience is therefore also often used in relation to the concept of sustainability. However, an ongoing debate asks whether resilience and sustainability actually carry opposing connotations. Unlike Fineman (2017), who approaches resilience as a condition supported by political structures, political scientists David Chandler and Julian Reid (2016) have linked the conceptual development of using resilience in policy papers to a demand on ‘neoliberal subjects’, individuals who need to take responsibility for their own precariousness. They criticize the logic of resilience-talk because it specifically targets people in socio-economically vulnerable situations.

How Are the Concepts of Exclusion and Inequality Central to Sustainability Science?

Equality and non-discrimination are intrinsically linked to sustainability science. Combating inequality became one of the most

important aspects of the Agenda 2030, which is sometimes even referred to as an ‘agenda for equality’ (UN 2015). One of its main goals is to develop programmes to promote institutions, laws, policies, and actions to combat discrimination based on race, sex, language, ethnicity, religion, age, disability, caste, Indigenous status, health status, migrant status, minority status, or other grounds, and to advance equal access to justice (UN 2015). However, the Agenda Goals have been criticized by scientists with regard to both their ability to challenge existing inequalities and their position on the main conceptual understanding of sustainability science—which is usually understood as emphasizing governance and management.

Some scholars blame Agenda 2030 for not challenging the positions of powerful actors such as big countries, international financial institutions, transnational corporations, and even international NGOs that have produced and reproduced inequalities in income, wealth, and power at national and global levels, causing the very problems the Sustainable Development Goals are trying to solve (Esquivel and Sweetman 2016; Struckmann 2018: 19).

Criticism of governance as a main form of operation within sustainability science refers to the possible adaptation of these concepts of equality and non-discrimination to the methods of neoliberal governance (Lawrence 2017). According to Lawrence, under the idea of sustainable development, we see a shift from protection toward governance, and ‘as we move toward a world in which individual and collective behaviour is governed by efficient expert management, older institutions such as popular democracy and equality become obsolete’ (2017: 80).

Situating Exclusion and Inequality

In the following sections, we will illustrate the criticism mentioned above using two case studies: management of so-called irregular migration in the European Union and the case of the continuous exclusion and unequal position of the Roma minority in Finland. These two examples illustrate the problematic logic of sustainability

as equality by showing how certain actions for guaranteeing a good life for one group can result in catastrophic consequences for another.

Migrants with Irregular Status in the European Union

Following the initial endorsement of refugee rights after World War II, support for them decreased. It became obvious that the scope of protection that the Western World would need to provide, based on the definition of a refugee from the 1951 Refugee Convention, clearly exceeded its willingness to do so (Dauvergne 2016; see however Mayblin 2018). For that reason, states needed to ‘ensure that asylum seekers do not arrive in the first place, because once a person is on national territory, policy options dwindle’ (2016: 45). Various efforts were therefore undertaken across the West to discourage asylum seekers’ attempts to seek protection on their own, to effectively manage their flows, or, more recently, to suspend the right to apply for asylum—in contravention of the Refugee Convention. In the European Union, this was manifested in continuous externalization of migration and refugee protection—for instance, in new legal institutions of the refugee procedure, such as the concept of a safe third country (Recast Procedures Directive); through *ad hoc* solutions such as the EU–Turkey agreement (European Council 2016); building walls, closing borders, pushbacks and hot returns (The Guardian 2020a, The Guardian 2020b) and the prioritization of border procedures and expulsions (The New Pact on Migration and Asylum); or the reconceptualization of those seeking protection as bogus asylum seekers or ‘illegal’ migrants (Anderson 2012; Kmak 2015; Mezzadra and Neilson 2013). These ‘illegal’ or irregular migrants then became securitized (Kostakopoulou 2000; Guild 2009) and most recently considered to be a threat to ‘our European way of life’ (von der Leyen 2019).

Threat and danger, however—unlike real human beings—can be governed and managed through various preventive measures.

The most recent effect of such a management-based approach to irregular migration in the EU is the crisis in the refugee camps in the Greek islands as a result of the EU–Turkey agreement. The official reason for the agreement was to end irregular migration from Turkey to the EU by breaking up ‘the business model of the smugglers and to offer migrants an alternative to putting their lives at risk’ (European Council 2016). In the agreement, the management of arrivals was in principle based on the fulfilment of the refugee criteria: all irregular migrants arriving in Greece from Turkey who did not fulfil these criteria would be returned, and genuine refugees would be brought instead, based on the UN criteria of vulnerability (European Council 2016). The agreement was signed, disregarding the human rights situation in Turkey. In addition, the agreement was broken in March 2020 by President Erdogan who ‘opened doors’ to the EU, leading Greece to close its border with Turkey (The Guardian 2020a) in violation of its international legal obligations. In practice, the deal, in combination with legal changes in Greece (Law No. 4375) as well as insufficient material conditions and lack of expert staff (European Court of Auditors 2017), effectively limited the asylum seekers’ rights—in particular their access to a fair refugee procedure in Greece—or resulted in returns to Turkey (Amnesty International 2017). The deal also resulted in a humanitarian crisis in the camps on Greek islands, the culmination of which was the fire in the overcrowded Moria camp, which held 12,000 refugees despite its 3000 persons’ capacity (Médecins Sans Frontiers 2020).

The prognoses for the governance of migration in the future, in the context of climate change, point toward an intensification of the current approach of the management of threat rather than the protection of human rights (Bettini 2013: 68). According to Bettini, the current discourse on climate-related migration emphasizes the inevitability and apocalyptic proportions of such migration, in light of which, the basic focus on human rights protection does not seem proportional. Existing studies often do not take into consideration that any possible climate-related migration will depend not only on the changes in the natural environment

of migrants' home countries, but also on the responses of the authorities (and to reactions to these changed responses) that might even limit the scope of migration with the effective programmes of early warnings, social and economic support, and overall preparedness. However, the dominant discourses that induce fear by painting a picture of an unstoppable flood of migration can cause the introduction of hasty or non-democratic solutions, and can also lead to denial or paralysis, or even to reactive behaviour. In consequence, climate migration may be treated as Business-As-Usual (Bettini 2013: 68), mobilizing similarly exclusionary and unsustainable responses as those introduced so far.

Roma Minority in Finland

The situation of the Roma peoples in Finland demonstrates another situated case study of exclusion and inequality. It illustrates what Lukes (2005) called invisible power. Invisibility here means that power takes such forms that it does not need to be openly executed but is hidden in the structures of society and influences people's self-perception and strategies (Bourdieu 1977). The term 'discrimination' here would distract from the situation where there is no obvious intent to discriminate. The act of discrimination is so tightly built into normal thinking and behaviour that people may not be aware of it. That is how exclusion works and how inequality is created, and their impact on a sustainable future for all human beings is significant.

In order to understand the situation of Roma peoples today, one must understand the length and severity of racism against Roma people, which could be compared to the experiences of people of colour in the USA (Tervonen et al. 2005). According to historical records, Roma immigrated through Sweden and the Baltic countries to Finland around 500 years ago. The history of discrimination against Roma in the Kingdom of Sweden, to which Finland belonged until 1809, is long: up until the 1750s, Roma who were found loitering could be hanged, and they could be convicted merely on the grounds of leading a nomadic lifestyle. The period

when Finland was a Grand Duchy of Russia was characterized by strong assimilation efforts directed at all the different nationalities residing in Finland, including Roma (Pulma 2006: 460). According to Camilla Nordberg (2007: 57), Roma were considered to be not only a social problem but also a national problem: their language and culture were foreign. The oldest organization serving Roma, Romano Missio, was founded as early as 1906 by non-Roma to 'help and guide Roma people' toward assimilation.

When Finland became independent in 1917, all population groups became Finnish citizens, including all Roma people who resided in the country. Various efforts were undertaken to assimilate the Roma population (through educating Roma to give up their 'curious habits' and 'become normal') (Komiteamietintö 1900: 3); for example, children were taken into custody to learn a Finnish lifestyle. The effects were paradoxical: the Roma became an even more closed community. Research conducted on Roma was undertaken mainly by non-Roma and all the expertise guiding the efforts to domesticate 'the wild Roma' ignored the knowledge of the Roma people themselves. An Advisory Board on Gypsy Issues (later Advisory Board for Roma) was established in 1956, which also including several persons of Roma background. From its beginning, its working agenda was clearly defined from a majority perspective (Söderman 2006: 11). After World War II, the socio-economic situation of Roma was poor: their housing and educational rights in particular were non-existent (Pulma 2006). Organizations were founded to improve the living conditions of Roma but without paying heed to their actual needs.

Since the 1970s there has been a shift in Roma politics, and Roma have become more involved in Roma organizations and in different state committees, which have tried to 'solve the Roma problem' (Toivanen 2020). Various efforts have been undertaken first to force and then to persuade the Roma to send their children to school and keep them there. Particularly in the field of housing, there have been programmes since the 1970s to guarantee equal housing rights to Roma people and also to address their cultural needs. Despite their own participation, Roma as a people have

remained on the margins of Finnish society, their existence entangled with exclusion, low education, cultural change and alienation (Helakorpi and Stenroos, forthcoming).

The Roma are recognized as a language minority in the Finnish Constitution (1999/731: Article 17) together with the Sámi and other language minorities as one of the groups to be protected under the minority rights clauses. Finland has acknowledged the status of Roma as a national minority—for example, in the explanation to the Framework Convention on National Minorities (Council of Europe 1995; Ministry of Foreign Affairs 2010). The Roma are represented in the governmental structures through the Advisory Body for Roma Affairs (RONK) and have their own centre at the National Board for Education for Roma education matters. Still, the RONK can be regarded as an organization that is motivated by majority interests to get Roma representation ‘settled’, to find a body ‘to talk to’ (Toivanen 2015). In addition, several Roma NGOs are active in different societal and cultural fields in Finland, especially those motivated by religious grounds. The policies on Roma issues underline the need to reach *similar standards* as the majority population has; they claim *sameness* rights, rights for equal opportunity.

The Finnish majority rules over the framework and premises for minorities’ identity claims, and sets the limits regarding what they can ask for (Toivanen 2015). There is a profound discrepancy between what the Finnish government says it is doing in the field of minority rights and the reality of how these groups are treated. Regardless of all the educational programmes, which have been in place since the 1970s, the marginalization of Roma has not diminished. A study on the education of Roma children in Finland concluded that, despite positive progress in the past years, the Roma still skip preschool education, are placed in special education or drop out of school more often than average pupils (Opetushallitus 2011).

Insults and verbal abuse in public places often target people who are considered different from the majority population, including Roma people. According to a survey on hate speech and harassment by the Finnish Ministry of Justice (2016), Roma respondents

said that they face discriminatory attitudes and insults when interacting with officials—for example, in the social services. The respondents also experienced being baselessly followed or stopped by security guards when shopping, which they found to be humiliating and fostered mistrust toward officials (Finnish Ministry of Justice report, 2016/7). According to a study by the Non-Discrimination Ombudsman, over 53 percent of the Roma respondents have experienced discrimination within the past five years while seeking employment. The study indicates that Roma women face more discrimination than men, and some participants felt that one reason for this might be the traditional dresses worn by the women. Besides being subjected to continuous discrimination in the streets, the prejudices of the majority population and the weaker economic position of the Roma make it hard for them to find accommodation as well. This applies to both the private housing market as well as the housing offered by the state or the city. Almost 49 percent of the respondents say they have been discriminated against based on their ethnicity when applying for a state-supported apartment, whereas the figure is 54.7 percent in the private housing market (Finnish Non-Discrimination Ombudsman 2014).

Why the Finnish Roma people have remained so marginalized is often explained by cultural distinction and strangeness. The Finnish public narrative is that Roma want to keep to themselves. It is certainly true that the Roma have ‘kept to themselves,’ but less due to cultural reasons. Finnish policies have been highly ambiguous: on the one side, there are policies that strive for equal opportunity and cultural neutrality but also, on the other, policies stressing the cultural difference of Roma, explaining how and why they have to be treated differently in day-care, school, or the workplace. Either way, the Roma have been only marginally a part of revising the policies (see Stenroos 2020).

In 1991, Charles Tilly posed a question that many others have kept asking for years before and after: Why do subordinates comply, why do they not continually resist? (Tilly 1991). Why would, for example, the Roma people accept the amount of

discrimination against them without taking to the streets and protesting against the injustices? Why do they not make both the out-group and in-group discrimination public? Steven Lukes (1974/2005) commented that people may not know their 'true interests'. This is what Lukes has called the third dimension of power, which is the power 'to prevent people, to what-ever degree, from having grievances by shaping their perceptions, cognitions and preferences in such a way that they accept their role in the existing order of things' (Lukes 1974/2005: 24). The 'real interests' of minorities such as the Finnish Roma remain untouched in state politics. Recognizing their needs and guaranteeing them rights to both equality and difference is ever-more difficult when the only places to be politically active are official bodies, with persons who are quite assimilated to 'Finnish thinking' (Toivanen 2010). If the answer to the problems of exclusion and inequality is that there should be more minority participation, then the participation cannot be defined from the majority's hegemonic perspective (Toivanen 2010). A sustainable future for all requires a careful analysis of whose interests guide society.

Conclusions

The examples presented above illustrate the two aspects of inequality and exclusion: visible and hidden acts of exclusion and discrimination. Whereas exclusion from human rights of irregular migrants and asylum seekers is often discernible, exclusion can also remain hidden in the very grain of society's structure in a manner that makes it almost impossible to study and change, such as in the case of the Roma in Finland. Accounting for and countering inequalities and exclusions poses one of the greatest challenges of today and remains at the core of sustainability science. In particular, political, economic, social, and cultural forms of exclusion, as illustrated in the discussed examples, constitutes an effective obstacle for implementation of Sustainable Development Goals.

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CHAPTER 11

Governance

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Abstract

This chapter reviews recent debates in socio-legal and environmental sciences that have highlighted the salience of polycentric governance in sustainability processes. In doing so, we argue that the spatialities of sustainability should be understood as relational and power-laden processes that unsettle, rather than replicate, given concepts such as ‘national’ and ‘international’. Foregrounding multiscalearity, our approach thus problematizes the Global North/Global South divide in sustainability studies. We illustrate our points through empirical examples from climate, biodiversity and freshwater governance, and refugee protection (or lack thereof) in Europe and beyond.

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Introduction

How should we think about sustainability governance (SG hereafter)? Should it be approached on a global/planetary, supranational/international, national, or urban and community level? Is there a role for national legal regulation in sustainability processes? Or does the nation-state act as an inconvenient mediator, standing in the way of transitions and struggles that develop governance transnationally and from the bottom up? Recent contributions in socio-legal, political and environmental sciences have provided important new perspectives on these questions (Dietz, Ostrom and Stern 2003; Hameiri and Jones 2017; Jordan et al. 2018; Swyngedouw 2004; see also Carton 2020 and Coddington 2018).

Sustainability can be defined as the capacity to ‘meet(s) the social and economic needs of the world’s population, current, and future, without endangering the viability of environmental systems’ (Wilbanks 2007: 279). Environmental crises, mass displacement, and discriminatory normative frameworks for human mobility and migration highlight the ‘poor track record’ of state-based SG in the last few decades (Vanhulst and Beling 2019: 115). Critical research has identified Eurocentrism, colonialism, and a temporal frame oriented toward normative futurity, downplaying the role of present-day struggles in shaping sustainability, as some of the major limits of mainstream approaches to SG (Bornemann and Strassheim 2019; Chimni 1998; Cole 2020; Mayblin 2014; Vanhulst and Beling 2019).

A narrow, vertical interpretation of the global vs local divide has also hindered debates on SG (Litfin 2019). In this regard, geographer Neil Brenner (2005) has highlighted the need for urban governance actors to consider the simultaneously relational and territorial nature of scales of governance, as well as their power-laden, vertical hierarchies (see Chapter 7 on *Scales* in this book). Far from being fixed, the ‘scalar configurations’ of SG should be seen as ‘the outcome of socio-spatial processes that regulate and organize social power relations’ (Swyngedouw 2004) and as ‘(a) struggle(s) to define the authority and resources distributed across and controlled at different territorial tiers’ (Hameiri and Jones 2017). We argue in this chapter that this approach allows us to see SG not as a

fixed entity but as ‘a trajectory of change’ (Wilbanks 2007: 279–81), characterized by dynamic plurality and polycentrism in which the central role of states in SG has been called into question.

Here we propose an approach to SG as resulting from organic evolution, challenges, and contestations that play out through multiple localities and scales. This allows for the inclusion of actors operating at different trans-local and transnational levels in decision-making processes. As both migration and environmental questions are crucial for managing sustainability, the following review of recent, empirically grounded literature on the governance of forced migration and environmental problems, such as climate change, biodiversity loss, and overuse of water resources allows us to question state-centred governance paradigms, and highlight some—more or less hopeful—alternatives.

Forced Migration Governance

By the end of 2020, the United Nations High Commissioner for Refugees (UNHCR) will operate with a planning figure of 82.5 million displaced ‘people of concern’ (UNHCR 2020). Whether we consider such an estimate realistic or not, the socio-legal protection of migrants and the management of forced migration remain among the main challenges of global governance today. The inadequacy of existing international governance tools is often highlighted in debates on forced migration and the climate crisis (Scott 2019) but extends well beyond the domain of environmentally induced displacement.

The responsibility to protect migrants and displaced people is articulated by international legal treaties such as the 1951 Geneva Convention on the status of refugees¹ and its 1967 protocol, as well as by national legislations and other international conventions that are regional in scale.² In the post-World War II era

¹ United Nations Convention Relating to the Status of Refugees, entered into force 22 April 1954.

² Such as the 1969 Organization of African Unity Convention Governing the Specific Aspects of Refugee Problems in Africa.

through to the end of the Cold War, the international geopolitical order was thus marked by the division between countries that had signed international legal agreements on refugee protection (particularly the 1951 Geneva Convention and its protocol, signed primarily by countries in the industrialized West) and countries that lacked such legal commitments (in the so-called Global South, see Chimni 1998).

Recent research on forced migration governance, however, has questioned these divisions and their implicit North–South geographies. Kate Coddington’s (2018) work on refugee protection in the UK and Thailand has highlighted how asylum seekers’ conditions in countries that are signatories to the 1951 Convention and its 1967 protocol increasingly parallel those in non-signatory countries. Her study details not only forms of ‘graduated protection’ in which the application of refugee law and policies vary significantly within national borders but also how asylum seekers experience formal protection as inadequate, even when international and national refugee laws are officially in force (Coddington 2018: 333; see also Zetter 2015). In her studies of refugee governance in the Gulf States, Georgia Cole (2020) makes a similar argument about actually existing forms of refugee protection beyond Eurocentric legal orders.

In addition, recent studies on the relation between humanitarian rescue and border enforcement in the Eastern Mediterranean have documented conditions of widespread ‘delay and neglect’ (Pascucci, Häkli and Kallio 2018) that span the European Union’s territories and those of its external partners. The EU–Turkey statement on refugees of 2016 reinforced a landscape of border externalization and humanitarian and security triage based on the EU “hotspot approach”. As the screening of incoming migrants was streamlined through dedicated institutions located in camps, the proliferation of actors rendered the attribution of duties and responsibilities particularly difficult, and formal protection scarce (Pascucci, Häkli and Kallio 2018).

These examples highlight a predicament of global refugee governance characterized ‘by the wholesale withdrawal or reduction of established rights’ (Zetter 2007: 181). Many of the inefficiencies

of formal protection can be partly ascribed to the dysfunctional character of a state-centred refugee regime that evolved around the late modern international order (Bauder 2014; Coddington 2018; Rygiel 2016). In this context, actually existing protection in the form of shelter and mutual assistance—‘everyday survival’, in Coddington’s words (2018: 336)—is secured by a ‘patchwork(s) of NGOs, social ties based on country of origin and churches that help to stave off refugees’ destitution’ (Coddington 2018: 336, see also Cole 2020; Palmgren 2013; Pascucci 2017). As Cole (2020: 15) puts it, ‘conditions of reception in non-signatory states ... offer a mirror through which to reflect on dominant systems of asylum and humanitarianism that appear “tweakable” but beyond radical reimagining’.

Environmental Governance

In the environmental realm, problems such as climate change, biodiversity loss, and overuse of common pool resources (e.g. water) have long been characterized as collective action problems: everyone’s freedom to use a resource or cause negative impact on the environment will end up in a tragedy in which no one has any incentive to protect the environment or the resource in question. This will, in turn, result in a race to the bottom (Hardin 1968). Garret Hardin proposed in the late 1960s that societies have two options to avoid the tragedy: government regulation or privatization (Hardin 1968). Both governance strategies present a significant role for the state: states can pass legislation to limit the environmental impact of human activity, or privatize the resource, in which case the owner would have an economic incentive for protection.

Such governance models have since been criticized for an oversimplified and overly state-centric picture of environmental governance (e.g. Ostrom 1990; Jordan et al. 2018). These criticisms have helped establish a more nuanced picture of environmental governance in which states are, on the one hand, too small to manage global environmental problems and, on the other, too large to consider local self-organization as an alternative or complement to regulation and privatization in governing the human–environment relationship.

The limitations of state action on global environmental problems, such as climate change, biodiversity loss, and water resource allocation and protection, have long been acknowledged. This acknowledgement resulted in a set of significant international treaties in the three sectors: the 1992 UN conventions on climate³ and biodiversity,⁴ and their consequent agreements and protocols, as well as the 1992 UNECE Water Convention⁵ and the 1997 UN Watercourses Convention.⁶ Yet almost 30 years later, they have either been overstepped or are closing rapidly (Steffen et al. 2015). This has prompted many environmental governance scholars to question the role of states in regulating our way to sustainability (e.g. Jordan et al. 2018; Drahos 2017).

In the climate debate, this critique has taken the form of polycentric governance. One strand of this discussion emphasizes the role of cities, such as New York or Helsinki, as front-runners and central actors in climate change governance (e.g. Bulkeley 2010). As states have been reluctant to take ambitious climate action, cities and municipalities have been nimbler in this regard (Reckien et al. 2018). A second strand in climate governance literature has been to underscore the importance of private governance and corporate action in mitigating climate change (Vandenbergh and Gilligan 2017). Both discussions claim that, although states possess political agency and democratic legitimacy, they cannot solve complex problems, such as climate change, without the help of local public and private actors. A state-centric view of climate governance has accordingly been taken over by a polycentric view of governance in which power and agency are dispersed at various levels of

³ United Nations Framework Convention on Climate Change, entered into force 21 March 1994.

⁴ United Nations Convention on Biological Diversity, entered into force 29 December 1993.

⁵ United Nations Economic Commission for Europe Convention on the Protection and Use of Transboundary Watercourses and International Lakes, entered into force 6 October 1996.

⁶ United Nations Convention on the Law of Non-Navigational Uses of International Watercourses, entered into force 17 August 2014.

hierarchy, ranging from the international to the local, and between the public and private domains.

In biodiversity, the discussion has also moved beneath the state level. This is visible, for instance, in discussions underscoring the role of local acceptance for biodiversity conservation measures (e.g. Ferse et al. 2010). Conservation of key species (e.g. wolves) on paper does little good if a lack of local legitimacy invites illegal hunting practices, and states lack the will or capacity to enforce conservation measures (Borgström 2012). These discussions underscore the importance of including local actors in institutional processes to establish conservation goals, conservation plans, and management.

In freshwater management, adaptive governance scholarship discusses public–private water management as a response to social and ecological complexity and uncertainty (Pahl-Wostl et al. 2012; Cosens, Gunderson and Chaffin 2014). Complementing international-, regional-, and state-level action on managing waters, studies have increasingly reported the emergence of local-level initiatives to tackle questions such as water allocation, aquatic biodiversity, flood protection, hydropower, recreation, and tourism (Cosens and Gunderson 2018). In this scholarship, the state is seen mostly as a facilitator of emergent local action instead of as a central planner and regulator. The main reason for this is that complex water problems cannot be tackled with simple state-designed regulatory fixes.

Conclusion

The empirical review offered above calls for approaches to sustainability governance that move beyond notions of territorial boundedness (see Rygiel 2016) and question the exclusive reliance on Western normative and legal frameworks in which nation states conclude, implement, and enforce refugee and environmental protection. Following Georgia Cole's (2020) work, we may define such governance as 'pluralized'. In the environmental domain, a similar phenomenon has been characterized as polycentric

governance, or adaptive governance (Jordan et al. 2018; Cosens and Gunderson 2018). Such a pluralized and polycentric approach is based on the recognition of actors that have so far remained marginal in discussions about sustainability policies and practices, from transnational migrant and refugee groups to rural and Indigenous communities (see Chapter 13 on *Traditional Ecological Knowledge* in this book). Making space for this plurality of subjects and polycentricity of power unsettles the verticality of established geographies of governance, and alters the role of the state, allowing more adaptive and nuanced approaches for managing complexity and for more inclusivity and fairness in sustainability processes.

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CHAPTER 12

Disaster Recovery (After Catastrophes)

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Abstract

This chapter provides an overview of the emergence of the sustainability concept in disaster recovery initiatives and disaster studies. We then specifically focus on the genealogy of the concept ‘owner-driven recovery’. This concept currently dominates disaster recovery policies, but from here it has been adopted more widely into urban slum development initiatives. We provide two kinds of cases from the Indian context—top-down interventions that actively use the ‘owner-driven’ agenda, and those that are

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driven by community ownership—and discuss what is being sustained and what the potential cascading effects of such initiatives might be. The case of urban recovery after the 2001 Gujarat earthquake illustrates how insensitivity towards inequalities and discrimination results in recovery that contradicts the parameters outlined for sustainable development: reduced inequalities, sustainable cities and communities (Sustainable Development Goals 10 and 11), and sustainable holistic disaster recovery principles of ‘participatory processes’ and ‘equity’.

Genealogy of Owner-Driven Post-Disaster Housing Recovery

Connecting disaster rehabilitation and recovery with longer-term sustainable development interventions and developmental processes emerged in the disaster management discourse in the late 1990s and early 2000s. Since then, sustainability has become a popular concept, referred to as sustainable holistic disaster recovery (Adie 2001; Smith and Wenger 2007: 237) with the goal of ensuring an equitable chance to all sectors and people to recover and become resilient (Phillips 2009: 51). Although it identifies six principles, including ‘participatory processes’ and ‘social and intergenerational equity’, the ‘mitigating to ensure disaster resilience’ principle (Adie 2001) dominates the current sustainable housing recovery discourse. Recovery usually refers to restoring social and other infrastructure, and revitalization of the economy. It is considered only successful and sustainable when it is driven through community or citizen–government partnerships, along with the significant reduction of the role of other civil society actors and international humanitarian organizations (ADRC 2005: 38). However, in practice, it often limits itself to the rebuilding of basic infrastructure and building permanent housing without due consideration to social processes, thus contradicting the parameters outlined for sustainable development: reduced inequalities, and sustainable cities and communities (Sustainable Development Goals 10 and 11).

Disillusioned by the socially oppressive and contextually insensitive forms of housing that modern architecture was producing (Vahanvati 2017: 26), John Turner (1972) introduced the idea of ‘self-help’ in housing reconstruction and propagated the idea of owner-driven reconstruction. From his experience of squatter settlements (*barriadas*) in Lima in the 1950s and 1960s, Turner *emphasized* the importance of the housing process and proposed that ‘value of housing was related to dweller-control more than to its physical features, therefore people deserve the freedom to build’ (Arroyo and Åstrand 2013: 2). Although the concept has existed in Europe since the first World War for reconstruction (Arroyo and Åstrand 2013: 2), the idea of aided self-help housing provision was put into practice in post-disaster reconstruction much later (Taheri-Tafti 2012: 347). It has become a mainstay in post-disaster recovery and major urban slum resettlement since the first guidelines on shelters and disasters emphasizing citizens as a ‘primary resource during reconstruction’ were released in 1982 (Vahanvati 2018: 26). However, research focusing on vulnerable groups has pointed out that housing reconstruction efforts fail to give sufficient priority to such groups as low-income renters or squatters (Mukherji 2010: 1085).

Also labelled as the self-help or self-build model of reconstruction, owner-driven reconstruction has been taken up after major destructive events, such as Colombia’s Popayán earthquake of 1983 and in the Balkans from 1993–2000 (Barakat 2003: 33). This approach—often recounted as a better and more sustainable alternative to contractor, or donor and NGO-driven, housing construction (Thiruppugazh 2016: 172–73)—was also applied in the reconstruction efforts after the 2001 Gujarat earthquake, learning from the mainly contractor-driven approach used by the Government of Maharashtra after the 1993 Latur earthquake (Barakat 2003: 33–34; Barenstein 2006: 5; Taheri-Tafti 2012: 347). It was the first large-scale implementation of the approach where the government intervened only through financial, material and technical assistance (Barenstein 2006: 5–6; Taheri-Tafti 2012: 348).

With the popularity of the model, critiques have emerged that highlight the challenges and myths related to the approach.

The conceptual shift from ‘self-help’ to ‘owner-driven’ has meant: the exclusion of those without land tenure (Mukherji 2008: 45; Taheri-Tafti 2012: 349–350), tenants, sharers, and squatters (Maly and Yoshimitsu 2012; Taheri-Tafti 2012); reduction of owners to labourers rather than decision-makers within the ‘do-it-yourself’ interpretation (Lizarralde et al. 2010b: 13); and rejection of slow and time-consuming housing processes of consulting the affected population (Jha et al. 2010: 95095). Since it transforms traditional top-down and technocratic decision making, the model is, at times, considered as ‘demeaning’ the role of the nation-states and non-governmental organizations (Vahanvati 2018: 27).

Taking this critique forward, the rest of this chapter brings forth the shades of the owner-driven housing approach that was implemented in the aftermath of the 2001 Gujarat earthquake by focusing on two owner-driven recovery processes implemented in urban west Kachchh (Bhuj and Bhachau). The two disaster housing recovery models bring forth the significance of social processes in addressing issues of capacity, autonomy and social justice within the context of urban recovery and sustainable development.

Urban Planning and Owner-Driven Housing Recovery in the Post-Earthquake Gujarat

The 2001 Gujarat earthquake recovery was globally the first large-scale implementation of both the owner-driven approach and the disaster recovery paradigm: accelerating the transition from relief to recovery and disaster resilience where the state government, with the support of international financial institutions, coordinated the reconstruction and repair of over a million houses through financial, material, and technical assistance (Barenstein 2006: 5; Mukherji 2008: 114; Taheri-Tafti 2012: 348). Over 13,000 people lost their lives as a result of the earthquake that occurred on 26 January 2001 (GSDMA 2002). It is estimated that 70 percent of the damaged buildings were located in the district of Kachchh, including 75 percent of the housing stock of Bhuj city.

The Gujarat government set up Area Development Authorities for post-earthquake urban planning with a loan from the Asian

Development Bank, yet the concrete tasks of town planning were contracted to private/non-profit planning agencies. Though the town-planning exercise caused delays between the relief, provision of temporary shelters, and permanent housing construction, it also created new opportunities and pressures on land redistribution and building of disaster-resilient towns. The process followed the generic town-planning legislation, except that the preparation, publication, revision, and sanctioning was completed in just six months compared to the two years it normally takes (Balachandran 2010: 106). Despite the speed, the state government declared:

It [the recovery programme] aims at becoming a people's program. It emphasizes the empowering process through continuous consultations with the community ... It will apply principles of equity and empowerment, and ensure, through appropriate mechanisms, that the voices of the weak and poor are always held.

(GSDMA 2002: 2, 4)

The reconstruction process in Gujarat involved various options and initiatives, from adopting villages to granting total control of reconstruction to the families. The adoption of villages restricted the ownership of the community; instead, the implementing agencies had the final say in choices and control of the reconstruction programme while advocating a participatory process. The owner-driven process adopted was a partnership between the government of Gujarat, private sector/NGOs, and the beneficiaries. The approach worked to strengthen each participating group and provided an appropriate implementation strategy for overall development (UNNATI 2006: 9).

Although the housing policy in Gujarat included the precondition to reinstate tenants after reconstruction (Thiruppugazh 2016: 173), it was only after years of advocacy, campaigning, and public demonstrations that specific affirmative action—namely, provision for new housing/land for tenants, and pre-earthquake urban informal settlements—was addressed in the most affected cities (Mukherji 2008; 2010; 2015). Although the Gujarat model was

conceptualized from the shortcomings of the contractor-driven approach in the context of the Latur earthquake, it was not as reflexive as the policy framework for the 2004 Chuetsu Earthquake in Niigata, Japan, which drew lessons on housing processes from the shortcomings of the response to the 1995 Kobe earthquake (Maly and Yoshimitsu 2012: 9–10).

Thus, outcomes of town planning and owner-driven housing schemes differ greatly: owner-driven reconstruction most benefited the homeowners with legal property documents, the middle class, and affluent castes that have both financial resources and social capital available to them. The results are less encouraging for renters and squatters, unless they receive specific attention from early on—this was the case in Bhachau, which had a focus on inclusiveness and people's participation matching the recovery efforts with the community's needs and capacities (Mukherji 2008; 2010; 2015). Participation in disaster recovery is aimed at improving the value of the intervention by focusing on the deliberation and inclusiveness of decision-making processes. In addition, linking policies with local experiences and decision making at the local level is believed to ensure the sustainability of intervention results (Barenstein 2006: 5).

Two case studies in Japan have demonstrated changes in post-disaster policy based on lessons learnt from post-disaster housing approaches in the past. After the 2004 Chuetsu earthquake in the Niigata region, reconstruction policies were modified based on experiences from previous disasters such as the 1995 Kobe earthquake, also locally known as the Hanshin-Awaji earthquake. A more open and comprehensive reconstruction approach was adopted in which the plight of tenants and homeowners was taken into consideration. In Hanshin-Awaji, several wooden houses, generally occupied by low-income tenants, were left out of housing policy, and the reconstruction followed a government-driven approach. However, after the 2004 Chuetsu earthquake, conscious efforts were made to lessen the restriction on compensation for private homeowners and public housing to allow rebuilding at a smaller community-level scale. Public-housing rent was

subsidized through a policy amendment that created an income-based rent system that was sensitive to income location and size of units. This continued for five years after occupation and was later extended on several occasions to aid recovery (Maly and Yoshimitsu 2012).

The rest of this chapter focuses on two towns located close to the epicentre of the earthquake, where houses located in the old town, squatter settlements and high-rise apartments were destroyed (Mukherji 2008: 2) and two very different town-planning and urban owner-driven housing approaches were adopted: one in Bhuj that was more tightly controlled by the state government and another in Bhachau which was more open to civil society and local citizen group participation from the outset (Mukherji 2010: 145).

Snakes and Ladders: When Temporary Displacement Becomes a Permanent One

Anuradha Mukherji (2008) has argued that, due to the significance of the district capital Bhuj as the economic, cultural and administrative centre of Kachchh district, and the interest from the government in choosing Bhuj as an important showcase of its successful recovery initiative, the state government's grip of the town planning and urban housing scheme was stronger than in other towns. Although not considered an important element of the town-planning exercise initially, the process did include extensive and documented meetings with earthquake-affected neighbourhoods, community groups, elected members, experts, municipal government town planners, and architects. However, these consultations were not successful in integrating urban inclusion and equality concerns, but rather provided a forum for the economically and socially more affluent groups to make sure that their needs and concerns were heard in the process.

Simultaneous with the release of the first town-planning scheme, which was to be used as the basis of housing construction at the new relocation sites, the state government announced a temporary

shelter site located approximately 5 kilometres from the collapsed old city of Bhuj to be built at an underdeveloped, industrial/waste-land area owned by the state government. Although it was remote from livelihoods, the city's main markets and business streets, the local newspaper enthusiastically advertised the decision as a step toward building a 'New Bhuj', a new neighbourhood that would not only offer the affected populations a roof over their heads before the approaching monsoon rains in June, but also provide all the necessary basic urban housing infrastructure and access to different government agencies, such as education, health care, and social welfare.

The area was divided into 18 sectors, which were further divided between different temporary shelter-implementing partners varying from religious organizations to international humanitarian organizations and their local and Indian partners. Housing structures, financing schemes, and owner-driven models varied among the implementers. Some future residents were trained in new building techniques with the help of masons from the Latur 1993 earthquake-affected areas; for others, membership in a religious- or caste-based organization allowed crowd-sourcing of funds to add features to the light-weight prefabricated units. The simplest housing unit consisted of one room with an attached bathroom, but the owners could add elements to it with their own funds or through community funding. Authorities in charge of the house beneficiary registration process encouraged the potential residents to form clusters of families, leading to highly segregated communities. The most powerful and affluent groups were successful in using the temporary shelters as a buffer after the initial relief shelters before moving to permanent housing units when the town planning and development of relocation sites for permanent housing were completed in 2004–2005 (Mukherji 2010). For others, such as renters and urban squatters, the buffer period of residing in the temporary shelters, and in the neighbourhood, has turned out to be longer. Mukherji (2010) suggests that the lack of a dedicated social housing policy led to major delays in housing recovery for the dislocated renters, sustained uncertainty of housing for the poorest households, firmed up a lack of affordable

yet up-to-standard rental housing units in the city, and left questions of housing equity and land tenure unsolved (Mukherji 2010: 1136).

All in all, roughly 5,000 units were built in the neighbourhood by different non-governmental organizations 6–16 months after the earthquake. The area was formally recognized two years later as a relocation site in 2003 as a result of demands by the residents and NGOs. However, 20 years after the earthquake, it still lacks sustained basic services such as gutters and sewage lines, a water supply, and quality roads. The neighbourhood became one of the most affordable, low-cost housing location for the migrant labourers who moved to Bhuj in search of reconstruction-related work. Gaps in the earthquake housing recovery are currently being dealt with by ongoing citizens' activism, and local non-governmental organizations have facilitated the central government's slum redevelopment housing initiatives.

However, based on life-historical interviews conducted with the residents of the area,¹ the promise of an owner-driven permanent housing scheme has failed to deliver their expectations due to limited availability of housing for those in need. This has led to conflicts between the aspirant beneficiaries, project managers, and the committees that decide on the beneficiary priority lists, as well as attempts to influence the selection process. Residents also consider the initiative as a failure due to insufficient collaboration between different stakeholders such as residents, NGOs, politicians, and government agencies; misuse of middle-management positions (such as contractors, committee members) for financial gain; irresponsible management; and lack of financial control over the housing process.

Project evaluations and independent research conducted in the neighbourhood suggest that owner-driven models adopted for the temporary shelter initiative reiterated and accelerated the existing pre-earthquake caste-based and socio-economic

¹ Marjaana Jauhola's Academy of Finland-funded research project 'Gendered Political Violence and Urban Post-Disaster Reconstruction' (2015–2020); more details at <http://scrapsofhope.fi/>.

discrimination, inequalities, and segregation. The neighbourhood turned out to be the only mixed-community neighbourhood with internal communal divisions between sectors or clusters of houses in the city, where all the other three housing relocation sites follow caste and religious group boundaries. Recovery and social inclusion and justice experts have called the initiative a failure as it was driven by technocratic and engineering priorities and rapid aid delivery ideology, and thus it was unable to prevent the devastating long-term social and economic impacts and the slum-like urban living conditions of the newly built neighbourhood. Lack of basic urban infrastructure sustained dispossessed populations in the city. The landfilling required for the area was completed in 2001 using earthquake debris from the damaged old city. However, as with other debris dumping sites, it has caused damage to old ponds and natural rainwater streams, causing floods and new disaster vulnerabilities (see Balachandran 2010: 2017; Virmani 2010: 151–53). This repeats the discussion on ‘sustainability’, where recovery processes are narrowly focused on mitigation, but have neglected participation and social inclusion in the overall process.

Small Scale Socially Inclusive Owner-Driven Housing Recovery in Bhachau

Contrary to the experience in Bhuj, the post-disaster recovery process in a smaller town of Bhachau created collaborative spaces for NGOs and public–private partnership for reconstruction and rehabilitation. Organizations with experience in pre-earthquake social mobilization and community-support initiatives became involved in recovery processes using a participatory framework (Mukherji 2008: 128). In this framework, starting with the temporary shelter reconstruction phase, special attention was paid to vulnerable populations such as widows, persons with disabilities, and orphans from among the marginalized squatter communities of Muslims, Dalits, Bhil, Vadi, Koli, and Khwas Rajputs (Mukherji 2008; UNNATI 2006).

A local NGO facilitated the reconstruction programme at various stages in Bhachau through the Citizen Support Cell (Nagrik

Sahyog Kendra, NSK), a collaborative effort between citizens and the government. The NSK collaborated with the newly established State Disaster Management Authority (GSDMA) and Area Development Authority (ADA) in Bhachau to support regular meetings with district authorities, World Bank officials, government engineers and planning consultants; and also published a newsletter. A significant contribution of NSK was the creation of a database on a range of issues faced by the citizens as well as the authorities that were instrumental in facilitating decision making for process modification and the integration of people's concerns. The facilitation was initiated in 2001 and was successful in several settlements with marginalized populations like the residents of Junawada and Vadinagar. The reconstruction in Bhachau town too was delayed owing to the six months needed to prepare the town development plan (TDP), infrastructure plan, and town-planning schemes. The technical planning document was elucidated by the local NGO to enable community participation and feedback. This facilitation enabled the recognition of the minority communities (Rabari, Bhil, Muslim and Dalits) in Junawada, and also intercepted the relocation of Vadinagar and let it settle in its original location (UNNATI 2006; Mukherji 2008).

The facilitation process by NSK and local NGOs started with the needs assessment through survey and local-level planning. Local committees were created and empowered to negotiate and manage issues in reconstruction. Thus, local-level planning was facilitated to resolve technical and legal issues related to development plans and town-planning schemes. The local NGOs worked with local committees in finalizing strategies to reduce conflict and duplication while supporting them in approvals and documentation. They also provided guidance to local government bodies on planning for infrastructure at the local level, and NGO project engineers worked with government engineers in awareness generation² (UNNATI 2006).

² For more details of the facilitation process of UNNATI (local NGO) working in post Gujarat earthquake, refer to <http://www.unnati.org/pdfs/books/OwnerDrivenHousingProcess.pdf>.

The ADA of Bhachau processes for building permission were complicated, and around 1700 families were unable to get documentation; this obstructed rebuilding. In this context, the ADA of Bhachau and NSK initiated a facilitation process of land regularizing and verification. While the government engineers focused on safety features, site supervision, post-construction validation, completion certification, and government compensation, NGOs were involved with families that had been left out. NSK facilitated the design-approval process for the modification of houses to enable retrofitting of those houses that had not been built following the safe construction guidelines by linking owners with NGOs equipped to facilitate this process in collaboration with the development authority. Approximately 1500 slum dwellers benefitted from the advocacy initiative of the local NGOs. Affected families were involved in the reconstruction process by transportation of material, developing house designs, budgeting, material planning, and as labour for reconstruction. Temporary shelters built in Bhachau, as in Bhuj, on distant and undeveloped wasteland that lacked basic urban infrastructure were successfully refused by approximately 500 families owing to the social mobilization, citizen activism, and critique toward unequal forms of recovery (Mukherji 2008).

Unlike in Bhuj, the ADA in Bhachau, had autonomy in decision making as it was not under the direct scrutiny of the state and media and was receptive to engaging with NGOs in recovery. Thus, the planning process in Bhachau accounted for community participation in which the local NGOs collaborated with different agencies to initiate a multi-stakeholder consultative process. The role of NGOs was significant in supporting the squatters with permanent housing. They were successful in bringing change to the urban housing policy by urging the authorities to provide housing for squatters, as half of the housing destruction was in squatter areas. However, the renters were largely left out of the reconstruction process as the GSDMA policy did not account for the tension between landlords and tenants, and the efforts by political actors and citizen groups were not as successful as in the case of squatters (Mukherji 2008).

Discussion and Conclusions

Recovery programming was adopted into the disaster management toolbox in the late 1990s and early 2000s to connect the temporalities of disaster rescue, relief, and longer-term rehabilitation and sustainable development to one another. The aim was to reduce disaster vulnerability, and ensure the reduction of inequality in sustained ways. However, as this chapter has illustrated, urban housing policy in reconstruction negatively impacts vulnerable groups of non-owners such as tenants, sharers, and squatters. This impact is not just found in Gujarat. For example, in Iran, female-headed households suffered due to unequal inheritance laws after an earthquake (Taheri-Tafti 2012: 349–350). Thus, the issue of land ownership has emerged as a major concern in several post-disaster reconstruction contexts. The onus of providing and establishing ownership ultimately falls on the affected community, along with the efforts of trying to recover. Pre-existing patterns of discrimination, marginalization from processes, structural and cultural barriers, and ignorance of those in authority position are some of the significant factors contributing to the impediment of sustainable recovery. Hence, participation of all stakeholders and addressing the power hierarchies is significant to ensure equitable inclusion (Phillips 2009: 51, 53).

The Gujarat experience illustrates how the different capacity of the affected households to recover was not part of the policy and decision-making process: the owner-driven approach, promoted as people-centric, followed a standardized technical and financial process that neglected socio-economic, political and cultural factors that influence the recovery of families and households (Taheri-Tafti 2012: 350). This standardization created recovery gaps as the government was too caught up in maintaining the system and following procedures. Both the cases—the towns of Bhuj and Bhachau—provide examples of how filling such recovery gaps is actively advocated by both citizen activism and locally based civil society organizations. Phillips (2009) notes that sustainable recovery means an equal opportunity for all to recover, however prevailing social, economic, and political set-

tings obstruct this. Further, research on sustainable recovery suggests adaptive planning approaches that meet the local demands as part of the recovery strategies (Smith and Wenger 2007: 241), which was not evident in Bhuj.

Furthermore, the above reflective long-term analysis of town planning and owner-driven approaches in Gujarat illustrates the unsustainability of recovery efforts. In fact, non-inclusive recovery processes may contribute toward the formation of the shadows of modernization, vulnerability reduction, sustainable development, and disaster resilience. They contribute to the emergence of permanently/sustained dispossessed populations, and, finally, resistance to unequal forms of development, unless they are structured to address urban housing and land tenure inequalities. Pre-existing power relations and inequalities (such as land tenure, homelessness, social and economic inequalities, or inadequate living conditions) tend to be reinforced during reconstruction and, unless attended carefully and with long-term endurance, they produce permanent global structures of inequality, dispossession, and conditions that form shadowlands of development, a subaltern to the success stories of international reconstruction aid, disconnected from any colonial continuities (Biswas and Nair 2010: 20).

The picture that emerges from such a scholarship points toward questions of the price, or the shadows, of claimed post-disaster urban planning and industrialization success stories (see e.g. Desai 2016 for an analysis of the post-disaster price to that of coastal Kachchh): whether such reconstruction interventions in fact normalize (urban) inequalities and dispossession, rather than aiming to achieve sustainable recovery. It is noteworthy that, although those involved in the town-planning process (see e.g. Ballaney 2008; Balachandran 2010; Thiruppugazh 2016) generally acknowledge the (re)production of urban inequalities as part of the reconstruction initiatives, attempts to 'solve all the economic and social problems created by the disaster and those that existed prior to the disaster' (Thiruppugazh 2016: 174) are seen as unrealistic. However, for others, lessons from the failures and success of such owner-driven temporary shelter initiatives after the 2001

Gujarat earthquake—and also after the 2004 Indian Ocean earthquake tsunami—have been used in the National Campaign for Dalit Human Rights to address caste-discrimination in humanitarian responses and to develop mapping and monitoring tools with the International Dalit Solidarity Network, which focuses specifically on Dalit and gender inclusion in disasters (IDSN 2013; Paul and Binoy 2013). Incorporating such tools and mechanisms would also ensure that the overall desire for sustainable recovery would be contextually tuned into addressing prevailing social inequalities and discrimination, rather than reiterating or reinforcing them.

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CHAPTER 13

Traditional Ecological Knowledge

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Abstract

Traditional ecological knowledge (TEK) refers to a body of knowledge, practices, and ideas transmitted and (re)generated orally and non-verbally in diverse forms from generation to generation. It is constantly changing and being updated. TEK is rich among several communities, but we will situate our cases in the Amazonian and Arctic Indigenous contexts. We will also discuss the limits of TEK in sustainability science, which include its truth-value and legitimacy. As it originates from different traditions, experiences, and language structures, it is challenging to systematize. Recently, however, TEK has been recognized in a more inclusive way, and

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traditional knowledge holders have been taken as collaborators to scientific projects. Therefore, various local communities have been able to contribute to science with their views and knowledge of the social history and presence of specific places, which are rapidly changing due to climate change and global warming. This has also offered better-situated and multidimensional understandings of complex and dynamic ecosystems. The inclusion of TEK can thus bring better-informed results, improve our understanding of environmental situations, and eventually contribute to greater sustainability.

Interconnectedness in Traditional Ecological Knowledge

This chapter introduces the notion of Traditional Ecological Knowledge (TEK) and shows its constantly changing local contents and connections. Our examples of the TEK and its use for policy making and academia come from Indigenous contexts in the Arctic and in the Brazilian Amazon. The cases show the notion of situated sustainability inclusive to both humans and other-than-human actors within certain localities. Our point is that TEK contributes to a complete picture of complex sustainability issues, and it can make a policy-making process more inclusive and better-informed.

Traditional ecological knowledge (TEK)—or local ecological knowledge (LEK), as it is sometimes known—refers to a body of knowledge, practices, and ideas transmitted and (re)generated orally and non-verbally in various forms from generation to generation. It started to receive attention in the 1980s when local species identifications and terminologies documentation were carried out—for instance, in ethnobiology. Several investigations also focused on the human understanding of ecological processes and interrelations in the field of human ecology, but TEK is much broader than environmental knowledge and comprehension of natural phenomena (McGregor 2004). The applied ecologist Fikret Berkes has defined it as ‘a cumulative

body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment' (Berkes 1999/2012: 7).

Even if there is no clear definition for TEK, it is commonly understood that 'traditional' in the term 'traditional ecological knowledge' does not refer to something only from the past (Battiste and Youngblood Henderson 2000/2012: 46); rather, it is about wisdom acquired on a long-term scale, constantly changing and being updated (Berkes 1999/2012: 5). Martha Johnson (1992), the former executive director of the Dene Cultural Institute in the Northwest Territories in Canada, adds that, despite its strong connection with the past, TEK 'is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio-economic changes of the present' (Johnson 1992: 4). TEK thus binds together generations of the past, the present and the future (Porsanger and Guttorm 2011: 18).

TEK is not simply a descriptive body of literature, and nor can it be categorized into separate fields, such as biology, geography, or chemistry. It is holistic, a 'way of life, a relationship that requires doing' (McGregor 2004: 396), and practical experience (Porsanger and Guttorm 2011: 18). TEK is connected to a specific place, and thus it is a situated knowledge (Berkes 1999/2012; Lauer and Aswani 2009; Weir 2009). One cannot be an expert in TEK by studying it without practising, living, and experiencing it personally, as it is possible to do with many types of Western sciences (LaDuke 1997: 35; McGregor 2004: 394). Thus, TEK is empirical, practical knowledge, and cannot be separated from the environment where it is produced. Furthermore, as Rebecca Tsosie (1996: 286–87) claims, TEK has a lot to teach about sustainable living, because it is the spontaneous outcome of the relationship of Indigenous people with the environment, their connection through generations across time, as well as respect for the natural life cycle. In other words, it is often about an

ecologically and socially sustainable way of life, connected to every decision, and policies also (understanding how life is sustained by humans and the environment together).

Even if TEK is rich among several communities (both Indigenous and non-Indigenous), we focus here on Indigenous contexts. Different TEKs can reflect different social systems that define what exists in the world (ontologies) and how knowledge is produced and what can be known (epistemologies). Values (axiologies) also affect the construction of TEK (Battiste and Youngblood Henderson 2000/2012; Berkes 1999/2012; Weiss, Hamann and Marsh 2013). Furthermore, these affect how TEK can be studied, used, and presented. Anishinaabe scholar Deborah McGregor (2004: 394–95) has argued that there are Indigenous and non-Indigenous views on Indigenous TEK. The non-Indigenous attempts at defining TEK focus on the content of the knowledge and how it is conveyed. Meanwhile, she notes that non-Indigenous views on TEK are often partial and incomplete, and even carry colonial attitudes toward Indigenous peoples. According to McGregor, Indigenous approaches underline connectedness, action, and the fact that human beings cannot be considered in isolation from their environment (2004). The Indigenous notion of TEK goes beyond the physical landscape; it refers to social relationships with living beings (human and other-than-human), and it is closer to the understanding of ‘ecosystem’ (Legat, Zoe and Chocolate 1995). Thus, Indigenous peoples view the environment, people, and knowledge inseparably, as a whole, and interconnected with each other (McGregor 2004: 394–95; Roberts 1996: 115). When addressing TEK in dominant languages, Indigenous peoples often use expressions such as ‘the Creation’ (e.g. the Haudenosaunee and Anishinaabe, First Nations tribes within the province of Ontario, Canada), ‘the Earth Mother’ (such as the Maori in New Zealand), or ‘the land’ (Indigenous people in Australia, the Arctic, and Hawaii). Indigenous scholars have argued that TEK is not only knowledge about interconnectedness with the natural environment, but a relationship itself: a ‘practiced relationship’ (Cajete 2000) and ‘the way one relates’ (McGregor 2004: 394).

TEK Among Amazonian and Arctic Indigenous Peoples

TEK exists in various forms, and so do its learning processes, which are culture-specific. In Indigenous contexts, TEK is connected to Indigenous traditions and cosmologies, and embedded in their languages, as certain relationalities and agencies of other-than-human entities are expressed in the structures and terminologies of local languages. TEK also forms a significant part of Indigenous communities' cultural heritage (Porsanger and Virtanen 2019: 293). Our two cases for situating TEK come from the Amazonian and Arctic Indigenous contexts, namely from the Apurinã, Manchineri, and Sámi communities.

For the Apurinã and Manchineri in Brazilian Amazonia, much of their TEK involves practical knowledge of diverse habitats and local livelihoods, such as fishing; collecting; protecting certain forest patches for animals and plants; use of fire for planting; gardening; selecting; weather forecasting; use of medicinal plants; and moving through the forest and waters. The Arawak-speaking Apurinã and Manchineri peoples—with whom the third author, Pirjo Kristiina Virtanen, has worked since 2003—inhabit the Upper and Central Purus River Basin, Southwestern Amazonia. These peoples came into contact with the dominant society at the end of the nineteenth century, and currently their territories are situated in the states of Acre and Amazonas, Brazil. Their long-term environmental observations, perceptions, assessments, and sensing—emerging from the variety of sounds, smells, and predictions—form the core basis of their TEK. These are often reported and analyzed communally; community members accumulate and contribute to the body of TEK in their own ways. Furthermore, community members provide an important epistemic community (who share the same idea of evidence and how knowledge is produced) to debate possible explanations for the events and for argumentation (Virtanen 2016: 98–100). Meanwhile, there are elemental gender, age, and expertise (such as hunters, healers, and so forth) differences in TEK. These guide the Manchineri and Apurinã subsistence practices.

From a young age, the Manchineri and Apurinã learn about their generations' long relationships with the plants, trees, animals, rivers, lakes, and other people, while attention is drawn to the interactions and interdependency of these entities. Personal corporal experience and moral issues are crucial in this learning process (Virtanen 2012). Among the Manchineri and Apurinã, an autonomous person knows the practices of care and respect toward other-than-human entities, as well as various practices of communication with them (animals and plants addressed by specific terms). Other-than-human subjectivities, such as so-called animal and plant master (owner) spirits, are thought to act and even draw on humans in harmful ways, if they become disturbed or when forest resources are overconsumed. The spiritual practices of the communities point to these invisible social realities that are inseparable from their ideas of sustainability (Virtanen 2016; 2019). These become explicit in art, such as songs, stories, and geometric designs applied on the human body, ceramics, clothes, beadwork, which for their part, when materialized, can connect humans and specific other-than-human actors.

Long-term observations are crucial for analyzing forest and water resources and broader ecosystems in the Manchineri and Apurinã lands, and their potential required conservation, among others. Both groups have already contributed to the territorial mappings in their demarcated reserves. These state-led projects studied the impacts of the new paved highways in proximity to the Indigenous lands and how to manage the natural resources in the Indigenous lands (e.g. Correia et al. 2006). The participative approach was crucial in the projects, but little has been done to protect the territories and to improve Indigenous peoples' own economic projects on their own terms. Subsequently, so-called ethno-mapping (*etnomapeamento*) initiatives have also been carried out by Indigenist organizations, and a group of Manchineri and Apurinã community members has been trained as researchers—not only to identify the existing natural resources in the territory but also to produce thematic maps, including culturally and historically valuable places for the community and biodiversity,

as well as to make future resource management and educational plans (e.g. Almeida, Ochoa and Gavazzi 2016; Bavaresco, Menezes and Miller 2016). The maps can be used as a basis to discuss territorial conflicts, invasions, and required protection and conservation acts.

Among the Sámi—the only recognized Indigenous people in the European Union—who live in the northern parts of Nordic countries and Russia, TEK is defined as ‘traditional knowledges and skills’ (*árbevirolaš dieđut ja máhtut*, as in Northern Sámi), which illustrates how it is connected to various practical needs and situations. The concept ‘inherited knowledge’ (*árbediehtu*) points to knowledge that is not learnt from books or in formal education, but inherited from generation to generation. Porsanger and Guttorm (2011: 18) define *árbediehtu* as ‘the collective wisdom and skills of the Sámi people used to enhance their livelihood for centuries. It has been passed down from generation to generation, both practically and through work and practical experience. Through this continuity, the concept of *árbediehtu* ties the past, present, and future together’. TEK in Sámi communities is entangled in livelihoods, such as reindeer herding, fishing, collecting berries, hunting, and traditional handicrafts, as well as moving in the forests, fells, rivers, lakes, and the Arctic sea. For example, in salmon fishing, the knowledge of salmon, its movement, spawning, and needs, as well as knowledge of the Teno river and its changing water level, is very detailed and both transmitted and regenerated through practices, observations, and stories (Guttorm, forthcoming; Joks 2015; Østmo and Law 2018).

TEK in Sámi communities is connected to certain humble dispositions and attitudes of the people to adapt themselves and their practices, which are possible or rational to perform, according to the weather conditions, as well as according to the will of the animals and other non-human actors (e.g. Guttorm, forthcoming; Østmo and Law 2018). Ethical and respectful relationality and reciprocity are displayed by using everything of the animal obtained, and leaving the places in the environment as they were. It also means recognizing and respecting the fact that every animal,

ealli, has a soul or spirit, as well as emotions, values, goals, and conscious ways of acting, communicating, and taking care. Also, lands are perceived as living entities and active in relation to humans and animals (Helander-Renvall 2016). In reindeer herding, this respect has recently encountered difficulties, as the acts and regulations have made it impossible to follow the multiple ancient habits of respecting nature and non-human beings—for example, the practice of not ever counting the reindeer or ptarmigans (Buljo 2017). In multiple Sámi contexts, the spiritual understanding of animals and other nature objects, as well as the existence of subterranean spirits, is called the ‘old religion’ (*dološ osku*), but it can also be called animism, which creates both respect and humility between the mutually interdependent human and other-than-human actors (Helander-Renvall 2010). However, the level on which animism influences practices or the experience of one’s relationship to the environment varies both locally and depending on one’s livelihood (Porsanger 2007). In current Sámi communities, the sacred practices are gradually recovering, as e.g. the practices of using sieidi stones to ask for good luck in reindeer herding, fishing, or life in general are revitalized.

The traditional knowledges produced by both Amazonian and Sámi Indigenous communities, which often aim to maintain the balance between humans and other-than-humans, are still largely disvalued in the schooling processes of dominant societies. For many Indigenous peoples, a long period of assimilation has meant tragedies because of devaluing native philosophies, large-scale economic actions expanding in their territories, missionaries’ attempts to convert the native peoples to different Christian movements, and new values introduced by the dominant culture. Some peoples’ tragedies have been greater than others: several peoples have become extinct, and numerous Indigenous languages are no longer spoken because of oppression, but TEKs—taught informally and since childhood—are important for Sámi, Manchineri, and Apurinã societies, and among many other Indigenous peoples. There are various solutions for bridging TEK and conventional scientific knowledge, and considering how they can become

mutually beneficial. Indigenous peoples' long-term observations can advance scientific knowledge—for example, when planning resource management and nature conservation. Thus, they can also be useful for policy making.

Potentials and Limits of TEK in Sustainability Issues and Science

TEK offers more multidimensional views of complex ecosystems and more sustainable outcomes. As a concept and content, TEK is widely used in anthropological, biological, cultural, and social research (see e.g. Kimmerer 2015; Lam et al. 2020; Lauer and Aswani 2009; Nadasdy 2011). However, in conventional Western science, TEK is often considered to lack a quantitative systematic approach of measurement, and thus it is not easily recognized as valid knowledge. Its systematization is also viewed as challenging because TEK originates from different traditions, language structures, and experiences. In addition, TEK is often considered to exist only qualitatively and as embodied skills, not in a textual form. That is why the position afforded TEK in many scientific investigations is mostly reduced either to producing new scientific hypotheses, testing, or interpreting scientific results (Johnson et al. 2016; Joks and Law 2017). Yet, Sámi scholar, Mikkel Nils Sara, has noted regarding scientific research on reindeer herding '[n]or has scientific research on reindeer produced results that add new insights to or contradict traditional knowledge' (Sara 2009: 162).

The limits of engaging with TEK on sustainability issues in policy making include its truth-value and recognition in academia, as well as in economic and development projects. Recently, however, Indigenous peoples have increasingly become collaborators in scientific projects and conservation efforts, and TEK has become acknowledged in a more inclusive way (Johnson et al. 2016). Co-production of knowledge methods have offered better-situated and multidimensional understandings of complex sustainability issues, such as dynamic ecosystems, which are rapidly transforming due to climate change and global warming. TEK can offer

different descriptions of events—for instance, a more practical view for the field of biosciences to produce their measurements and modelling. Local communities have been able to contribute to science, drawing from their practical experiences and views on environmental history, conservation practices, resource management, and knowledge of specific places (Berkes 1999/2012; Chilisa 2017; McGregor 2014). The synthesis and integration of different TEKs and scientific research can improve our understanding of environmental situations, produce better-informed results, increase our understanding of different values in knowledge-production, and eventually lead to greater and more inclusive sustainability discussions and outcomes (Lam et al. 2020; Tengö et al. 2014; Virtanen, Siragusa and Guttorm 2020). However, the challenge still often remaining is that the earlier epistemological hierarchies lead the analytical thinking and eventual policy-making decisions (cf. Hakkarainen et al. 2020).

Due to the close tie between TEK and the people who hold this knowledge, according to LaDuke, the people who experience and ‘who live by this knowledge have the intellectual property rights to it’ (LaDuke 1997: 37). Ultimately, an unsolved issue that requires more attention internationally is the lack of laws and regulations on TEK, as legal protection of Indigenous peoples’ TEK that has been commercially exploited for years (Porsanger and Guttorm 2011: 35–36). Consequently, there is a need to consensually recognize the Indigenous peoples’ legitimacy over their TEK and to provide it legal protection. A successful example is represented by the UN Convention on Biological Diversity (CBD), where the Code of Ethical Conduct was approved in 2010. It acknowledges the preservation of traditional knowledge and recognizes the sustainable use of the natural resources and the territories by the Indigenous peoples (CBD Code of Conduct 2010; Porsanger and Guttorm 2011: 36–37). In the context of biodiversity convention, however, an unsolved question is also how to remunerate the holders of TEK fairly for their contribution to the world’s biodiversity. The greatest danger at this moment for regeneration of TEK are economic development projects that alter and destroy the local ecosystems

and Indigenous peoples' environments. When TEK can no longer be reproduced, created, and used in practice, its possible future revival becomes significantly uncertain.

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CHAPTER 14

Agroecological Symbiosis

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Abstract

Food systems present a nexus of challenges and potential solutions to the unsustainable global crises of the Anthropocene. Most of humanity interacts with multiple food systems as a result of being involved in our highly globalized, extractivist, and productivist paradigm. This chapter explores Agroecological Symbiosis as a situated example of a food-system (re)design aimed at fostering sustainable interactions from environmental, economic, and sociocultural perspectives. This chapter contributes to our understanding of sustainability through the many emergent and interconnected elements of food systems. We ground the theoretical enquiry in lived

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experience by drawing parallels to the real-world case example of Agroecological Symbiosis. In light of the complexity and interconnectedness of food systems, careful contextualization is needed to enact meaningful sustainable transitions in food systems. There is no one-size-fits-all approach to food systems (re)design, and a variety of actions along the whole food system are required.

Sitting Down at the Table

We do not know how bread is made, how cloth is woven, how a table is manufactured, how glass is made. We consume, as we produce, without any concrete relatedness to the objects with which we deal; we live in a world of things, and our only connection with them is that we know how to manipulate or to consume them.

Erich Fromm, *The Sane Society* (1990: 130)

People gather down both sides of the long tables, with exuberant conversations and easy smiles—this is a joyful space. Folks mingle about the vendor tables, kids run through the crowd, sellers stand behind collections of hand-crafted goods and wares for sale. The air is warm and heavy with the smell of coffee and cake. The room buzzes and hums with layers of sound: steady conversation punctuated by a child's shriek of delight and the sharp sound of chairs scraping on the floor. An accordion player springs to life in the far corner, adding a festive layer over the din. To move through the crowd is akin to swimming through molasses. Karelian pies piled high with egg butter and other sweet and savoury home-made delights, edible expressions of the Finnish countryside.

This space is pure energy. However, as the event ends and the groups break up, it is gone as quickly as it forms. While ephemeral, it is powerful, and the air vibrates with the promise that this will happen again.

The above is a brief sensory description of a visit to the farm market at Knehtilä Farm in Palopuro Village, Finland. The Knehtilä Farm is part of a pilot project called Agroecological Symbiosis (AES). This food system experiment is premised on closing biomass loops and supporting a vibrant and viable countryside. The Palopuro AES is an example of the development of sustainable

localized systems for human-scale production and processing of organic food (Helenius et al. 2017). The term ‘human-scale’ is used here to refer to an agricultural system designed from the ground up with localized sociocultural, environmental, and economic perspectives (see Chapter 7 on *Scales* in this book). This is not a ‘sustainable’ iteration of an industrial-conventional agricultural model, but an agricultural model designed around a locality in which people live and are an integral part of the agricultural system (Condon et al. 2010). In this iteration of the AES concept, there are four local organic farms, an anaerobic digester for biogas production, and a farm cafe/market. Organic farming does not rely on synthetic chemical fertilizers and pesticides, and further differs from conventional farming in that organic agriculture has certification requirements that aim to integrate agroecological practices to nourish plants while conserving water and soil resources (Gliessman 2014).

Agroecological practices approach food systems holistically. On a fundamental level, agroecological food systems are based on developing and supporting sustainable food system practices that encompass the environmental, economic, and social aspects of food systems. Agroecology is a science, a practice, and a relational approach to food both socially and culturally (Gliessman 2014). It was developed in the 1970s as agronomists recognized the value of ecosystem approaches to understanding the science of agriculture (2014). As a practice-oriented way of relating to agricultural systems, agroecology regards the cultivated and uncultivated landscape as part of an integrated ecosystem, rather than agricultural practice as removed from nature (Helenius, Wezel and Francis 2019).

The scope of this chapter is to present a brief introduction to aspects of sustainable food systems. To this end, we use Palopuro AES as a situated example of a sustainable food system model. Our objective is to introduce a real-world case study of a food system designed to support wider goals of sustainability. We follow the examples of Haraway’s (1988) ‘situated knowledges’ and Sze’s (2018) ‘situated sustainability’, which rely on analyzing context, power, and positionality. To better understand sustainable food systems, we demonstrate situated sustainable practices through an AES case that has established tangible, local solutions to the larger challenges facing food systems on a global scale.

Agroecological Symbiosis: Human-Scale Food System (Re)design

Agroecological Symbiosis is a contextually situated application of agroecological knowledge and processes. AES uses an agroecological lens to interpret, understand, and redesign the functions of localized agricultural practices and food systems (Francis et al. 2003). A food system encompasses all aspects of production, processing, and consumption of food, and includes all the interrelated actors associated with each of the multiple levels from farm to fork (Willett et al. 2019). AES is essentially a series of recommendations for the structure and interaction of adjacent agricultural entities for cooperation that promotes locally and regionally sustainable food systems (Koppelmäki et al. 2016). As a concept, AES is intended to be adaptable on different scales in a variety of settings and to allow for the intentional contextualization of food systems in practice. Each AES is designed to correspond to the socio-cultural and environmental strengths and constraints of the area in which it operates (Helenius et al. 2017; Helenius et al. 2020).

AES is a situated development of food systems focused on the re-localization of production, processing, and consumption of food products. Palopuro AES was established to close the energy loop through nutrient (re)cycling and making use of system-produced bioenergy (Koppelmäki et al. 2019). Beyond the environmental considerations, the Palopuro AES provides a living example of a localized food system that acknowledges the place-based natural and social components of agricultural systems (Koppelmäki et al. 2019, see also Chapter 13 on *Traditional Ecological Knowledge* in this book). The Palopuro AES reveals the processes and interconnections of how food gets to consumers, where it comes from, who interacts with it, and where it goes when consumers are not using it (Clapp 2016). AES provides an alternative to the globalized food chain, whose predominant extractivist paradigm deepens the agricultural metabolic rift, with continued depletion of natural resources and production taking place far from the places of consumption (Patel and Moore 2017; see Chapter 17 on *Extractivism* in this book).

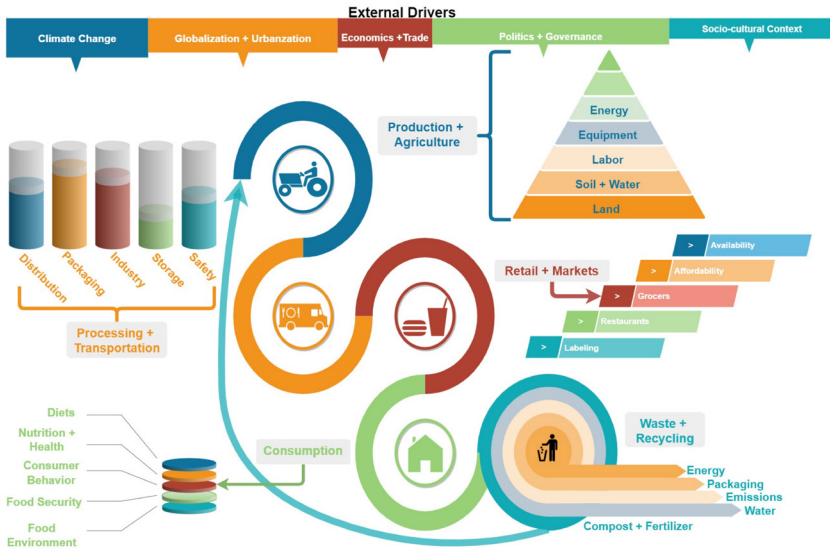


Figure 14.1: The globalized food system is a complex system of connection and interconnections between the environment, economy, and society. This figure illustrates some of the many facets and connections present in the overarching global food system. Adapted from the Food Systems Dashboard (Johns Hopkins University 2020).

Global-Level Pressures on Food Systems

Food systems are crucial for supporting sustainable futures because they crosscut globally interconnected biophysical, economic, and sociocultural spheres (Tuomisto et al. 2017). Figure 14.1 provides a top-level overview of some of the many facets that comprise the global food system. As this figure illustrates, there are many entities involved and connected at different scales with many overall external drivers of the food system. Figure 14.2 depicts current examples of inequality, waste, and excess within the system, which make achieving healthy and sustainable food systems challenging (Foley et al. 2011). Current industrial agricultural practices, in combination with expanding deforestation and competition for land, energy, and water, have pushed the Earth system well beyond its planetary boundaries (Steffen et al. 2015). Productivist agricultural practices, especially mono-cropping, have systematically stressed the Earth's biosphere integrity (i.e., genetic

Global

FOOD SYSTEM

Challenges

2,800 kcal

/ person / day available*

*2,000-2,500 recommended

not equitably distributed



1.4 bil.

overweight + obese



800 M

go hungry / day



200 M

children suffer
undernourishment

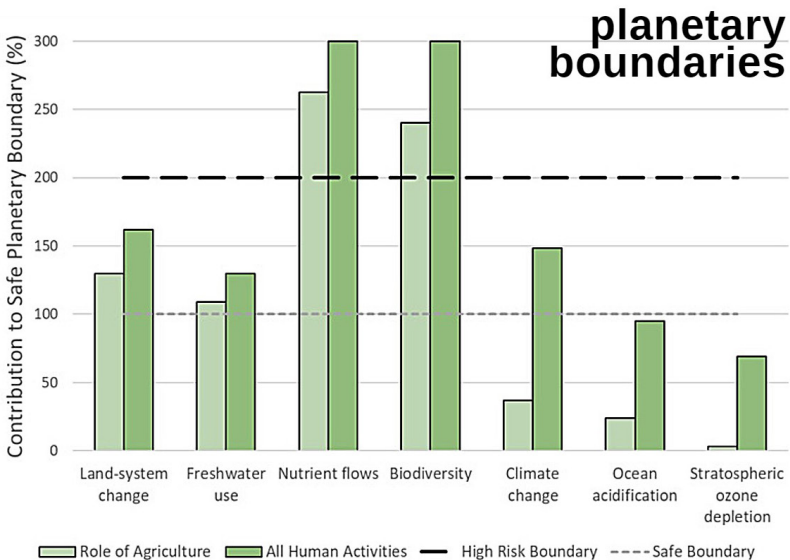


Figure 14.2: Major global food systems challenges, highlighting the impacts of agriculture and nutrition inequities (FAO 2019; Haddad et al. 2016). Planetary boundaries show the role of agriculture in all human activities as they impact or surpass safe and high-risk boundaries (Campbell et al. 2017).

and functional biodiversity) and biogeochemical flows (Campbell et al. 2017).

Our globalized, fast-paced food system has accustomed people to ‘McDonaldized’ foods that are efficient, calculated, predictable, and controlled (Ritzer 2013: 1–26, 186–88). Bolstered by societal demands, foods are faster, pre-made meals are meatier, and people are eating more, which is efficient in production, but deficient in nutrients (FAO 2018). Streamlined food systems, while they have supported the creation of ‘cheap’ food, have homogenized cultures and caused huge negative impacts on human health and the planet (Patel and Moore 2017). Trade liberalization has also caused major shifts in institutional practices and led to the growth of transnational food corporations and greater food industry marketing for normalized processed/packaged products (Vermeulen, Campbell and Ingram 2012).

Food is more than simply the nutrition it provides. There are sociocultural components that must be honoured when designing sustainable food systems. Wide disparities exist between having food security (i.e., adequate access to, availability, stability of, and being able to utilize food) and food sovereignty (i.e., the right of producers and consumers to have a say in how the food system is set up, regulated, and maintained) (Desmarais and Wittman 2014; Rosset 2008). Global diets are changing reciprocally with the global food system. For example, the increased global demand for livestock products, in parallel with increasing wealth and the urbanization of populations, is one of the main drivers of environmental changes (Willett et al. 2019). Compared to plant-based food, livestock products generate generally higher environmental impacts, such as climate change and land use, water resource depletion, and pollution of waterways (Willett et al. 2019). Worldwide, rates of hunger and undernutrition have fallen, meaning lower mortality rates and improved lives for millions of people (Haddad et al. 2016). Yet concurrently, the rates of overweight, obesity, and diet-related chronic disease (e.g., diabetes and hypertension) are increasing in every region globally (Haddad et al. 2016).

Other factors that impact food systems include power relations and imbalances, which can serve as supports or barriers to

sustainable transition (see Chapter 10 on *Exclusion and Inequality* in this book). The roles of power relations are particularly important in developing a contextual understanding of food systems. For many, the privilege of making conscious, directed, sustainable choices is limited due to the daily need to find food and have enough time and energy to prepare it. The varying power relations at play in food systems come from an increasingly globalized and neoliberal paradigm (Tilman and Clark 2014). For example, large agribusinesses (e.g., Monsanto, Bayer) have dominated global fertilizer markets, forced farmers into buying corporate seeds annually, and maintained lobbies that wield vast influence over governments (Clapp and Scrinis 2017).

Sustainability and Food Systems

Food systems are complex and context-dependent, interacting simultaneously on many spatial scales and in multiple temporal dimensions (see Chapter 7 on *Scales* in this book). Depending on how these food systems are designed and managed, they can support sustainability, or they can contribute to worsening climate change, environmental degradation, and social and health inequities (Willett et al. 2019). Global and regional interventions and measures for food system redesign run the risk of overlooking the importance of local conditions when attempting to manage or ameliorate sustainability challenges. There is a persistent need for contextualization when discussing food systems at all scales. One-size-fits-all approaches to food system transition will not bring about meaningful changes (Hinrichs 2014).

What constitutes a sustainable food system? There are many interpretations of what combination of factors makes a food system sustainable. Willett et al. define a ‘safe operating space for food systems’ as ‘a space that is defined by scientific targets for human health and environmentally sustainable food production... operating within this space allows humanity to feed healthy diets to about 10 billion people within environmental limits of the earth system’ (2019: 450). According to the United Nations,

a sustainable food system ‘is a food system that delivers food and nutrition security for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised’ (UN 2015: 32). In addition to food security, sustainable food systems must also consider the food sovereignty of the participants in the system. This means designing and implementing systems that support the ‘right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems’ (La Via Campesina 2007).

AES is an example of a food system model that can improve sustainability and address the issues of the global-level pressures of food systems on a context-based, local scale.

Is AES a Sustainable Food System?

Environmental, Economic, and Sociocultural Properties Of Palopuro AES

AES systems address the issues of unsustainable global food systems and model greater resilience to environmental changes. For example, AES uses crop rotation, including clover-grass lays, to improve the soil structure and, therefore, the long-term productivity of the soil and resilience to climate change (Helenius et al. 2017). Clover crops fix nitrogen from the atmosphere so that synthetic nitrogen fertilizers are not needed, which reduces the environmental impacts of input production and improves the self-sufficiency of the farm. Chemical pesticides are not used in AES, which increases biodiversity and reduces ecotoxicity, lessening the potential for human health issues. In mixed-farming systems that contain livestock and crop production, the nutrients can be recycled efficiently, and losses to waterways are reduced. Anaerobic digestion of the manure and crop residues improves the quality of the fertilizers and provides renewable energy for the farm, which reduces dependency on fossil fuels.

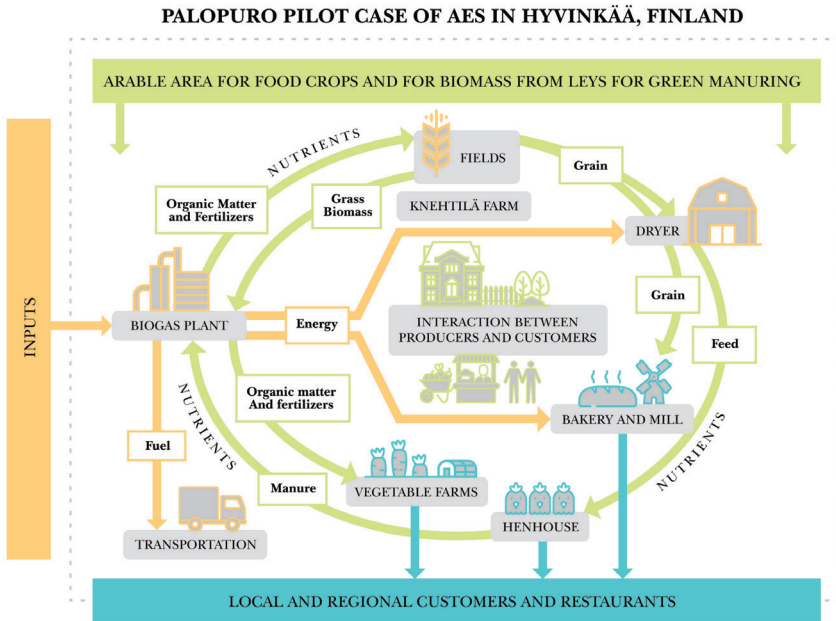


Figure 14.3: The idealized AES model for Palopuro village from the perspective of nutrient and energy flows. **Note:** the interaction between the producers and consumers through the farm market is at the heart of the AES model. This figure is developed from a figure used in Koppelmäki et al. (2019).

Palopuro AES recycles organic materials to produce biofuel and fertilizers (Koppelmäki et al. 2019). The manure from the animal operations, the excess silage from the organic leys, and other crop residues are combined and deposited in an on-farm anaerobic digester. The anaerobic digester converts the organic material to biogas (i.e., gas consisting mainly of methane and carbon dioxide) and digestate (i.e., the remaining solid and liquid fractions of the organic materials). The resulting digestate is used as a fertilizer for the grain and vegetable fields. The biogas produced is used to run the machinery on the farm, with the excess sold to power consumer vehicles. This creates a system, depicted in Figure 14.3, wherein the nutrients from the side streams of organic materials are recycled and subsequently used as biofuel. This system was developed from the grassroots level; the farmers themselves

wanted a way to use their side streams and create biofuel on a local scale (Koppelmäki et al. 2019).

The AES model also acknowledges the economic facet of sustainability through a focus on creating actionable opportunities for farmers to operate profitable farms. In the Palopuro AES, one way this is achieved is through side-stepping the raw materials market and making their own value-added products. Food processing, in addition to food production, is performed at the farm level. Bringing food processing into closer proximity to food production serves to reduce the number of steps in the supply chain and reduces the need for intermediaries (Koppelmäki et al. 2016; Helenius et al. 2020). This allows the farmers to retain a greater degree of autonomy. Such autonomy is important, as many farming practices are no longer independently viable due to the contrasting economic properties of the global food system. AES systems directly improve unsustainable food systems issues by increasing the profitability of farms, creating jobs in rural areas, and boosting rural economies.

The sociocultural aspects of the Palopuro AES are represented most strongly through the farm-market events, which, in essence, bring the community into the farmers' front yards. Social and cultural reclamation and education happen through activities at the farm markets. The markets consist of prepared food, vegetable, and handicraft vendors. In addition, there is usually musical and/or other forms of entertainment and expressions of cultural traditions. These events are attended by several hundred participants and have occurred regularly since 2012. The AES model actively promotes the inclusion and creation of community spaces as an aspect of food system redesign.

The community and sociocultural supports in this AES juxtapose more globalized systems by bringing producers and consumers into closer contact. Such localization and connections work to boost the food literacy of the consumers in the community who interact with the AES. Consumers have direct knowledge and appreciation of where their food comes from, how it is produced, the working conditions of farmers, and how AES practices

improve the sustainability of their local food system. Further connections foster improved food security through the availability of local food in stable, accessible, available, and utilizable ways that are less reliant on external inputs. Food sovereignty is also addressed by localizing the systems, giving producers more power and control over their means of production, processing, and interacting with consumers.

Conclusion

In a successfully redesigned local (or broader) food system, the goal is not to apply a single iteration of the AES model to solve all problems and implement all sustainable solutions, but rather to develop a network of overlapping systems that are able to respond as a whole to the unsustainable practices of each particular place. The overarching goal of the AES model is to create a localized food system premised on transparent biomass cycling, human-scale food production, and supporting liveable and viable countrysides. The AES pilot project at Palopuro, used here as an example of situated sustainability, continues to evolve and develop in support of these overarching goals.

Transitions to sustainable food systems will require a variety of actions across the entire system. The risks of unsustainable food systems are felt globally, but lack of action in a concerted and timely manner will likely cause the greatest impact on local agricultural livelihoods, resources, and food availability (FAO 2011). If significant changes in production and consumption are not made, the impacts of climate changes on food systems will be significant, disproportionately affecting poorer populations more than wealthy ones (Vermeulen, Campbell and Ingram 2012). Given the negative environmental impacts and the extreme pressure that food production has placed on our planetary boundaries, agriculture, and the food systems feeding the world need to make large course corrective shifts (Willett et al. 2019). Many possible future food systems have been suggested that address the environmental, economic, sociocultural, and other dimensions of sustainability

discussed. Major changes are needed on multiple levels to enact food systems (re)designs that support sustainability.

Even in the face of such challenges, there are actions that can be taken to transition to sustainable food systems. Recommended actions include adopting healthy diets following national dietary guidelines and reducing animal-based foods (Willett et al. 2019), implementing novel foods and technological solutions (e.g., cellular agriculture, insects, seaweed, mycoproteins) (Parodi et al. 2018), reducing food losses and waste (Kummu et al. 2018), and leveraging strategic economic and fiscal incentives (e.g., eco-taxes and eco-labelling, marketing and education around new foods, and subsidies) (Lindgren et al. 2018). Furthermore, deeper paradigmatic shifts in the ontologies underlying diets have also been suggested for transitions to ‘post-Anthropocene diets’ for sustainable future food systems (Mazac and Tuomisto 2020). All suggested actions complement and support the development of localized systems such as the AES model. The opportunities and challenges of future sustainable food systems highlight the importance of context-dependent solutions.

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CHAPTER 15

Heritage Naturecultures

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Abstract

This chapter considers heritage natureculture as a resource and theoretical lens to inform sustainability studies. In the context of changing environmental, cultural, and technological conditions, the category of heritage has emerged as a situated concept that describes how people relate to place and society in late modernity. It is similarly a source to challenge received histories that exclude particular experiences from official public narratives. In response to climate change, heritage scholars increasingly turn to institutions and sites of cultural memory as contested grounds to reimagine both past and future relationships with the environment.

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This chapter offers examples of these developments in theory and practice. Thinking heritage in relation to sustainability through these contexts enables scholars to understand how knowledge of the past is composed, maintained, and rewritten, with a view toward present and future generations.

Introduction: Disrupting Heritage

In an era of anthropogenic climate change and accelerated human mobility, the category of heritage becomes a key site for situating sustainability discourse. Heritage has been defined at the crossroads of international legal protections and local cultural definitions, referring to sites, objects, and practices that constitute tangible and intangible sources of meaning-making in the world. Originally limited to cultural objects and places considered worthy of conservation by historians, art historians, archeologists, architects, and anthropologists, the term has expanded to include important ecosystems, as well as practices through which cultural memory is made, reproduced, and circulated in the contemporary world. In 2015, over 20 representatives from international heritage organizations issued The Pocantico Call to Action on Climate Impacts and Cultural Heritage, sounding an alarm that climate change poses a material threat to world heritage sites (Markham 2016; Union of Concerned Scientists 2015). The call to action reaffirms the status of cultural heritage as a human right and argues that threatened heritage sites contain invaluable knowledge of the human and environmental past that can inform present societies. However, anthropogenic change also forces us to rethink the categorical distinctions between nature and culture, distinctions that have reinforced the belief that humans are separate from the environment and that have traditionally informed our understanding of 'heritage' (Lowenthal 2005). The ontological distinction between natural heritage (e.g., national parks, wildlife reserves, bodies of water) on the one hand, and cultural heritage (e.g., arts, industry, traditional practices) on the other, can no longer be easily maintained in the Anthropocene (Harrison 2015; Lowenthal 2005; Solli 2011).

Thankfully, philosophers of science such as Bruno Latour (1993) and Donna Haraway (2003) have posed the term ‘nature-culture’ to refer to hybrid objects that cannot be reduced to either of the dualistic categories of nature or culture. This awkward construction is made to slow down our thinking in order to attend to the material and discursive practices through which the world takes on meaning, as it supports the formation and circulation of knowledge. Thus, heritage natureculture is a conceptual hybrid that emphasizes entwined environmental and social histories on both the material and symbolic level. This chapter takes this situation as a starting point and illustrates how heritage practitioners are redefining the present through the past. Telling stories that emphasize entangled meaning and being allows us to better situate heritage practices in the service of sustainability.

Defined one way, heritage is all the invented tradition and social memory that is under threat by anthropogenic change. However, considered critically, heritage is that which disrupts settled convention and presentist assumptions by dramatically reframing the material history and intangible traditions of human culture. It works against the ‘reactionary populism’ that uses heritage rhetoric to buttress essentializing and exclusionary claims to identity and territory in that it exposes overlooked and deeply-interrelated material histories (González-Ruibal, González and Criado-Boado 2018). Critical heritage practices can also serve the interest of cultural recognition. In the case of traditional ecological knowledge, it creates opportunities for epistemic exchange in the management of ecosystems (see Chapter 14 on *Traditional Ecological Knowledge* in this book). Likewise, it opens the way to emerging digital heritage practices, as well as to alternative and non-professional or non-expert understandings of heritage.

The critique of the so-called Authorized Heritage Discourse has become a cornerstone of the Critical Heritage Studies movement (Smith 2006). Within this context, and the wider context of sustainability, it is appropriate to consider not only expert, specialist, and authoritative viewpoints, but also those of non-professionals. Previously overlooked groups, which include traditional Indigenous communities and amateur enthusiasts, are now receiving

more attention in heritage discussions. In some cases, amateur enthusiasts identify and collate knowledge about a particular heritage category long before academics become interested. This is seen in the material heritage connected to, for example, World War I material culture in Belgian Flanders (Thomas and Deckers 2020; van Hollebeke, Stichelbaut and Bourgeois 2014) or the material remains from the World War II era in Finnish Lapland (Thomas 2019). Furthermore, the participatory potential of heritage for co-creative engagements between specialists and members of the public, who are sometimes identified as citizen scientists, is a growing area of research and practice (e.g. Gibb 2019; Simon 2010). These co-creative engagements with the past highlight the democratic practices through which cultures are made, and reframe heritage as a 'space in which futures are assembled'. Since it 'involves working with the tangible and intangible traces of the past to both materially and discursively remake both ourselves and the world in the present', Rodney Harrison, for instance, argues that understanding heritage as a natureculture is fundamentally a future-oriented practice (2015: 35). These conceptual shifts are registered in broader culture with increasing urgency.

This disruption of past, present, and future imaginaries is expressed in *Parasites Like Us*, a speculative novel written by Pulitzer Prize-winning US author Adam Johnson (2003). The otherwise mundane setting of this campus novel is shattered when archeologists unearth a jar containing ancient North American popcorn, which they eat. The exposure of the jar's contents simultaneously unleashes a buried plague, wiping out domesticated livestock and those humans who have not been immunized by the corn. The graduate student whose project involves reconstructing paleolithic techniques and simulating hunter-gatherer lifeways enables the small group to survive the collapse of agricultural-industrial society. The narrative dramatizes the biological, settler-colonial, and temporal conjunctions that disrupt historical periodization. Narratives of cursed archeological sites emerged from the colonial expeditions that founded many museum collections. The symbolic threat from the past, often from the ethnic other, are products of an orientalizing gaze. Yet today, this threat from

an unearthed past comes from viruses released by melting permafrost, the exposure and erosion of archeological sites, and the disintegration of the natural markers (e.g. layers of sediment or ice) that are necessary for measuring environmental change and human impact across geological time. Indeed, this temporal collapse contributes to what author Amitav Ghosh (2016) calls ‘the great derangement’ of climate change, which is exacerbated by the erasure of the imperialist economies that have contoured the globe through extractive industries. This collapse of past and present is joined by a collapse in the distinction between nature and culture.

In this context, museum curators and historians alike must consider how climate change challenges the conventional distinctions between natural history and cultural history. The condition of anthropogenic climate change demands histories that emphasize the environmental dimensions of human culture, with expansive understanding of the diverse conceptions of the natural world. These approaches are intended to ‘prepare for uncertain futures’, ‘manage nature/culture borderlands’, and ‘conserve diversity’ in culture and ecology (Harrison 2015: 37). On the other hand, these practices draw critical attention to the objects and locations of heritage, specifically how these objects and locations are identified, theorized, and put in conversation with broader contexts. Redefined as heritage naturecultures, the objects, sites, and processes of storage and transmission may open new possibilities for humans to redefine their place in the world and cosmos, while at the same time transforming the policies that threaten it.

Uses of the Past

Climate Stories in the United States

The new uses of heritage can be found in the US National Parks Service, whose Framework for Addressing Climate Change with Cultural Resources outlines a plan to integrate traditional ecological knowledge, archeological evidence, and cultural history into a strategy for managing national parks, which combines science, mitigation, adaptation, and communication (Rockman 2015: 40).

This approach examines how past human societies responded to environmental changes like droughts with evidence from the archeological record. Reconstructing successful and unsuccessful responses from the past can inform current social dynamics. Likewise, the strategy recognizes the epistemic importance of Indigenous North American knowledge and cultural memory. Inviting Indigenous collaboration and co-production into climate change mitigation—for instance in the controlled burning of forests—is a necessary step toward redressing dispossession. Perhaps the central pillar of this programme is communication.

The ‘every place has a climate story’ initiative synthesizes this knowledge into stories that highlight the naturecultures that compose the objects of heritage institutions. These stories are designed to communicate: 1) how climate affects material heritage now and in the past; 2) the disproportionate environmental impact, past and present, of European settlement on Indigenous societies; 3) how the archeological record of past responses to environmental change can inform the present; and 4) what contemporary practices and effects result from this history (Rockman 2015: 46). Even more recently, the disastrous bushfires in Australia in 2019–2020 have generated media discussion on how adhering to traditional Indigenous land management practices could have safeguarded against the fires (Shastri 2020). In such cases, we find a determined effort to use the naturecultures of the past and present to fashion more durable futures.

Material Memory in Finnish Lapland

An example of heritage natureculture that has, until recently, continued without much intervention from professional management is found in the communities that interact with the material and environmental remains of World War II in Finnish Lapland, particularly among the numerous German military sites established between 1941 and 1944. These interactions range from everyday encounters of local inhabitants, to the ‘hunt’-like interventions of military collectors searching for objects of interest, through

to more profoundly emotional experiences of descendants. This sheds light on changing attitudes of how material and cultural heritage is viewed within the context of nature. As Herva (2014) notes, the perception of Finnish Lapland, especially in tourism marketing, is often as an ‘untouched’ wilderness, exotic and liminal compared to the rest of Europe. Yet the positioning of Lapland as a natural wonder ripe for exploring denies the agency of humans in its shaping (particularly that of Indigenous Sámi), and points to colonialist Othering. Furthermore, there has even been concern on the national level for Finland to distance itself from its wartime past of acting as a co-belligerent with Nazi Germany (Herva 2014: 300). Connected to this perception of Lapland as devoid of human intervention, and also with Finland’s downplaying of its role in the war, in the mid-2000s a voluntary organization known as *Pidä Lappi siistinä* (‘Keep Lapland Tidy’) began clearing World War II remains from forests in Lapland. This was ostensibly for safety reasons; much of the material removed was made from rusted metal, e.g. food cans, spent artillery, and remains of field kitchens. However, it also points to the perception of this historical material as somehow spoiling the otherwise ‘pristine’ wilderness of Lapland, and perhaps of being of a period that was better forgotten. Over time, however, debate, especially in the local press, moved from discussing whether the retrieved metal had any ‘value’ beyond potential resale as scrap, through to calls to leave the material remains in situ, as more people recognized their interrelationship with nature and their position as testimony to the recent conflict past (Thomas, Seitsonen and Herva 2016).

In more recent times, in part due to the raised public concern for (and appreciation of) World War II material as ‘witnesses’ to the violent past, a greater sense of their status as part of the palimpsest of heritage natureculture in Lapland has also developed (see Seitsonen and Koskinen-Koivisto 2018 for interviews with residents of the Sámi village Vuotso referring to the material culture in this way). This has also seeped into official policy, with it becoming possible only in recent years to designate sites from this period as official (authorized) heritage, in turn affording them

legal protection (Enqvist 2014). Whether this official intervention in practice alters how people continue to regard, consume, and even adventure, in this particular environment, and with this particular material culture, remains to be seen.

Digital Heritage Naturecultures in India

In a different world region and cultural and social contexts, we find the use of heritage in digital creative industries, both in relation to and beyond naturecultures. India is currently experiencing a boom in video-game development, especially from so-called indie (independent) studios that use regional cultural heritages in their games in innovative and engaging ways. These include specific aspects from Indian history, art such as music, dance, and dress styles, and architecture. Such games are based on the Indian developers' marked consciousness of the distinctive nature of their own heritages and their potential to attract global audiences. A notable game that toys with Indian cultural heritage on many levels is the forthcoming but already intensively promoted and acknowledged (in game trailers, events, dance shows, journalistic blog entries and on its own website) 'Antariksha Sanchar' (English: 'Transmissions in Space'). Blending the life story of the South Indian mathematician Srinivasa Ramanujan (1887–1920) with elements of science fiction, Steampunk and, most intensively, South Indian classical Bharatanatyam dance, the 'point and click adventure inspired by the dream theorems of prodigious mathematician Srinivasa Ramanujan' (Antariksha 2017) creates a distinctive South Indian heritage tale.

One remarkable feature is the game's playful incorporation of classical Hindu mythological recounts of humans' relation to aeronature, that is, to airspaces and to the creatures inhabiting them, such as insects, birds, and mythological beings. As indicated in its name, Antariksha Sanchar 'traces the idea of flight from small plants to insects to birds and finally to mythological concepts like Hanuman, the Pushpaka Vimana and the Vaimanika Shastra, an early 20th-century Sanskrit text on aerospace technology', as the

main game developer Avinash Kumar (cited in Anonym 2016) explains. It adds to the game's appeal that intensive panoramas of South Indian landscapes with their own unique aesthetics, dominated by palm trees, are incorporated into gameplay. As humanity's long contemplations on space and aero-nature are taken up and redefined through the specific context of Indian cultural heritage and in the digital format of video games, this history is brought to larger audiences—both in India and globally.

Incorporating such themes in the video-game format invites new and potentially unique views on aerospace and human interactions with atmosphere, and additionally offers playful, creative experiences with these specific heritage naturecultures. This extends to the persons playing the game but also beyond them, to persons watching the game trailers, visiting the dance events around the game, and so forth. As it states in the current dance and show events promoting Antariksha Sanchar: 'when it all comes together, you are treated to an engaging, immersive storytelling experience that blends history, mythology and modern technology in new and exciting ways' (Kappal 2018). Exploring heritage natureculture through the video-game industry raises questions of authorship, commodification, archiving, and authenticity, as it forecasts a future of heritage production that redefines the immersive experience and the encounter with time.

Conclusion: Future Pasts

The emerging framework of heritage naturecultures foregrounds the historicity of the natural world, as well as the historicity of human concepts of nature. Likewise, as anthropogenic environmental change challenges the imagined autonomy of culture, heritage naturecultures enable scholars and citizens to focus on the non-human entanglements that make culture possible. As the above examples illustrate, the rise of heritage naturecultures in the context of sustainability is opening up alternative pathways for sustainable land management, creating tourism and livelihood industries that redress the memory of war and systemic aggression,

and digitally reviving environmental and scientific culture to engage audiences in new contexts. The difficulty of a concept like heritage is that it is too abstract to be easily contained, and can be misused by those who prefer fantasy to an actual, if contested, past. Using a concept like heritage natureculture means recognizing that the past that is conserved is simultaneously a past that is produced. It is a composition of the human and non-human, brought together in the service of co-existent futures.

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CHAPTER 16

Tourism Platforms

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Abstract

Over the past decade, Internet-enabled peer-to-peer platforms have had a significant impact on urban life and the economies of many cities. This process is sometimes referred to as ‘Airbnbization’, with reference to the most notable platform, Airbnb, which has grown explosively since it was founded in 2008. Airbnb and other peer-to-peer platforms rely on new business models that are designed to extract and use data while intermediating between different groups of people. These platforms have been conceptualized both as forms of a sustainable, decentralized sharing economy and as manifestations of platform capitalism that disrupts the existing structures of market economies. We draw on the cases of

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Venice and Helsinki to illustrate the sustainability discourses and geographically uneven consequences of Airbnb and other peer-to-peer platforms. Venice is an example of a city where tourism has reached unsustainable levels, whereas Helsinki is an example of a city where the growth of Airbnb has been more modest. These two cities thus illustrate the contradictory discourses on economic and social sustainability surrounding peer-to-peer platforms.

Introduction: Situated Sustainability in Tourism

Many tourism institutions and policy-makers have recently embraced ‘sustainability’ in their attempts to define the role of tourism in development. Discussions and research on ‘sustainable tourism’ have proliferated in the international agenda, starting from Agenda 21 issued at the UN Rio Conference on Environment and Development in 1992, up to the recent Sustainable Development Goals (SDGs) launched in 2015 (UNWTO 2010; United Nations 2015). Tourism can contribute to achieving these goals, including decent work and economic growth (SDG8); reduced inequalities (SDG10), as well as peace and justice (SDG16).

More and more, the tourism sustainability discourse has included complex analysis of destinations, infrastructures and services, and social corporate sustainability tools to control potential impacts from a managerial perspective (Funt and Lynes 2018). Despite these considerations, many researchers have criticized the prevailing understanding of ‘sustainable tourism’ for being connected to a growth-oriented neoliberal policy framework (Mowforth and Munt 2015) where the public sector has only a minor role. Sustainability in tourism is still conceptualized largely in terms of economic and financial growth, whereas social and environmental sustainability have remained subordinate to the economic dimension. For example, in many destinations, ecotourism is promoted as a way of integrating local livelihoods into transnational flows of capital, goods, and culture. However, tourism economy, especially when carried out by large investors active in multiple destinations, may threaten local traditional ones. Also, fostering economic growth does not guarantee that the surplus, employment,

benefits and adverse effects generated through tourism are distributed evenly (Hall and Richards 2000).

In this chapter, we propose a situated understanding of sustainability, acknowledging that while the sustainability issues related to tourism are ‘global’ in nature, their manifestations are contingent on the local cultural, soci(et)al, and regulatory context.

Situating sustainability allows us to reach a critical view on tourism, going beyond the assumption that there are simple and universal fixes to negative impacts. Situated thinking involves a reflection on practices, through which the locale is transformed as a consequence of structural changes enacted by all parties engaged in the tourism industries. As Haraway (1988) proposes, situated knowledge demands subjective positioning inside the issues, rather than external hegemonic visions. Situatedness is not sufficiently considered in tourism, although this area of study and operations is deeply intertwined with local planning, democracy, and governance. By proposing to link tourism to situated sustainability, we aim at deeper consideration of ethical and political implications of the tourism industry on places. Tourism may help to revive and resurrect cultures and sustain livelihoods for some groups, but may also cause pressures to socio-ecological systems and built heritage, infrastructures, and cultures. Tourism brings external flows of people, capital, consumption—and narrations—into local areas through commercial intermediators that are most often outsiders. This brings along problematic effects as they prioritize tourists and capitalist interests over local residential needs.

Our position in this chapter on urban tourism is situated alongside the residents of our cities of origin: Venice and Helsinki. The two cities represent very different situations of urban tourism: Venice is a mature destination, often seen as ‘the bad example’ of unsustainable tourism worldwide, while Helsinki has a recent involvement in global tourism networks. However, they are both interested in Internet-based platforms offering tourism services. Our proposed perspective looks at the platforms’ contribution to changing urban areas as places experienced by both residents and tourists. While it is usually argued that global tourism and Internet platforms bring homogenizing pressures, our situated approach

brings recognition of epistemological and ontological diversities within places, and support for the maintenance of diverse identities, values, and functions. This diversity of visions allows points of conflicts to emerge; for instance, between the tourists' use of public transportation during peak times of work and residents' commuting; or between tourist appeal for community festivals or costumes, and the local needs to preserve local traditions and defend them from industrial appropriation. Residents' situatedness may highlight impacts to the extent that they perceive tourism as a heavy extractive industry taking over long-term practices and sometimes reacting through social mobilization to restore sustainability, cultural appropriateness, and spatial justice.

However, local agency becomes complicated in the current times marked by social media. The possibility—for both tourism operators and consumers—to operate in virtual spaces for promoting, selling, and buying products challenges traditional forms of tourism management and spatial governance. For these reasons, we think that Internet-based tourism activities offer an interesting field of observation of structural changes that happen in our societies nowadays. They also offer a space for the formation of new constituencies and community agency. Such activities do not only operate virtually but they also produce changes that are concretely impacting physical infrastructures, livelihoods, social and economic relations, environments, cultures, and the rights to the city.

Genealogy of Platform Tourism

The rise of Internet-based activities in tourism, through various commercial websites, mobile applications, and social media, is tied to the emergence of platform capitalism, which relies on data as the basis of productivity and economic growth (Olma 2014; Srnicek 2017). According to Srnicek (2017), digital platforms have become a means by which the capitalist system is adapting to the declining profitability of the manufacturing industries. Airbnb, Booking.com and Uber are examples of digital platforms operating in the tourism sector. Their business model focuses on accumulating capital by extracting, analyzing, and controlling data, while

outsourcing everything else, including workers, maintenance and training (Srnicsek 2017: 33–35). Their interconnection with other platforms, e.g. Google Maps, enhances the perception of proximity and accessibility of various services and, thus, contributes to making areas more appealing to potential guests.

The rise of these platforms has generated controversial discourses. On the one hand, they have been conceptualized as a form of sharing economy that generates additional income for local residents, decentralizes tourism within cities and promotes sustainability by enabling the sharing of underutilized resources (Martin 2016). On the other hand, digital platforms are criticized for challenging the existing regulatory environment, disrupting structures of market economies and fostering overtourism by accommodating the growing tourism demand (Garcia-López et al. 2019; Martin 2016; Srnicsek 2017). Many researches have observed the platforms' profound effects on cities and neighbourhoods: transforming cities into neoliberal spaces of entrepreneurial activity, while fostering commodification of people, housing, and residential neighbourhoods (Minoia and Jokela 2021). For example, Airbnb has shifted from the sole facilitation of peer-to-peer home-sharing toward a diversified offer including apartments and houses, tourist guiding, and other services. Studies have shown that while Airbnb encourages interaction in accordance with the principles of 'sharing economy', the interaction between hosts and guests is limited and more focused on the house rental than the human relationship (Ert and Fleischer 2019: 286; Jung et al. 2016).

While the undesired effects of platform-driven tourism have been acknowledged in many cities, effective governance structures are not in place. These would be needed, especially in areas that suffer from 'overtourism', the overcrowding of destinations or popular tourism sites within them (Dodds and Butler 2019). Platform-based short rentals contribute to overtourism by allowing tourists to access private homes, staying in historical, old neighbourhoods where hotels would not be established. In addition, many studies have reported a connection between gentrification and proliferation of Airbnb listings (e.g. Gutierrez et al. 2017; Wachsmuth and Weisler 2018). This is because short-term rentals

have a direct effect on the cost of housing and living, while progressively expanding at the expense of low- and middle-income long-term residents. In the most valued areas, housing speculations are already causing displacement of residents and loss of traditional economies. Other changes involve retail shops and services to accommodate the tourists; decorations and interior designs to please expectations of authenticity and comfort.

As digital platforms impose their own rules to the market, they introduce new organizational forms and new modes of exploitation. For example, the outsourcing of labour has meant that work is done on an on-demand basis by workers who are legally contractors rather than employees, and who may, therefore, be responsible for safety issues and be vulnerable in the face of changes in the digital platforms (Acevedo 2016; Dolnicar 2019: 256–57, 260). The vulnerability of workers is further reinforced by monopoly tendencies of digital platforms based on the platforms' access to vast masses of data. Hosts or superhosts—the most successful ones—constitute a differentiated category of workers (Roelofsen 2018): originally depicted as residents disposing of under-utilized parts of their homes, this group has changed into hosts offering entire apartments with increased professionalism, sometimes presenting online with a rich pool of apartments to rent.

As the following examples show, the organizing principles of tourism are intertwined with wider economic and societal changes, which have to be taken into account when sustainability is examined from the perspective of tourism. It is important to focus on the ways in which global trends manifest themselves in local contexts, paying attention to the scale of neighbourhoods and individuals.

Case Studies

Venice

The case of Venice represents a space of overtourism, and what 'a worst-case scenario' would be for other tourist cities. Already for decades, the tourism monoculture has substituted traditional

livelihoods and cultural activities that had formed the very essence of life on the lagoon city for centuries (Minoia 2017). With the decline of the petrochemical industrial pole of Porto Marghera and other productive sectors like fisheries and handcrafts, the tourism industry, combined with the growing port, has become a major labour provider. It is offering many precarious and exploitative jobs and adding pressures over residential services and commerce, prioritizing those devoted to short-term visitors (Salerno and Russo 2020). In this situation of economic insecurity and social disgregation, the ownership of apartments has been seen as a safe-haven asset, and Airbnb as an intermediary of lodging for tourists has enforced the idea of housing as a source of revenue, rather than the main asset for residential rights (Russo and Richards 2016). Massive advertisement of Internet-based rental intermediators has been spread in many forms (phone calls, letters to private residents, banners in public transport boats, etc.).

Many observers argue that Airbnb and other platforms accelerate the transformation of residential apartments into tourism lodging. Inside Airbnb (2020) shows that, for instance, in August 2019, there were twelve listings for every 100 residents in the historic city. The same analysts have also assessed a strong presence of multiple listings in the hands of a few large operators. Data observation also shows that, given the physical limitation of the historical city, the area of Airbnbization is expanding to the mainland of Mestre and beyond.

The inhabitants of the historical city are declining at a pattern of about 1000 individuals per year and, in July of 2021, the number of inhabitants totalled just below 50,000 persons. It is argued by many that the increase of platform-based short-term rentals has been one of the main causes for residents' evictions. However, this correlation is contested by some tourist professional categories and even by the local administrators who have claimed that the decline is due to natural causes such as the concentration of aged residents in Venice compared to the inland communal area. In reality, the current spreading of tourist apartments in the mainland shows that the Airbnbization of the city is mainly caused by the higher rentability of short-term rentals compared to long-term

ones. Many residents' associations strive for a defence of housing rights, but their requests for public intervention to control tourist extractive exploitation remain unanswered, with the sector totally in the hands of strong entrepreneurial lobbies.

Airbnb has also evolved from the intermediation of rental services to the inclusion of other tourism services, e.g. promoting guided tours for allegedly authentic experiences in Venice, for 'living', 'cooking' or 'shopping' 'like a Venetian', despite the fact that the service providers are often new residents with little connection to the city.

Besides Airbnb, many other platforms guide tourists in their activities, like in any other tourist destination. One online platform that has changed the spatiality of walking in Venice is Google Maps. Its importance in navigating and orientation is paramount. As a consequence, the space of the visits has expanded. Through Google Maps and other mobile softwares, everybody is able to explore narrower streets and take shorter ways; but this, unfortunately, contributes to a daily congestion that is perceived by the residents as a further attack into their intimate life.

Helsinki

Helsinki has recently become an integral part of international tourism networks. The total number of overnight stays increased from 3.2 to 4.2 million between 2010 and 2018, resulting in an over 30 percent increase (Visitory 2019). This development manifests itself in the urban scene as proliferation of hotel projects and congestion around major tourist sites during the peak season.

The growth of tourism has been entangled with wider soci(et)al transformations driven by state investments in knowledge-based industries following the economic depression of the 1990s (Schienstock 2007). In this process, Helsinki has acquired a special role as a hub through which Finland has connected itself to global flows of capital, knowledge, and labour, and portrayed itself as a trailblazer in smart solutions and business opportunities enabled by digital data.

As part of this development, the state is currently fostering the digitalization of the tourism sector in order to enhance competition and enable the entrance of new actors to the global tourism market. The digitalization of tourism is connected to urban policies that emphasize the importance of local entrepreneurial spirit as a driver of desired urban development. Dating back to the ‘creative city thinking’ of the early 2000s (Borén and Young 2013), the City of Helsinki has reinforced the economization of culture for the purpose of generating profit and attracting a talented workforce, companies, and affluent tourists. Recent city branding endeavours have portrayed the city itself as a ‘platform’ that fosters the economic vitality of the city by enabling rather than regulating entrepreneurial activities (Jokela 2020).

In this context, digital platforms in tourism appear as enablers of ideal forms of active, responsabilized citizenship. This idea has been fostered through the recent deregulation of taxi services by the Act on Transport Services (2018), which has opened incumbent actors up to competition from new entrants. One of these is Uber, which has recently re-established its operations in Helsinki. Similarly, short-term rentals provided by Airbnb and other digital platforms have proliferated in the city, giving rise to new types of micro-entrepreneurs. In 2018, there was one Airbnb listing per 124 inhabitants (compared to one per 178 inhabitants in 2016). This development has been supported by urban policies and marketing campaigns that highlight the importance of ‘authenticity’ and ‘local way of life’ as Helsinki’s key assets in the field of tourism (e.g. My Helsinki 2019).

For some public authorities, Airbnb appears as a solution for demand fluctuations, as it has enabled the growth of tourism during the high season. In the spirit of the ‘authenticity’ discourse, some commentators have also praised Airbnb for directing tourists to areas that are less populated by tourism, enabling them to ‘live like locals’ in spaces that would otherwise be underutilized. However, a closer analysis of Helsinki’s Airbnb listings challenges the idea that short-term rentals are primarily a form of sharing economy or a source of extra income for non-professional local

residents. For example, based on data collected by AirDNA (2019),¹ in 2018 a vast majority (81 percent) of Helsinki's Airbnb listings were entire homes that were not shared with the locals (Jokela and Minoia 2020). Furthermore, over one-third of the listings were available or reserved for more than 182 days in a year, indicating that a big proportion of the listings are not permanently inhabited by their hosts. This interpretation is further supported by the fact that more than one-quarter of Helsinki's Airbnb hosts had at least two listings in Finland.

Helsinki's Airbnb listings—and especially the professional rental services—are concentrated in neighbourhoods adjacent to the city centre. In these areas, residents have reported some problems related to short-term rentals, such as disturbances and responsibility issues (City of Helsinki 2020; Pajuriutta 2019). However, there have not been any large-scale movements against Airbnb or other digital platforms in tourism.

While the City of Helsinki is committed to market-oriented tourism policies, the growing popularity of Helsinki as a tourism destination is also generating discussion on the need of steering the growth into a sustainable track. Local authorities acknowledge that the rapid increase in the accommodation supply encourages further growth of tourism-related traffic, posing a challenge to the liveability of the city. According to a hegemonic view supported by Helsinki's status as the European Capital of Smart Tourism in 2019, digitalization of tourism can be reconciled with the principles of sustainable urban development. While the common understanding has been that problems related to short-term rental platforms are small scale and local, the City of Helsinki (2020) has recently issued instructions for providing accommodation in a flat. These instructions create potential for stricter regulation by clarifying the definition of acceptable short-term renting of a flat.

¹ This data was acquired for the study in 2019 with funding from the Faculty of Social Sciences of the University of Helsinki.

Conclusion

This chapter has looked at the cases of Venice and Helsinki. Both cities have suffered from a declining role of manufacturing industries that previously constituted their economic backbone, and have ruling administrations considering tourism and large international events as offering growing international reputation and connectivity to the world. This shows that, in both cities, the promotion of tourism is entangled with wider developments, such as knowledge-based economization and commodification of culture. Helsinki's city authority shows a clearer positive interest in service platforms in line with the 'smart city' branding, while Venice's managerial and political space has been invaded by large international events and corporations' interests. In both settings, platforms have accelerated the availability of tourist rentals of apartments. While in Venice, Airbnb is criticized by residents for having subtracted a massive number of residential housing, in Helsinki, the phenomenon has only recently been noticed and addressed with clear definitions of acceptable forms of short-term renting in order to protect residential housing rights.

The two cities have different experiences of tourism development: Venice has been long dependent on overtourism, and is currently questioning what her future, after the Covid-19 pandemic, will be. Helsinki has had modest but fast-growing flows of visitors and has maintained many different urban functions. This pandemic confirms, anyway, the volatility of the tourism market and unsustainability of any economic monoculture. Surely, the topic of short-term rentals and the role of platforms in them will be an interesting phenomenon to observe for the forthcoming months and years.

These two cases shed light on urban tourism in relation to the growing use of Internet-based applications. We have used a situated sustainability approach to present this topic through our own perspective as residents of tourist destinations—where platforms have taken over in the intermediation and provision of various services and produced already visible impacts.

Operating in virtual spaces, platforms produce mobility, economic, and social changes, as well as environmental and geographical impacts that may challenge local residents' living places and organizations. This chapter has taken a closer focus on platforms offering short-term rentals of rooms and apartments as a sector driving the strongest impacts on residential neighbourhoods.

Studying platform tourism is increasingly relevant for urban studies, social media studies, and tourism studies. From the perspective of urban studies, it elucidates the complexity and multiscale nature of sustainability issues, showing that what may initially have been marketed as socially, environmentally, and economically sustainable practices (e.g. sharing of underutilized living space) are actually producing unsustainable effects. As we have discussed, short-term rental platforms may accelerate the acquisition of housing as financial investments that cause the eviction of residents, coupled with other neighbourhood changes. In areas deeply involved in the tourism economy, homes become financial assets with high rentability. We argue that short-rental platforms are commodifying cultural and natural resources, creating new specialized economies, annihilating the social fabric of the locality, and infrastructuring and disciplining the space to extract value from it (Beaumont and Nicholls 2007). Since global platforms escape from local administrative regulations, multiple scales of governance and multi-actor networks (e.g. connecting mayors of tourist cities) need to be experimented in order to exchange practices addressing the new challenges.

Media studies are also fundamental for understanding patterns of tourist choices. The rise of digital platforms has been accompanied by the growing popularity of social media, which enable tourists to share their experiences to wide audiences and, thereby, to demonstrate taste and accumulate cultural capital (Dodds and Butler 2019: 14; Mowforth and Munt 2016: 124–46). This, in turn, encourages dynamic tourism consumption, as increasing numbers of tourists pursue the 'authentic' experiences popularized by social media influencers and other prominent individuals.

Moreover, the complexity of changes brought about by digital platforms in tourism highlights the importance of tourism studies

in understanding social issues in cities. By focusing on the relationship between tourists' motivations and behaviour, as well as the new opportunities offered by digital platforms, tourism researchers can contribute to the study of culture- and knowledge-based economies where cosmopolitan consumption is challenging the boundary between locals and tourists. Tourism studies must also consider the new modalities of entrepreneurialism and managerialism, as well as the new tourist professions brought about by the platforms.

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CHAPTER 17

Extractivisms

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Abstract

Unsustainable extraction of natural resources has come under increasing criticism since the 2000s, as global commodity prices have risen, and new waves of land grabbing and investing have put resource politics in the limelight of global development. The concept of extractivism has been gaining scholarly and policy relevance and is becoming more widely used as an organizing concept to explore a range of unsustainable practices. The study of extractivism and its impacts extends to the deeper historical and structural features that underlie unsustainable practices, including economic models and ideologies. The concept of extractivism is useful for highlighting the deeper and systemic roots of unsustainability. The phenomena surrounding resistance to extractivism

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are highly useful for understanding the often-overlooked struggles of local communities. It is through such local struggles that communities may pursue more sustainable land-use practices, and more just socio-ecological conditions. This resistance often involves a deep critique and rethinking of the ways of understanding and conceptualizing nature, through which alternatives to extractivism, as a basis for sustainability, can be developed.

Mother Earth is the source of life, not a resource.

Chief Arvol Looking Horse, 19th Generation Keeper
of the Sacred White Buffalo Calf Pipe Bundle
(Lakota and Dakota nations)

Introduction

The concept of extractivism has a considerable history, especially when referring to increasingly widespread practices of overexploitation and appropriation of natural resources. The extractivist attitude or mentality is characterized by taking too much, too destructively, and too quickly, with too often a wanton disregard for giving back, or even considering the arguably necessary establishment of balance with ‘nature’ via sustainable reciprocal relations. Thus, the concept, mentality, and practices of extractivism are in direct contrast with the concept of sustainability. Genuinely sustainable practices of human relations with ‘nature’ (or preferably ‘the web of life’; see Moore 2015) require balanced reciprocal relationships. Extractivism, therefore, may be understood as embodying the antithesis of sustainability, in both theory and practice.

Serious critiques have now emerged, centred on certain areas or vectors of extractivism—for example, extractive approaches in agriculture, commercial forestry, and the mining sector. Studies and critiques of land grabbing and global resource rushes have emerged. These patterns have increased radically since 2005–2007, when global financial markets started to pour over-accumulated capital into land and resource acquisition, leading to a commodities supercycle in which prices and projects of extraction increased

dramatically. Primary commodity extraction has been and remains at the core of world politics and the global political economy. Extractivisms today, whether ‘local’ or ‘global’, are among the key causes of global climate change and the ecological breakdown crises, as greenhouse gas emissions and other severe problems for socio-environmental sustainability continue to increase as extractivist practices expand. Solving these global crises and problems requires not only understanding extractivism(s), but also actively resisting and devising actionable alternatives to extractivism(s). This chapter proceeds with a situated example of the impact of extractivism, engages in a discussion of the theoretical underpinnings, introduces forms of resistance to extractivism on a global and local level, and closes with a call to action.

Lived Experiences of Extractivism

Fieldnotes from a resource frontier:

The air was heavy with dust and smoke. Flames lapped at the trees and vegetation. The hot air quickly grew thick with flying debris and pieces of ashy leaves, blown here and there with the changes of the wind. A lady appeared by the roadside with kids in tow on their way to school. A normal day in the Amazon, fires behind you as you step into the school bus, not caring at all about putting them out. The lady said that the fire will rage until it has burned all it can, and only if it jumped the road would they try to quell it. The land had been set on fire for speculative reasons, to sell it to the would-be land buyers from the south, hungry for new areas to plant soybeans. This land was certainly one of those where the person who burned it did not have the right ownership papers. With the forest burned, the land will quickly become badly eroded, yet it seems no forests can hide from greedy eyes looking to turn them into plantations and grasslands. Through the smoke clouds, we could see the soybean silos, and vast open fields amid degraded rainforest.

—Brazilian Amazon, by Highway BR163, November 2019
(Adapted from Kröger 2020a).

We use these fieldnotes as a mechanism to offer a glimpse of a lived experience on a resource frontier where the consequences of extractivist practices are most keenly felt (Kröger 2016a). Our world is facing unprecedented socio-ecological crisis and breakdown on multiple fronts. Modern societies are reaching a breaking point, as they have transgressed planetary boundaries that would ensure the maintenance of sustainable interactions with ecosystems (Steffen et al. 2015). Each breach of these thresholds is a deterioration and destruction of life on this planet in all its different forms, including the life of human beings (Hosseini and Gills 2020). Considering these alarming realities and deep challenges to sustainability, scholars and practitioners have been searching for new ways to make sense of these crises. The social scientific concept of extractivism, which in practice is a form of natural resource extraction premised on destructive use and abuse of natural resources, has emerged to fill this void (Kröger 2020b; Ye et al. 2020). The concept of extractivism is a useful description of processes wherein more is taken in an interaction than is returned, but extractivism also has a role as an organizing concept and a way to comprehend the overarching processes that drive our current world-system, which is a capitalist world-ecology (see Moore 2015). The idea of extractivism as an organizing concept is rooted in development and globalization studies. It is a concept that brings new understandings and new sense-making to what drives these global-level processes of accumulation and depletion. Employing extractivism as an organizing concept allows us to interpret the form of these processes, assess what is happening on the ground, and determine what can be done about it. Extractivisms span several different sectors, global production networks, and ever-more intensely interlinked global value webs (Kröger 2016b).

The term 'extractivism' was born in Latin America, used initially to describe the mining sector. However, the extractivist conceptualization lends itself well to describing several other sectors on a global level. A particularly startling example of the aggressive nature of the extractivist paradigm is the expansion of agro-extractivism (McKay 2017). This mode of agricultural production

includes the monoculture plantations of soybeans, oil palm, sugarcane, and corn, which have expanded around the globe to supply the burgeoning feed-fuel-fibre-food markets within new so-called bioeconomies based on the replacement of fossil-fuel sectors. In addition, there has been rampant growth in forestry extractivism of eucalyptus, pine, and other large-scale tree plantations that have systematically displaced natural ecosystems such as biodiverse forests and grasslands. Discreet extractivisms happen on the local level, but the extractivist mindset has grave implications on the world-system level. The increasingly pervasive and aggressive extractivist paradigm is now a global phenomenon.

Extractivism indicates types of intervention by human beings into what we have traditionally, and reductively, called 'nature'—non-human species, and soils, water, and minerals (see Moore 2015). A precondition of extractivism is the (de)valuation of life and life forms in a given area to 'natural resources' that can and should be extracted anthropocentrically (Kröger and Nygren 2020). Under extractivism, concepts of value are deployed in converting materials, found freely in the web of life and extracted from the earth, into commodities (see Moore 2015). Extractivism intrinsically revolves around mass commodification. Those commodities are often placed into the global circuits of capital, and thus serve capital accumulation. In this way, it also has a specific meaning around capitalist(ic) extractivism, or what could be termed extractivist capital accumulation. It is important to note, not all resources that are taken from the earth fall into what could be considered an extractivist practice. Extractivism is explicitly linked to the concept of depletion, ecological degradation, or blatant destruction (Ye et al. 2020). In other words, extractivism is a relationship with the web of life premised on depleting the ability of life to renew itself. It involves entropy, depletion, pollution, ecocide (the destruction of ecosystems to the point of total collapse), and the transformation of ecosystems into a radically altered state that has been brought about by human activity and that often destroys the previous ecosystem (see Moore 2016; Escobar 2020). This has direct and increasingly dire consequences for ecological systems and myriad species, and for communities and

their lifeworlds (Viveiros de Castro and Danowski 2018). Extractivist expansions displace and dispossess human beings as well as driving out multiple species from their original habitats. Therefore, from a critical development studies and post-development perspective, one cannot separate the critique of extractivism from a critique of capitalist modernity.

Extractivism: A Global and Historical Process

The roots of extractivism as a practice might go back millennia, but for the purposes of sustainability science, the concept is most useful in understanding the processes and practices that create the material structures of the contemporary period. When we discuss ‘global extractivism,’ this implies that it is becoming an ever-more prevalent practice globally, primarily by capitalist enterprises. However, in finance and other areas of the corporate sphere, we can also see an expansion. Extractivism expands through changing physical, social, and symbolic spaces on ever-faster and larger scales, in increasingly remote areas of the globe (Kröger 2016a; 2020b).

International political economy has analyzed the worldwide spread of capitalist patterns through the concept of globalization, global supply chains, and global value chains. Dependency theory and world-systems theory have provided structural analyses of global political economy along with neo-liberalization on a universal scale. All of these are deeply entangled with extractivism and the extractivist mindset, and prompt conjoined critiques (Hosseini and Gills 2020). Related (sub-)concepts that are helpful in the systemic analysis of the conflict between extractivism and sustainability include: developmentalism, growthism, anthropocentrism, and coloniality (Gudynas 2015; Escobar 2020); commodity and resource frontiers (Kröger and Nygren 2020); and primary commodity export dependency, capitalist modernity, and underdevelopment (Bunker 1985). These processes have relegated much of the Global South to primary commodity extraction from natural resources for export to the Global North, for purposes of capital accumulation and wealth creation in the Global North, while

mainly extracting wealth from the Global South (Bunker and Ciccantell 2005).

Alternatives, Post-extractivism, and Local and Global Resistance

Extractivism is a concept that cannot be ignored and needs to be utilized and deployed. It is useful to understand the multiple and converging crises that threaten sustainability, and what drives them. Alternatives, and post-extractivism, can be pursued through this analysis. There are two levels of resistance or attempts to transform extractivism in theory and practice. Around the world, local social forces, local classes, communities, and Indigenous peoples, who have in some cases been situated in their own land for millennia, have relentlessly resisted extractivism (see Chapter 13 on *Traditional Ecological Knowledge* in this book). By local, we refer here to the areas that are the homes of the people in that area (some of these areas have also been targeted for extraction by other Indigenous groups—for example, in the case of highland Indigenous groups extracting gold from the rivers of Amazon Indigenous populations in Peru and Bolivia). When an extractivist project causes or threatens to cause entropy, depletion, pollution, ecocide, dispossession, and oppressive asymmetrical power relations, in many cases the locals have organized and politicized to understand these negative local land-use changes, and to create resistance (Kröger 2013; 2020b). There are many different forms of resistance to extractivism, types of tactics, types of collations, and different terrains of struggle—whether very local or globalized—and many mediascapes and global formations. Yet, so much of the character of extractivism ultimately is local and is experienced as local by real beings who are under either attack or threat from extractivism (Kröger 2020b).

Besides the local physical struggles, the other terrain where transformation is pursued is the global political level, which is currently dominated by transnational corporations, banks, and other financial actors, such as hedge funds and private equity firms. How these entities can be made to withdraw their support for extractivist

projects, and resisted, needs to be analyzed in greater detail (Global Campaign 2017). A whole array of different social actors, movements, and organizations already work to bring transnational corporations and financial institutions into some binding framework, a code of conduct that limits their destructiveness and sets up regulatory regimes (in the international-relations sense of rules, order, and norms). In short, many see an urgent need to create new institutions that can effectively control the conduct of the destructive elements of extractivism. A primary example is the human rights treaty approach, a growing international effort to try to bind transnational corporations into a new regulatory system in which they would be punished for human rights abuses around the world (Global Campaign 2017, also see Chapter 4 on *Human Rights* in this book). There is mounting evidence of corporations being guilty of human rights violations (up to and including the murder of protesters and activists) through extractivist projects and related practices, as well as causing other types of severe social and environmental injustices (Global Witness 2018). The Environmental Justice Atlas (EJAtlas n.d.) presently documents over 3100 such cases around the world from a variety of sectors (Temper et al. 2018). The International Criminal Court has been approached to consider making ecocide a crime punishable under international law as a crime against humanity for which people could be arrested and prosecuted, including corporate, finance, and government leaders (Greene 2018). Corporate social responsibility is another common approach, intended to deepen responsibility and mitigate the most negative impacts of extractivist practices, but the results have largely remained insufficient (Banerjee 2018). The creation of ethical codes of investment for banks and corporations and other finance entities has been another approach of corporate self-regulation.

Large global campaigns have been organized around pressuring certain entities to adopt a rigorous ethical code of investment so they would stop certain kinds of extractivist behaviour: the global campaign to boycott oil palm coming from orangutan forests is one example. Particularly for palm oil extraction—as well as oil and gas, or coal and other types of fossil-fuel—many ethical

codes already exist. Global civil society plays a key role, but future demands could go beyond mere voluntary guidelines and certification schemes (whose results are highly doubtful). Courts could be used to force entities, corporate or finance, into new behaviour and punish them for past extractivist offences (Kröger 2013). There is also the conservation movement and measures for protection (as controversial as that can often be), and many kinds of projects that resist extractivism exist in this capacity. These measures can protect certain areas and the people and other species that live there, so that they will not be subject to wanton destruction. Of course, the option of ethical consumerism does exist (for those who can afford it). For many people, consumer activism and the related online campaigning by proliferating platforms for signing pledges is a very important, or central, element in global activism.

Contemporary Extractivisms and Resistance in Different Contexts

Extractivism, in its different forms, has expanded globally because there has been a global commodities supercycle since around 2005–2007 (Bebbington and Bury 2013). This supercycle led many governments, including progressive Latin American governments, to focus their development policies on increasing the revenue from exports of natural resources. Discussion arose around this macro-policy as a form of neo-extractivism, which was conceptualized as a new type of political economic model through which progressive Latin American countries and governments could use the windfall gains from commodity exports to further progressive social welfare agendas (Gudynas 2015; Svampa 2019). These governments saw that they needed to first safeguard themselves from the ravages of global financial markets by building surpluses in current account balances. This goal was to be achieved by giving leeway to export producers to increase their commodity exports (Andrade 2019). The 2008 financial crisis led much transnationally mobile and domestic capital to search for safer options, which led to land investing, further increasing the extractivist drive. This created many problems with local communities in Latin America,

which had mostly been promoting these progressive governments (Kröger and Lalander 2016). As a countermovement to the support given by progressivist governments to extractivism, there has more recently been a backlash, with populist right-wing governments coming into power (Andrade 2019). The soybean, pulp, ethanol, and other agribusiness sectors based on monocultural production, as well as the mining sector, had all gained strength during the reigns of these progressive governments and the commodities supercycle, and started to promote the dismantling of progressive governments in order to be able to expand even further (Kröger 2012; Kröger and Nygren 2020). The role of the state became much more powerful during the progressive era—for example, during the Workers' Party regimes in Brazil. This intense extractivist period of global land grabbing has led to major political impacts, including the creation of new powerhouses, which are now being manifested in different political contexts.

On and in the frontiers of deforestation in the Amazon, extractivism is highly visible, temporally, and spatially, as illustrated by the fieldnote excerpt above. There are now seemingly endless soybean plantations, where just a few years ago, there was rainforest. What is new about extractivism, in contrast to simple natural resource exploitation, is that the scale and pace of changing the landscapes have accelerated. One can see an expansion of tens of millions of hectares of agro-extractivist monocultures taking over and destroying forests in a matter of only a few years. If one travels in these areas, in South America, it takes days on end to journey through vast expanses of soybean and eucalyptus monoculture-dominated landscapes. In many of these fields, one cannot even see the horizon. The scope, scale, and socio-ecological implications of these transformations is truly shocking. This type of ultra-destructive interaction with the earth needs its own concept to denote and distinguish it from simple resource exploitation or even conventional agricultural practices. Extractivism and ecocide are appropriate terms.

The production in these new contexts is intrinsically global. These are global spaces in the sense that the commodities go to markets all around the world. Most agro-extractivist expansion

goes to feed the global meat production complex, within the converging feed, food, fibre, and fuel markets (Jakobsen and Hansen 2020). The rise of biofuels, bioeconomy, and the green economy are closely related to this extractivist expansion, as well as the rise of flex crops and the return of plantations (Borras et al. 2016). The global meat production complex produces more greenhouse gas emissions than the entire transportation sector (Foer 2019). That makes sense when you look at the huge monocultural plantations and what they displace—for example, the Amazon rainforests and similar areas around the world. These systems of extractivism are inherently not ‘sustainable’.

Conclusions

Extractivism is in direct contrast with sustainability. However, capitalist modernity is premised on such extractivism, and highly destructive processes are currently more the norm than the exception. When there is a systems-level extractivist mindset imbued in multiple levels of practice, it is difficult to engage in truly sustainable transformation, locally or otherwise.

We contend that fighting global extractivism and fighting climate change and ecological breakdown are inextricably conjoined. Unsustainability and extractivist practices are inseparable; to resist one is to resist the other. We need a ‘deep restoration’ toward a post-extractivist and sustainable future; to think deeply and reflect on how to change ourselves and how to reorganize our lives, individually and socially (Gills 2020). Systemic change and radical transformation are now a historical imperative.

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PART III

Art as Research

CHAPTER 18

Aesthetic Sustainability

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Abstract

The scope and range of human aesthetic preferences have been discussed recently from the perspective of their role in advancing sustainability in contemporary societies. Philosophical and applied studies in environmental and everyday aesthetics seem to support the idea that knowledge and awareness cause changes in aesthetic values. Aesthetic sustainability as a concept has recently been developed to show why certain objects, artefacts, and landscapes become valued more highly over time. Instead of discussing the temporality of aesthetic values only in terms of historical styles, trends, or tastes, as has traditionally been the case, the concept focuses attention on the deeper layers of aesthetic appreciation, bringing together aesthetic, ethical, and cognitive values. Aesthetic sustainability is introduced here as a conceptual tool that provides insight into how human aesthetic preferences and

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choices function. It is also pointed out how the sphere of aesthetics is an important part of the human capability to imagine more sustainable futures.

Introduction

We are faced, both individually and collectively, with having to make a wide variety of choices on a daily basis. The everyday life of an individual consists of moments of decision making between two or more options in matters both large and small, and the consequences of many of these decisions are difficult to fully estimate. Those unavoidable choices on an individual level have to do, for example, with one's personal appearance (Naukkarinen 1998), home tasks such as cooking and cleaning (Melchionne 2013), or broader and socially directed situations such as choosing between modes of everyday transportation (Mladenovic et al. 2019).

Many of these choices include an aesthetic component, but they also require taking into consideration exceedingly complex processes with consequences reaching far beyond the sphere of our everyday life and actions. Even when no actual decision is needed, the aesthetic perception and assessment of objects, places, people, and situations is an integral part of the everyday experiential repertoire, which is often so habitual that it does not even draw conscious attention.

Interestingly, and against the often-repeated common phrase, the experience of beauty is rarely only 'in the eye of the beholder' or a matter of purely subjective and illogical opinion. As philosophical study of aesthetics points out, judgement of taste is instead a much more complex phenomenon that unfolds as a result of broader cultural, historical, and intersubjective processes. This chapter further explicates the connections between everyday actions and aesthetic values since it is of vital importance to take greater responsibility for aesthetic choices and evaluations in the face of the urgency of current sustainability challenges. The aim is to show that a better understanding of aesthetic processes can be used to support tactics to move beyond trend-based consumerism.

This chapter focuses on showing how aesthetic values, manifested through aesthetic preferences and choices, can and should be taken into account in the broader framework of sustainability transformations. Human aesthetic values cover a wide range of ideas and conceptions of what is aesthetically satisfactory and pleasing—either based on human perception or, more broadly, experientially. Understanding the scale of individually varying and socially shared aesthetic values is relevant to those aspects of sustainable development that are directly linked to the human lifeworld. This broadly covers the sphere of human experience, ranging from lived everyday environments to consumption habits. The overall idea of this chapter is to present aesthetic sustainability as a conceptual tool and to trace its roots through philosophical and applied theories in environmental and everyday aesthetics, design theory, and sustainability studies.

Aesthetics and the Manipulation of Values

It might seem paradoxical to discuss the concepts of aesthetics and sustainability together. Aesthetics seems to refer only to external features and qualities: to the appearance of objects, people, and places. The very word ‘aesthetic’, in its everyday usage, is associated with the superficial, visually emphasized layer of the human lifeworld. This focus on the perceptually mediated materiality and physicality of very different types of phenomena is, however, a key to understanding why aesthetics is important in solving many contemporary sustainability challenges.

It has been long debated in philosophical aesthetics whether the subject concerns only the aesthetic or if it is more linked to other values. In the Western tradition, the claim of the disinterestedness of the aesthetic experience has been a central idea since Immanuel Kant explored the topic systematically in his *Critique of Judgment* (1790/2007: §2). In environmental aesthetics, disinterestedness is used to explain the disassociation of the aesthetic appreciation of an environment ‘from the appreciator’s particular personal, religious, economic, or utilitarian interests, any of which could

impede aesthetic experience' (Carlson 2019). Following from this idea, a certain disassociated aesthetic attitude prevails when evaluating phenomena that pique our interest with their perceptually manifesting qualities: one has a certain mindset or stance toward the objects (or landscapes, artefacts, people, etc.) of our appreciation or even when initially acknowledging that they are of aesthetic interest. However, the grave contemporary ecological concerns create moral concerns beyond the scope of disinterestedness since they are radically altering the vantage point to the changing aesthetic qualities of the environment (Auer 2019).

It needs to be emphasized that the aesthetic, in contemporary theories, is most often understood so that it does not refer only to aesthetically positive qualities such as beauty, the sublime, picturesque, or cute, but also to aesthetically negative qualities such as ugliness, grotesqueness, or even disgusting features, as long as they wake some level of attention and interest (Saito 2019). The limits of aesthetic interest are also debated, especially in the subfield of everyday aesthetics: according to some theorists, the so-called restrictivists, everyday aesthetics concerns only those phenomena that are aesthetically elevated among the more mundane experiences, whereas expansionists claim that the very mundane, subtle, and even barely discernible qualities of everyday objects, activities, and phenomena are also aesthetic and should be studied as such through more nuanced conceptual distinctions (Puolakka 2018).

One way to distinguish between different nuances in aesthetic appreciation is to categorize experiences and ensuing judgements into the 'thin sense' and the 'thick sense' of the aesthetic (Carlson 2008; Hospers 1946). This distinction between the surface aesthetic (focusing on physical appearance and formal aesthetic qualities such as colour, shape, and composition) and the deep-seated layer of aesthetic judgement is the key to understanding how aesthetic values are intricately tied in with other values—such as ethical and epistemic or cognitive values—which are important to the formation of ecological understanding. Ecological values are of specific interest in relation to sustainability, but it is important to understand that ethical values contribute more broadly to supporting different scopes of sustainability.

Through behavioural economics, nudging has recently gained widespread interest as a concept that sheds light on the mechanisms of soft manipulation (Thaler and Sunstein 2008). With the means of careful deliberation in the placement, order, presentation, and arrangement of objects and services, for example, people can be steered toward making better choices for themselves. What is better or desirable is determined by prevailing ideas on what is healthy, ecological, socially beneficial, and so on. These ideas are based on continually updated scientific knowledge in relation to the prevailing ideologies of society. As a form of soft or libertarian paternalism,¹ nudging aims at gently directing people toward making better choices for themselves and the community. Interestingly for aesthetics, many of the examples used are focused on manipulating people's attention and perceptual processes. An often-cited example is how food perceived as healthy is placed at the beginning of the buffet table so that the plates of the hungry buffet-goers will be filled with them first. Developing the concept of nudging takes these ways to manage behaviour with the means of choice architecture further and makes them explicitly available as a method of governance in contemporary societies.

The theory of nudging acknowledges that what one sees, hears, smells, tastes, or feels is what one's attention will more likely be directed toward. Sudden changes in perception draw attention more easily, and human beings might be intrinsically interested in new phenomena. Novelty value has been studied in Western philosophical aesthetics to some extent, most notably in the analysis of the 'charm of novelty' (Coleridge 1817/2014) but, recently, it has been of interest in more applied fields such as marketing, consumer, and innovation studies. The same applies to other psychologically explained, aesthetically relevant phenomena, such as the Diderot effect, which is used to manipulate consumer behaviour

¹ For a detailed description of different forms of paternalism, see Dworkin 2020.

toward making additional purchases that they did not need in the first place (Evans 2010).

In philosophical aesthetics, whether focused on art or (human) environments, there has been interest in concepts that are related to novelty value but are more essence-determined, such as originality or authenticity. These place more emphasis on temporal longevity in aesthetic appreciation than on the mere fascination for the new (not necessarily newly produced but also referring to that which is new to an individual's experience). One version of this thematic is also the phenomenology-originated discussion in the subfield of everyday aesthetics, which focuses on how strangeness and familiarity and their interplay are important factors for the aesthetic appreciation of individually determined everyday environments (Haapala 2005; Vihanninjoki 2019).

Attractive = Sustainable?

According to prevailing scientific knowledge, humans exhibit many aesthetic preferences that are of evolutionary origin (Voland and Grammer 2003). The human preference for blue and green colours is one example, while another is linked to preferring certain types of animal species over others: we are affectionate toward cute, furry mammals, whereas we tend to be less interested in or even disgusted by insects or snakes. Foul smells and tastes make us react with physical repulsion, and the preference for certain types of landscapes has been explained through a universally valid, hereditary propensity to favour open vistas with enough greenery to promise safety and nourishment (Dutton 2010).

Based on evolutionary psychology, aesthetic preferences are fairly stable since they have been developed over hundreds and thousands of generations as adaptations that secure the survival of the individual and the continuity of the species. However, human activity and the forms it takes are not only dictated by these types of biologically determined urges or instincts. Many examples from much shorter periods of time show that there are also aesthetic preferences that change much more quickly. In

these cases, it is reasonable to argue that some type of intergenerational change in aesthetic values is taking place. The intergenerational perspective has been more prevalent in philosophical ethics, and environmental ethics in particular (Nolt 2016). However, aesthetic values are also of interest from this perspective to the extent that they are subject to change, sometimes more abruptly but more often gradually. Generational shifts in attitudes, interests or commonly shared knowledge (through education, culture, and socially shared experiences, for example) seem to be important factors in determining changes in tastes. One example of this type of change is the gradual acceptance and ensuing large-scale adoption of landscape-altering sustainable technologies, such as wind turbines—discussion about which still revolves around opposing views of their aesthetic qualities (Good 2006; Gray 2012).

Sustainability as a concept refers strongly to temporal endurance and durability. However, there is, by necessity, some friction between determining which elements should change and which should be sustained in order to increase overall sustainability. This is of crucial importance in sustainability transformations and directing aesthetic attention could help support more sustainable solutions instead of those that are ethically compromised. Change in aesthetic appreciation is a well-known and historically documented phenomenon—for example, in relation to natural environments, ‘when people start appreciating the parts of nature formerly regarded as aesthetically negative’, such as mountain areas or wetlands (Saito 1998: 101).

The roots of aesthetic sustainability as a conceptual tool can be traced through theories in landscape ecology (Nassauer 1997), everyday aesthetics (Saito 2007), design theory (Harper 2017) and, most recently, in philosophical and applied urban aesthetics (Lehtinen 2019). Its development aims at understanding why certain objects, human-made artefacts (e.g. buildings, tools), landscapes, and environments are valued more than others, and how this appreciation increases or decreases over time. Instead of discussing the temporality of aesthetic values only in terms of historically distinct styles or fluctuations in trends, as has often been the case, the concept

directs attention to the deeper layers of aesthetic appreciation that bind together aesthetic, epistemic, and ethical values. In its recent form, the concept of aesthetic sustainability is influenced particularly by intergenerational care ethics (Groves 2014). From the perspective of aesthetic concerns, this means that humans tend to show more attentive and generation-arching care toward those objects and environments that they appreciate aesthetically. This process requires extensive knowledge of the processes and factors beyond mere personal preferences (Lehtinen 2019).

Aesthetic sustainability could be presented as one additional tool for contemporary choice architectures of various types. It seems clear that aesthetic value is an underused leverage in sustainability transformations. However, due to the growing interest in experience research, it is likely that methods for measuring the benefits of aesthetically positive experiences and the overall role of aesthetic values in sustainable processes will be developed more fully in the near future. Stemming from philosophical aesthetic theory, Green Aesthetics (Saito 2007) and the concept of Aesthetic Footprint (Naukkarinen 2011) are examples of this, both having been developed in a multidisciplinary setting with an emphasis on sustainable design practices as drivers for change in aesthetic preferences.

Yuriko Saito's Green Aesthetics is an early attempt to bring together design principles that support the sustainability and positive aesthetic quality of the designed product. Green Aesthetics introduces many of the same ideas that are also central in the notion of aesthetic sustainability as presented later by Harper (2017), namely the emphasis on choosing durable materials that age with grace and thus planning for care and maintenance in the product design phases. Both take into consideration the immaterial ideas and values (e.g. familiarity, cultural references, etc.) that everyday objects often contain beyond purely functional and material features. Green Aesthetics, as well as many pragmatism-influenced accounts of aesthetic experience, emphasizes that we are dealing with forms of multisensory engagement that also cultivate bodily and spatial involvement with the phenomenon in question (Berleant 2010).

Through a deep-seated understanding of aesthetic values, it is clear that objects in the sphere of human everyday life cannot be approached only as items of consumption; they also embody less tangible values, such as memories and emotions, by having come to represent other people, places, and life events. Organizational problems such as the material excess present in most contemporary societies are, on an individual level, linked to this.² The number of items owned by an individual or a household has exploded in less than a hundred years. The time and effort to take care of them and maintain order has simultaneously increased. The managerial side of everyday life has become more complex and difficult to maintain, while many of the everyday processes (such as mobility, housework and so on) have become more efficient through technological development.

Aesthetic choice is another new conceptual formulation relevant to explicating the relation of aesthetics, values, and sustainability (Melchionne 2017). It points at what follows the moment of aesthetic appreciation and the acknowledgement of this being of greater aesthetic value than something else. On an everyday level, life is full of small moments in which preferences and values become manifested in the everyday through individually insignificant choices that nonetheless have an impact when scaled up to the societal level. While acknowledging that structural, systemic changes are needed when it comes to tapering consumption or introducing circularity to different industries, individual responsibility on an everyday basis is also of importance. Aesthetics offers one approach to changing attitudes and interests in order to support sustainability in different practices. This could be useful when there is a conflict in values or when it is difficult to gain support for sustainable solutions for no clear reason other than old habits.

Change in some preferences is slow, but since 2007, many of Saito's ideas in *Green Aesthetics* have become significantly more

² See, for example, Jane Bennett on the phenomenon of hoarding (Bennett 2012).

mainstream and aesthetically accepted, as is visible, for example in the cultivation of urban meadows instead of neatly mowed lawns. Corporate greenwashing, on the other hand, is a negative example of how surface-level aesthetics is also used to give false impressions of products or services being environmentally friendly (Richardson 2019). An increasingly relevant worry for the value change perspective is also whether the change toward sustainability-supporting aesthetic preferences is rapid enough and whether it could be precipitated before the tipping points of the earth or social systems are reached.

Conclusions

In the effort to better understand human decision-making processes, both individual and collective, philosophical and applied aesthetics can provide insight into how aesthetic values influence these processes. It is important to study how personal, individually executed aesthetic choices manifest in the everyday practices of contemporary societies when determining the significance of aesthetic values for sustainability transformations. Aesthetic preferences—or more broadly, taste—are never purely subjective, but are formed in a complex network of personally developed and even biologically determined tendencies to be attracted by something that is intertwined with what is socially valued, acceptable, or avoided. To some extent, the most commonly shared aesthetic preferences seem to reflect the general value ethos of their time. With this in mind, it is not an exaggeration to state that we are currently witnessing the formation of a new aesthetic ethos negotiated through the terms of sustainability.

It seems clear that people will still also continue to enjoy (aesthetically or otherwise) things that are not good for them, others, or the planet; such destructive human behaviour is not satisfactorily encountered by prevailing contemporary scientific paradigms, which tend to emphasize the rational side of human activity. In this sense, the humanities are of crucial importance to the development of sustainability studies, since it will be through history, language, narratives, representations, and art that we will have

at least some possibility of understanding the darker tendencies of the human societies and the overall processes of how human values develop.

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CHAPTER 19

**Mapping Environmental Memory
Through Literature**

**A Conversation with Emily Lethbridge
and Steven Hartman**

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Árni Magnússon Institute for Icelandic Studies

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Abstract

This conversation with Emily Lethbridge (Árni Magnússon Institute for Icelandic Studies, Reykjavík) and Steven Hartman (University of Iceland) highlights transdisciplinary research in literature and sustainability through the environmental and

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digital humanities. The insights that have come out of their separate projects inform work in the fields of archeology, geology, and natural-cultural heritage in Iceland and the greater North Atlantic. In these exchanges, they each speak to the role of literature and culture in their shaping of their respective programmes of research and collaboration.

Introduction

Parker Krieg (PK): When thinking about Iceland and literature, I'm always reminded of the poem by Jorge Luis Borges, 'Nostalgia for the Present':

At that precise moment to himself the man said:
 What would I not give
 to be with you in Iceland
 under the grand immobile daytime
 and share this now
 like sharing music
 or the taste of fruit.
 At that precise moment
 the man was together with her in Iceland
 (1999: 447).

For many in the twenty-first century, Iceland similarly occupies an almost mythological location in the cultural imagination as a place of timelessness, where ancient and modern coincide. The sagas likewise stand at the intersection of ancient and modern literature, 'on the boundary between history and fiction', transmitting cultural experience, information, and myth to present readers (Lethbridge 2020: 26). Borges' poem, by the same token, reflects literature's ability to collapse time and distance into a single moment of shared experience: sound and taste under the midnight sun. This 'nostalgia for the present' has implications for sustainability. After all, for the foreseeable future, the literary travel imagined in the poem is more sustainable than the air travel that makes it possible to have the direct experience so prized by environmental

culture. Yet Iceland's recent tourism boom, whose ecological footprint and societal impacts are overshadowed by spectacular geological formations and landscapes, is not entirely new.

In your own ways, each of you highlights the ways that Iceland and its culture has been globally connected for centuries, as are the environments that populate these stories. Emily Lethbridge, your Icelandic Saga Map (ISM) project makes present the environmental past in the Icelandic sagas, and de-mythologizes the sagas so as to make their knowledge accessible to contemporary readers. You've even gone on to develop the notion of a 'narrative stratigraphy' of Iceland, working with geologists on the environmental history of place-names, and attempting to match written records of environmental catastrophe with the geological record itself. On a separate trajectory, Steven Hartman has crossed paths with the sagas in your joint publication (Lethbridge and Hartman 2016). At the same time, Steven Hartman, your work extends to developing international research platforms that integrate the environmental humanities into sustainability studies through projects such as Inscribing Environmental Memory (IEM), ICECHANGE, and the UNESCO project, BRIDGES: Building Resilience in Defense of Global Environments and Societies. Emily and Steven, thank you for taking the time for this interview.

Part One: Emily Lethbridge

PK: What kind of information have you uncovered from the sagas? How have they inspired you to rethink literature and sustainability?

Emily Lethbridge (EL): One of the main things I have uncovered in developing the project is just how complex and processual the nature of the relationship between saga-place and its equivalent in the contemporary landscape is. It is, in fact, much more difficult than one might assume at first, from a theoretical perspective and in reality, to make a one-to-one connection between a place named in a saga and what is assumed to be the 'same' place in the contemporary landscape. In some cases, it is not possible at all. This might be because of landscape change, or place-names

being lost or transferred to other locations when farms were abandoned or moved, for example, or younger places being given older names on the basis of what people read in the sagas. Marking places named in the sagas as dots on a map that correspond to locations in the contemporary Icelandic landscape is arguably misleading in the way that it suggests a straightforward continuity between past and present. The reality is much more opaque and all the more interesting for that.

Questions of literary genre come in here (to what degree are the sagas and the world they present fiction/fictional, or historical, or something in between?), as well as the political, ideological, and even economic dimensions of cultural heritage landscapes. In some instances, one can see how individuals or communities might have a vested interest in a specific place in today's landscape being identified as one and the same place in the sagas, for instance. But landscape is never passive or static, as archeologists and anthropologists such as Christopher Tilley (1994) and Barbara Bender (1993) remind us—as well as cultural geographers such as Denis Cosgrove (2008). It is a social and cultural construct that is always in flux, mutable, subjective, and at the heart of questions concerning identity and perspective. In this light, trying to better understand the stratigraphy of story and reality that have accumulated and coalesced over many centuries is a fascinating endeavour.

It can be a challenge trying to separate out the multiple layers in order to work out how people, story, and landscape have acted on each other in an Icelandic context over a period of one thousand years or so. But charting how information regarding the natural world, early Icelanders' perceptions of it, and their place in it (as well as their response to environmental change), as encoded in the sagas, was subsequently passed on from one generation to another for as long as these stories were recopied and retold—right up until the late nineteenth century—is also illuminating from the perspective of sustainability. Themes and information in these stories continued to be relevant to later generations of Icelanders: the stories were a means of communicating different kinds of knowledge at the same time as being entertaining.

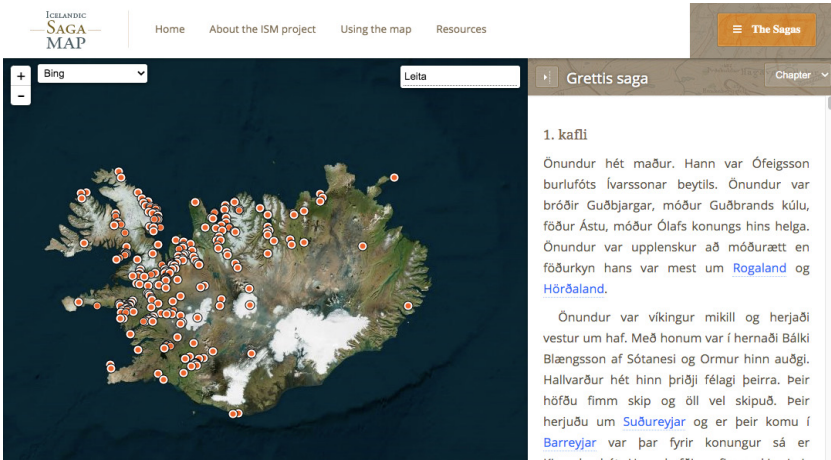


Figure 19.1: Icelandic Saga Map, *Grettis Saga*. Source: Icelandic Saga Map project (<http://sagamap.hi.is>).

PK: How would you describe the Icelandic Saga Map project?

EL: The Icelandic Saga Map project is a digital project that enables the spatial reading of the medieval Icelandic sagas (*Íslendingasögur*, *Sturlunga saga*, *Landnámabók* and other medieval Icelandic works) as well as other related works (such as nineteenth-century accounts of travel to Iceland and visits to saga-sites). The website interface (<http://sagamap.hi.is/>) displays text on one side of the screen and a map on the other. Once the user has selected a saga, the saga text and the accompanying map appear. Toponyms in the text are hyperlinked to the map where all places mentioned in the saga are displayed. When a toponym in the text is clicked on, its location is highlighted on the map; when a toponym on the map is selected, hyperlinks appear that direct the user to all mentions of that place in the text corpus (saga/other work and chapter number).

On a basic level, geography (who lives where, how journeys made by saga characters lie in the landscape, where this or that fight happens, where saga characters are buried, etc.) is essential to the narrative mechanics of the sagas. Printed editions and translations often contain maps as appendices to help readers who are not familiar with Icelandic geography first-hand. But one great

advantage of the ISM digital map interface is the opportunity it provides for layering spatial data, and thus enabling a more holistic interrogation of the role of places in these narratives as a corpus than is possible otherwise. When several sagas are selected simultaneously, for example, the geographical overlap between them is clearly displayed, and we get a sense of how some places more than others might be seen as ‘nodes’ in saga spatial networks.

PK: How does this relation of narrative and place change our understanding of the sagas and their place in literary and environmental history? What might it tell us about Iceland’s past and present relationships in the global circulation of culture?

EL: I hope that the ISM project has helped those outside of Iceland who study the sagas or who enjoy reading them to navigate these rich narratives intellectually by showing how the arcs of their plots are so closely tied to the landscape. Also, that the project has helped to underline just how crucial the landscape itself was in the transmission of these stories over many centuries: I do think this is something that has been generally underplayed and not really researched in depth. I see the tradition of nineteenth-century saga pilgrims writing about saga-sites on the basis of their own experiences of places they were shown to be another highly significant and influential part of the history of the sagas’ transmission.

Demonstrating in a visual way via the map interface how the sagas are rooted in the landscape I think helps to emphasize the concrete nature of human–environment relations that are represented in these stories: people are tied to place in a very explicit way, and the overall sense is of reciprocal influence between the settlers and their descendants, and the land they claimed and worked. Another dimension here is the way that place-names were a crucial source for saga-writers in many instances: place-names contained kernels of narrative which were worked up in longer form by those who put the sagas down in writing. Whether or not the longer written interpretations of these place-names have their origin in any historical reality does not really matter—the interesting thing here is how the landscape preserved and prompted storytelling in an active way.

With regard to global perspectives, it's worth remembering that there are many places in Europe and beyond that crop up in the sagas: although the default map view is set so that Iceland fills the screen, if you zoom out you will see places around the world that appear in sagas. There are places in North America that feature in the Vinland sagas (*Eiríks saga rauða* and *Grænlandínga saga*); the outlaw saga, *Grettis saga Ásmundarsonar*, ends in Constantinople; and many other saga heroes travel to other Scandinavian countries or to the British Isles. So, these narratives have a significant international component: Iceland and the stories of Icelanders in the sagas are part of a bigger, connected whole.

PK: The mapping project had you practically living in a van, travelling around Iceland for some time...

EL: Yes, I actually lived on my own in a Land Rover ambulance for a whole year in 2011 while I travelled all around Iceland exploring saga-sites, contextualizing them in the wider landscape I was becoming familiar with, and collecting local knowledge about places associated with sagas and saga characters. It was in fact the year of travelling and reading sagas in their local settings that gave me the idea of building the Icelandic Saga Map: as I travelled, I was ever-more attuned to how sagas overlapped geographically with the same places appearing in many sagas. I wanted to find a way of displaying this overlap visually, thinking that this was a perspective that is hard to appreciate when one reads the sagas one at a time at home or in the library, as discrete narratives rather than chapters of a bigger whole.

As I travelled, I also began to appreciate the crucial role that the landscape and place-names played in transmitting saga narratives alongside their written transmission in manuscripts, from medieval times to the late nineteenth century. Access to the narratives, what we might call 'saga literacy', was acquired by Icelanders in indoor contexts and outdoor contexts in a complementary and reciprocal way. From the time of the sagas' written composition, Icelanders would have become familiar with the saga narratives in the form we know them through reading manuscript copies of the sagas indoors or listening to someone read aloud from a manuscript

during the winter ‘*kvöldvaka*’ (evening wake). They would thus become knowledgeable about saga geography and places on the basis of these stories (i.e. what happened where, presumably especially in cases where stories were local). This knowledge was reinforced (even put to use in a practical sense to aid navigation) when working or travelling outdoors: in this context, landmarks and place-names encountered linked physical place to the narratives read and told. I have written about this in my 2016 article [PK: See Lethbridge 2016]. So, as well as helping readers to find places named in sagas and thus to follow the spatial twists and turns of their plots more easily, the ISM interface as a whole enables website users to gain a sense of how the landscape preserved and communicated saga narratives—itsself a type of palimpsest, a surface that has been written on over and over again.

PK: How did the project come about? How did your research carry you from medieval literature to environmental issues?

EL: I had already learnt Old Norse-Icelandic as a student and got my modern Icelandic up to speed by working on a dairy farm in north Iceland for several periods of a few months at a time in 2008, 2009, and 2010. I conceived the ‘Sagasteads of Iceland: A 21st-century Pilgrimage’ project while I was on the farm after rereading sagas set in that area and realizing as I got to know the area that most of the places in them were still ‘there’ in the landscape today, farms named in the sagas were still working farms today.

The Sagasteads project was akin to anthropological fieldwork in some senses, a kind of phenomenological ‘literary fieldwork’. Another inspiration that bridged medieval and modern periods for me, and that was an important organizing force behind the project, was the tradition of foreign travel-writing on Iceland—in particular, English-language accounts of travel and descriptions of saga-sites by nineteenth and twentieth-century ‘saga pilgrims’ such as William Morris (1911). Saga literature and all things Icelandic/Northern became increasingly popular in Britain and North America throughout the nineteenth century, and Morris was one of many visitors who travelled to Iceland in order to see and experience places named in the sagas for themselves.

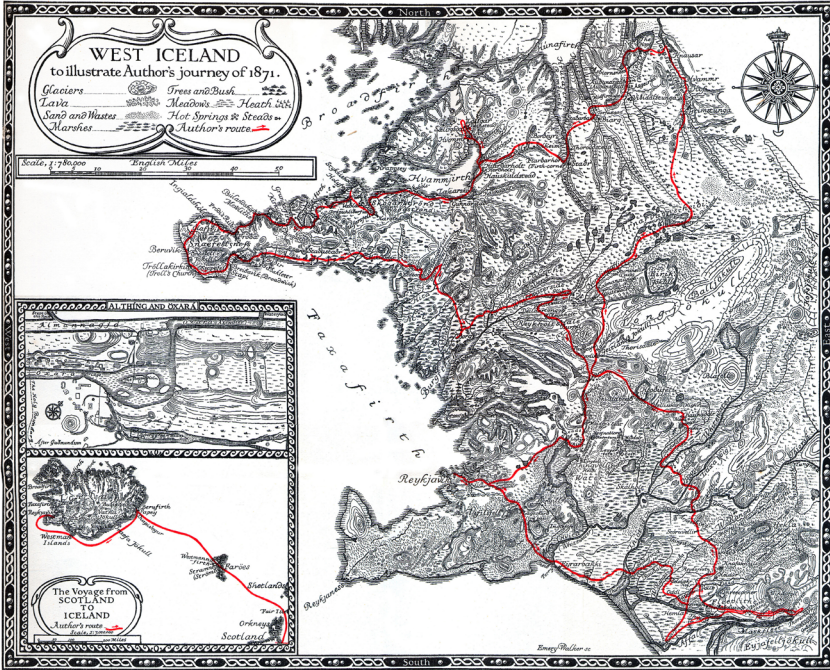


Figure 19.2: William Morris' Map of Iceland. Source: William Morris Archive, available at http://morrisedition.lib.uiowa.edu/Icelandic_CollectedWorksv8_map.jpg.

The name of the project was chosen in homage to a wonderful book called 'The Sagasteads of Iceland' published in 1899 by William Gershom Collingwood and Jón Stefánsson. I remember stumbling across a copy of this book in the open stacks of the Cambridge University Library when I was a BA student and being captivated by the beautiful watercolour and pen-and-ink sketches of saga-sites and retellings of saga narratives. Throughout the year of my saga-site explorations, I used this book as another filter or lens through which to view the landscape and assess change and continuity over time. Morris's 1871 and 1873 accounts (Morris 1911), and Collingwood's and Jón Stefánsson's 1899 book, are among the travel books that have been geo-referenced and added to the ISM website. It's interesting to see where they (and others) went, and to compare how they described the same saga-sites. For me, being in the landscapes, trying to trace connections between

texts and places, experiencing places at the height of summer in 24-hour-daylight, and in mid-winter—in the dark and in fierce weather—that gave me insights into the portrayal of life in Iceland in a way that I could never otherwise have accessed. Working on the farm, too, helped me to better understand the reciprocal and cyclical relationship between farmers, the land they work, and the livestock and other animals that their lives are founded on.

PK: Your work engages physical locations, textual interpretation/translation, and digital technologies. What are the challenges (practical, conceptual, institutional, societal) of working across these contexts?

EL: Practical challenges include—inevitably—funding and time. Time is perhaps my biggest practical (and societal) challenge right now as I have a young family, and leaving my 2 year old and 4 year old at home with their dad for any extended period of time while I disappear off into the remoter parts of Iceland to do fieldwork isn't really an option. The Sagasteads project was funded by small grants I got here and there: from the British Academy, and from businesses, and I learnt a fair bit about how to market an academic project for a more general audience then.

The technical development of ISM and the hugely time-consuming work geo-referencing texts has been funded by various project grants from the University of Iceland, Rannís, and most recently, as part of a bigger National Science Foundation-funded project on digital infrastructure called dataARC [www.data-arc.org]. I've been lucky to have been awarded project grants that have enabled me to continue developing the digital resource and my research, and I've learnt a lot from others I've worked with, particularly on the technical side. It helped a lot too that the computer programmers I've collaborated with had humanities backgrounds as well as being excellent programmers, so they had no difficulties in understanding where I wanted to go with the saga corpus data, and of course, had many excellent ideas themselves that wouldn't have occurred to me. Not having the programming background myself has been frustrating at times, and while I try to learn bits and pieces, I would love to have more time to devote to this. One institutional challenge

I've come up against (and I know that others working on digital humanities projects have too) is the fact that it is hard to get concrete credit for digital projects in the academic evaluation framework. You get points for publishing but not for curating datasets and digital resources. This is rather unfair in many respects, not least because of the huge amount of time and editorial work that goes into generating and maintaining digital data to a high standard. It's not unlikely that the ISM website has had a much greater impact worldwide than my published research, which only a small number of academics will probably ever come across.

PK: What did you find rewarding in working in the landscape?

EL: As well as a better understanding of the subject I was researching and gaining inspiration from being in the landscape, I loved meeting people and learning from them. I talked to everyone I came across—at petrol stations, in local grocery shops—and I knocked on a lot of farmhouse doors. People were genuinely interested in the project, in my story and what I was learning, in the Land Rover, and they often went out of their way to help me even when I turned up unannounced. They showed me places themselves and introduced me to others who might have relevant information... they also often invited me in for coffee and cakes, and even fed me hearty meals sometimes (which was always welcome!). My Icelandic improved a lot, and I began to feel that I was building relationships with people all around the country and, in that way, finding my place in Icelandic society. Once I moved to Reykjavík and started working there, I trained with the Mountain Rescue Service (Björgunarsveit), and that gave me regular opportunities for long weekends in the mountains in all conditions: this also helped me to build up and extend my mental mapping of Icelandic landscape, environment, and narrative intersections.

PK: Do you have any advice (practical or otherwise) for emerging scholars who are hesitant about interdisciplinary fields and unconventional projects?

EL: It's always good to talk and to use opportunities to hear about the experiences that others have had, to learn from the challenges

that they have encountered. People are generally very willing to share details about how they managed to develop projects, the many stages involved and the work that went into turning an idea into a reality. I see it as the duty of more established scholars to respond constructively to requests for advice or support that emerging scholars may have. So, it's always worth sending an email to make contact, although when you're a student or in the early stages of your career, you might feel shy about doing this. With regard to collaborating with scholars outside your own field, I think one key thing here is to try to identify a specific area of overlap or mutual interest, and to develop concrete research questions and methods. Interdisciplinary collaboration can require patience too: you have to be pragmatic and flexible—for example, when trying to explain something that is of paramount importance to you, intellectually, but that does not necessarily seem significant to others because they have a different intellectual background or foundations.

PK: What is next for ISM? What other questions do you hope to address?

EL: Re. ISM development. Right now we are adding new texts to the database, and a PhD student at the University of Iceland/Árni Magnússon Institute for Icelandic Studies has been working hard at inputting information about places associated with saga manuscripts so we can add that as a new 'layer.' This data will enable fantastic new visualizations and analysis of what sagas were being copied or read where in Iceland from the medieval period to the nineteenth century, and how that relates to places that are named in the sagas. It will also show the journeys that individual manuscripts made in space and time. I'm incredibly excited about this, and it's been on my ISM-wish list for years: another dimension of the place/text cross-over, geography as a key to narrative transmission.

PK: You are now involved in launching a new place-name project... what can place-names tell us about environmental history, heritage, and sustainability?

EL: Place-names can tell us a great deal about these themes and are an important source for any historical consideration of

landscape and landscape change. I've been Head of the Department of Onomastics at the Árni Magnússon Institute since 2017 and, since starting, one major aim was to make the place-name archive we have in our care open and accessible to everyone in digital format. The archive comprises around 14,000 documents that preserve registers of place-names for nearly every farm around Iceland, along with detailed landscape descriptions, etymological information, notes about local folk traditions associated with landmarks and place-names, and detail about farming practices among other things. Some of the documents run to dozens of pages and include hundreds of toponyms. It's an extraordinary collection of documents for many reasons: its incredible richness, its comprehensiveness, its enormous potential for detailed comparative place-name research and, not least, for the light it can shed on the environmental history of Iceland from the early twentieth century to present times—a century or so that saw more change with regard to farming technology and techniques and landscape utilization than the whole millennium that preceded it. The collection is now digitized and searchable at <https://nafnið.is> (also at <https://nafnid.is> if your computer doesn't have Icelandic characters).

Place-names are protected in Iceland by law as part of Iceland's cultural heritage, and a place-name committee appointed by the government ensures that 'good practice' is followed when new place-names are created. One of our departmental roles is to give people advice with regard to new place-names and conduct research using various historical sources if disagreements arise about place-names (e.g. over location, spelling, or variants). On the subject of disagreements, place-names, and environmental history, I used the Nafnið.is database to find and analyze examples of place-names that begin with the element 'Þræta', which means 'dispute' or 'quarrel' in Icelandic. I found hundreds of examples (e.g. Þrætutunga, Þrætupartur, Þrætuspotti, Þrætustykki, etc.) and it was striking that, more often than not, the location of these place-names' referents was on a boundary between properties. Many toponyms give us insights into the socio-economic history of places, and here we can infer that these patches of borderland between farms were so-called because neighbouring farmers

fought over them and the resources they yielded at points in time: perhaps livestock strayed and grazed where they should not have, or one farmer mowed a patch that another considered to be on his side of the boundary. Especially where these patches of land are not extensive, this says a lot about the value, historically, of every corner of land an Icelandic farmer had access to and utilized to make hay to support livestock over the long winter period (the medieval law-code *Grágás* decreed that farmers could not keep more livestock than could be fed during the winter, and the failure to adhere to this legal requirement sets off feuds in a number of sagas). Although Iceland in recent years has had one of the highest GDP per capita figures in Europe, life for many Icelanders right up until the early twentieth century was very hard and directly dependent on environmental conditions, since it involved eking out a subsistence living on the land.

There is a long-standing tradition of local interest in place-names and place-name history in Iceland, and thousands of people around Iceland contributed information about toponyms known personally to them when organized collection of the material was conducted during the twentieth century. Although around two-thirds of Iceland's population now lives in and around Reykjavík, I think it's likely that most Icelanders will find relatives who were informants in the database if they look up farms where members of their family lived or had connections in previous generations. It also makes research easier for those who already use the data for different purposes (e.g. in archeology, local government/administrative planning, local history, etc.). We hope that the database will stimulate interest among those who have not had access to this material. I'd love to see projects developed that involve school children looking over documents in the collection together with grandparents in order to identify which place-names are still in use, which have fallen out of use, and recording new place-names, for example. I think that would be a fantastic way of encouraging the youngest generation to establish a connection with the Icelandic landscape and nurturing their sense of responsibility for the land and respect for its natural resources. It goes without saying that this is vital for the future.

Part Two: Steven Hartman

PK: How does an interdisciplinary project like Inscribing Environmental Memory (IEM) come together? How was it conceived?

Steven Hartman (SH): In 2011, together with Anna Storm and Sverker Sörlin, I had the pleasure of organizing what I'm pretty sure was the first broadly inclusive interdisciplinary environmental humanities symposium in the Nordic countries. It was certainly one of the first major meetings in Europe defined by a concerted effort to envisage and map out new pathways for better integrating diverse streams of environmental studies based in the humanities, long organized (before then) within separate epistemic communities such as environmental history, ecocriticism, environmental ethics, historical ecology, environmental anthropology, and so on. Titled simply 'Environmental Humanities', the symposium also involved a researcher training course that focused on theoretical and methodological intersections among all of these cognate fields. I'm aware that comparable efforts were under way in Francophone contexts around the same time, or shortly thereafter, led by people like Patrick Degeorges, Bruno Latour, Philippe Forét and other researchers and policy specialists seeking to break down knowledge silos and promote transdisciplinary engagement and collaboration among different epistemic communities, on the one hand, and between academic communities and the sectors of environmental policy and management on the other.

It was in the context of this 2011 symposium in Sigtuna that the ideas for the Inscribing Environmental Memory initiative first took shape. The main organizing partner, NIES, was in fact a very interdisciplinary environmental humanities network from the time of its founding at a University of Oslo symposium in fall 2007, bringing together environmental history, ecocriticism, science and technology studies, landscape studies, and environmental architecture. But the Sigtuna symposium represented a significant scaling up of ambitions and active efforts to map out and actualize a more fully integrated environmental humanities community. What was new about the Sigtuna conference was that it brought ecocriticism, environmental history, anthropology, STS,

and environmental geography into very direct and fruitful conversation with fields such as historical ecology and ecological economics, not only through the participation of many early career researchers across this spectrum (especially PhDs in training) but also by involving many of the leading figures in these fields internationally, scholars such as Carole Crumley, David Nye, Richard Norgaard, Kate Soper, Kenneth Olwig, Libby Robin, Axel Goodbody, and many others. All sessions at the symposium were plenary, which made it not just another catch-all conference where different disciplinary communities went their own way for conversations in their own silos and then came back together for a couple of keynotes and coffee. In fact, it was standard at NIES symposia that all sessions always involved everyone. Without that, how can you get real cross-pollination of ideas, methods, theories, or a true basis for new collaborations?

PK: So, these interdisciplinary cross-pollinations led to IEM and the current project, ICECHANGE. Could you say more about each?

SH: What grew out of these conversations, enthusiastically but also somewhat chaotically at first, was a more focused series of exchanges among an expanding community of participants in the humanities, social sciences and environmental sciences that became the foundational concept for the initiative we came to call (informally) Inscribing Environmental Memory in the Icelandic Sagas (IEM). The discussions began with the idea of looking at environmental representation in the medieval Icelandic sagas and other available sources in the Icelandic written record, with a particular focus on resource scarcity and its relation to social conflict. This indigenous northern body of writings not only provides a unique voice to local historical accounts but represents a diverse literary tradition with a long native scholarly tradition of place-centred narratives. This focus would remain an important one in the coming years among the growing community of researchers identifiable with the IEM research collaborations, but it would become one of several interlinked areas of investigation.

The initiative has developed (or evolved) in what can be described as overlapping nodes and sub-projects that integrate multi- and

interdisciplinary teams of researchers across many institutions in the Nordic countries, the UK and the USA. Complementing eco-critical literary and historical analyses of Icelandic textual sources, non-textual data sets (material culture, zooarcheology, paleoecological data, etc.) relating to the period commencing with the Settlement Age (870–930) up through the fifteenth century have been the focus over the past several years. The emphasis is now turning increasingly to the modern period (1550–1950), while continuing to study specific questions from earlier (pre-modern) periods, with increasing emphasis being placed on efforts to analyze environmental change, societal development, social-ecological resilience, and environmental memory in Iceland and also, increasingly, in comparable island communities of the North Atlantic, such as Greenland, Orkney, Shetland, the Hebrides, and the Faroe Islands. More and more emphasis is now being placed on synthesis of results and findings in new interdisciplinary dissemination efforts.

All of these very fruitful exchanges and new collaborations in IEM's scholarly community of interest have led to funded projects, including 'Reflections of Change: The Natural World in Literary and Historical Sources from Iceland ca. AD 800 to 1800 (ICECHANGE)', co-led by historical climatologist Astrid Ogilvie and myself, and also involving environmental historian Árni Daniel Juliusson, historical anthropologist Jon Haukur Ingimundarson, and literary historian Vidar Hreinsson. ICECHANGE is financed by Riksbankens Jubileumsfond. However, the IEM collaborations have also contributed to newly funded projects such as the US National Science Foundation project 'Co-production of Knowledge and the building of local archeological capacity in Greenland', led by archeologist Thomas McGovern (Hunter College, CUNY), as well as other projects funded in Iceland, Scandinavia, the UK, and the USA. As funded projects have taken shape, they have gradually displaced or overtaken the informal designation IEM, which is used less often these days, although the community of intersecting institutions, disciplines, and research groups that were previously grouped under this handle remain very much intact and are more active than ever, having in fact grown into a larger community of purpose as new projects come online.

PK: *The ICECHANGE article, 'Medieval Iceland, Greenland, and the New Human Condition: A Case Study in Environmental Humanities' received the 2019 St Andrews Prize from the European Society for Environmental History (ESEH). Can you tell us about it?*

SH: My co-authors and I felt very honoured to receive the St Andrews Prize from the European Society of Environmental History. This article is an example of the kind of interdisciplinary dissemination effort that I just mentioned [PK: See Hartman et al. 2017]. In this case, our team of collaborating researchers was composed of a physical geographer, a cultural anthropologist, two environmental archeologists, an environmental historian, and a scholar of literature and ideas taking an ecocritical approach to narratology and historiography. Normatively speaking, the scientific traditions and methods brought to bear by this particular constellation of researchers was (and remains) far from typical, certainly within a humanities context. This circumstance extends as well to the quite varied data sets drawn upon in the study. For example, the study included sampling, analysis, and interpretation of soil data based in the field of physical geography, using the highly resolved stratigraphic techniques of tephrochronological analysis, among other methods, to answer questions about geomorphology as well as historical landscape formation, use, and change in medieval Iceland and Greenland. The study also involved zooarcheological analysis of previous human settlements, ethnographic research applied to interpretation of medieval documentary data available in so-called normative documents (registers, farm inventories, and the like), and ecocritical as well as environmental historical analysis of stories, annals, and so on.

Satisfactory synthesis of all these study elements in the overarching analysis remains one of the chief challenges of this kind of team-based interdisciplinary research, but that very process of translation and co-learning, sometimes involving unexpected or even serendipitous connections, can sometimes yield breakthroughs in understanding that enable interdisciplinary work to be so much more than the sum of its parts. Nevertheless, whatever

breakthroughs we may achieve in interdisciplinary teams amounts to only half the real challenge, particularly if we don't want whatever advances we achieve to be one-off boutique developments that remain largely invisible to the wider research communities this work is meant to engage. Finding new ways of disseminating such work to multiple specialist communities implicated in the research can also help us overcome the kinds of disciplinary tunnel vision apt to occur when we get too entrenched in our own discourses or disciplinary communities. It can also help us move beyond the pitfalls of nominal (shallow) interdisciplinarity, which happens when research efforts advertise themselves as interdisciplinary endeavours without really earning that label.

I suppose that recognition we got in the form of the St. Andrews Prize is evidence that we achieved at least part of our ambition by reaching one key scholarly community implicated in our research. In the kinds of interdisciplinary research we have been carrying out in the integrated IEM collaborations, this is an encouraging first step, but I'd also have to admit that it's just a beginning. The fact is, presently, there are very few journals, if any, that have the kind of wider readership spanning environmental sciences (social and natural sciences), humanities, and the arts to which we feel our research is relevant. And it's hard to say whether those broadly inclusive dissemination channels are likely to emerge anytime soon (it seems unlikely somehow in the present academic publishing landscape). This means that the onus is on us to find other ways of directing our dissemination efforts to reach this wider constituency.

PK: How has your understanding of literature changed through collaboration across disciplines?

SH: I can't really say that my understanding of literature has changed fundamentally since I began to collaborate across disciplines. What has changed somewhat is my understanding of what critical approaches to the study of literature—and what results those studies yield—lend themselves more readily to integrated research crossing lines of enquiry in the academic landscape we

operate in today. Not all forms of enquiry lend themselves to this kind of integrated work in ways that I would say are prerequisites for true interdisciplinary engagement of researchers coming from often very different epistemic and methodological traditions. Such teams are already self-selecting, or they don't last very long.

Those who embark on these kinds of interdisciplinary collaborations demonstrate already from the start a strong interest and a mutual willingness to acknowledge the validity and value of sometimes manifestly different approaches despite (or sometimes even because of) their differences. When I am working with researchers who are in effect seeking to reconstruct the past (both past environmental change and past human influence on and response to environmental change), then my very genuine interest in questions concerning the aesthetic dimensions of literary composition and execution may be of limited interest to my colleagues in archeology or physical geography. Maybe of no interest at all. That doesn't mean I'll cease to be interested in these questions myself. They're just not the kind of study focuses I'm apt to unpack and go after aggressively in my common work with these colleagues. I'll address them in other more discipline-specific ways in a literary studies context.

The mainstay of the research we have been pursuing for a number of years now within what I would call the IEM collaborations (some of my colleagues might call them something else) approaches heritage and environment as inextricably intertwined. There's a lot that can be gleaned and learnt about these intertwined focuses from literary history. And the ambition of the literary studies-oriented work in these collaborations has tended to be dominated by a collective effort to locate and analyze significant examples of environmental knowledge inscribed in local traditions of literary production.

The heritage perspective defining our common work together places a premium on the value of recorded ideas, observed phenomena, local history, auto/biographical narratives, everyday perspectives, attitudes, and lore in cultural texts of many kinds. Our interest in these kinds of works is undiminished whether

or not these texts exhibit features of an exemplary literary culture according to nineteenth and twentieth-century hierarchies of virtuosity that effectively set the tone, critical fashions, and research agendas of professional literary studies throughout the twentieth century and up through the recent past. To a great extent, I would say that we are far less interested in the virtuosity of artistic achievement in literary texts (literary with a small l, never a large L). Many kinds of local literary expression that may have been dismissed 50 years ago, maybe even 20–30 years ago, as doggerel or naive folk expression, we view as potentially very valuable for the social memory these texts may preserve, maybe even more valuable owing to their virtual invisibility to a large segment of the mainstream critical establishment until more recently.

Much of our work, whether it focuses on narrative, poetic, or folkloristic expression of local ecological knowledge, gender relations, values and norms, or simply everyday observations concerning seasons, meteorological conditions, or life on smallholder farms, is richly informed by the field of ecocriticism. But that doesn't define this work in its entirety. Together we are very interested in learning more about environmental representation and memory in the light of wide-ranging studies (historical ecological, archeological, and climatological, to name only a few) which for decades now have been striving to examine and reconstruct evidence of the *longue durée* of human impacts on island landscapes in the North Atlantic, the impacts of climate and other environmental changes on human communities, and the interaction of human societies and their environments at different spatial and temporal scales. The individual contributions to our knowledge and collective understanding of our study objects often help to fill in blind spots that each of us in our respective teams and groups (and from our respective research traditions) may have entered into our collaborations with. That fact helps to illustrate just why literary works—like other documentary, material historical, and even intangible cultural sources that we're studying—can't be fully illuminated independently of the other evidence of cultural heritage and environmental change.

PK: Through BRIDGES, you are embedding environmental humanities to UNESCO frameworks for sustainability education. Can you tell us about your hopes for the BRIDGES project?

SH: Yes, over the past year or so, a process has been under way to establish a new international sustainability science coalition, now in the final stages of being formalized in the UNESCO Management of Social Transformations (MOST) intergovernmental programme. The BRIDGES coalition is innovative in a number of ways, not least by being the first human-centred and humanities-driven international sustainability science initiative within UNESCO. The main organizing partners have been the International Council for Philosophy and Human Sciences, the Humanities for the Environment global observatory network [hfe-observatories.org], which I represent, and UNESCO itself. The general assembly of BRIDGES is now composed of a network (still growing) of 50 strong institutional and organizational partners very active in sustainability science, education, and action internationally, such as the International Science Council, Future Earth, the Club of Rome, and the World Academy of Art and Science, as well as smaller but no less important partners with local and regional focuses, such as the indigenous community of the Kogi people in Colombia, the Penn Program in Environmental Humanities, the Cappadocia University Environmental Humanities Center, the Swedish Centre for Biodiversity, and the Third Pole in India, a key regional node in the Earth Journalism Network. BRIDGES is a strategic undertaking in the co-design and co-production of research, education, and public action in support of the Sustainable Development Goals. The coalition promotes new potentially transformative collaborations across the academic domains of the arts, the humanities, the social sciences, and natural sciences, as achievable on the ground in a range of local and territorial contexts together with local partners. We feel this effort meets a very real need to bring the humanities and arts, as well as non-academic partners representing vital threatened natural and cultural heritage around the world, more fully into the mainstream of sustainability science knowledge formation and application of knowledge (in its broadest and most inclusive configurations) to the major social-ecological challenges of the twenty-first century.

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CHAPTER 20

Imagining Godzilla

An Art Research Network Platform

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Abstract

This chapter introduces Imagining Godzilla, an experimental, mobile, artistic and art-science research and network platform with a focus on investigating the environmental challenges facing the Baltic Sea and its surroundings. The first section provides the reader with factual information about the project and its aims, as well as the current biophysical condition and political situation of the Baltic Sea. The first edition of the residency was held in Helsinki during August 2019 in collaboration with the Bioart Society. The long-term aim is to develop an international network of artist residencies and marine science research centres around the coast of the Baltic Sea, allowing fundamental collaboration and cooperation between artists and scientists, and disseminating results, findings, and artworks to the public.

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Figure 20.1: Godzilla in Helsinki Harbour, 22 August 2019. Drone photo: Tivon Rice.

The Imagining Godzilla network platform was conceived and run by artist-researchers Merja Puustinen and Andy Best. It is based on *Godzilla*, a Polynesian-style sailing catamaran designed by James Wharram. Wharram studied the ancient Polynesian sailing canoes and based his designs on their timeless principles. In the 1950s, he was the first person (together with two companions) to sail a catamaran west to east across the North Atlantic. *Godzilla's* unique pedigree and aesthetics create an environment conducive to artistic thinking and research, in contrast to a conventional scientific research ship or a traditional artistic residency on land. Its shallow draft, stable platform, and wind power allow artists and researchers close physical and mental access to the sea and its coastline. The simple no-fuss interior and blend of Western and Polynesian aesthetics provide an environment well-suited to creative artistic thinking.

With more than 20 years' experience sailing in the Baltic Sea, Best and Puustinen have become increasingly concerned with the levels of pollution, biodiversity loss, and density of shipping

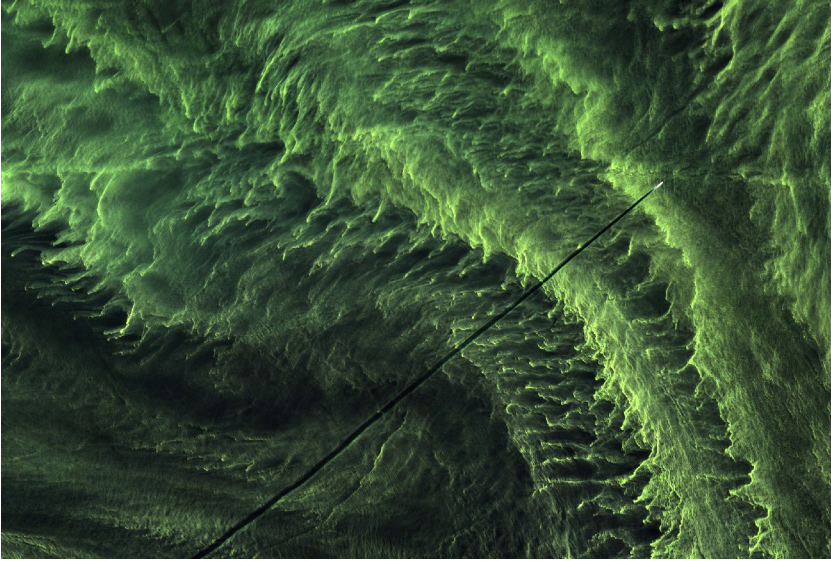


Figure 20.2: A ship cuts through algae blooms in the northern section of the Baltic Sea, 28 July 2019. Image sourced from EU Copernicus Sentinel-2 satellite. Image: Andy Best.

apparent in the area. Having sailed widely over many areas of the Baltic Sea, Best and Puustinen have observed how cyanobacteria algae blooms affect huge areas, often well out of sight of land. *Imagining Godzilla* is an attempt to use artistic means to research and draw public attention to these phenomena, as well as giving artists and researchers the opportunity to experience and get up close to the sea in general.

The Baltic Sea is the second-largest inland sea in the world – the largest being Hudson Bay in North America. The Baltic Sea is also the largest brackish sea area in the world. Inflow of fresh saline water from the North Sea and Atlantic is extremely limited due to the narrow, shallow channel connecting to the Baltic Sea via the Kattegat between Denmark and Sweden. The Baltic Sea is also fed by rivers from a large catchment area four times the size of the sea itself (Attila 2019). Many of the rivers discharging into the sea flow through large industrial areas (Neva—St. Petersburg; Vistula and Motława—Gdańsk; Daugava—Riga). For example,



Figure 20.3: Tanker in the port of Klaipėda discharging water directly into the harbour, 27 July 2019. Photo: Andy Best.

the River Vistula drains 60 percent of Poland's land area. Many rivers in Finland, Sweden, and Denmark run through rich agricultural and forestry regions and, as a result large amounts, of organic material and fertilizer run-off are deposited into the sea. All these factors make the Baltic one of the most polluted seas in the world.

The Baltic Sea is heavily used by commercial shipping, particularly by tankers and container ships coming from and heading to ports in Russia, as well as other major harbours such as Gdańsk, Klaipėda, Liepāja, Ventspils, Tallinn, Stockholm, and Helsinki. The Baltic also plays host to large numbers of cruise ships, each with the pollution footprint of a small town. In addition, there are many commercial ferries on regular routes connecting cities around the coast of the sea. During the summer months, the coastal areas of the Baltic attract large numbers of tourists and pleasure boaters, particularly in the Stockholm archipelago and the Finnish Archipelago Sea areas, as well as along the northern Polish and German coasts. All these factors lead to increased pollution and pressure on the sea and its wildlife.

One of the major problems facing the Baltic is eutrophication, the growth of algae in the water due to an imbalance of nutrients,

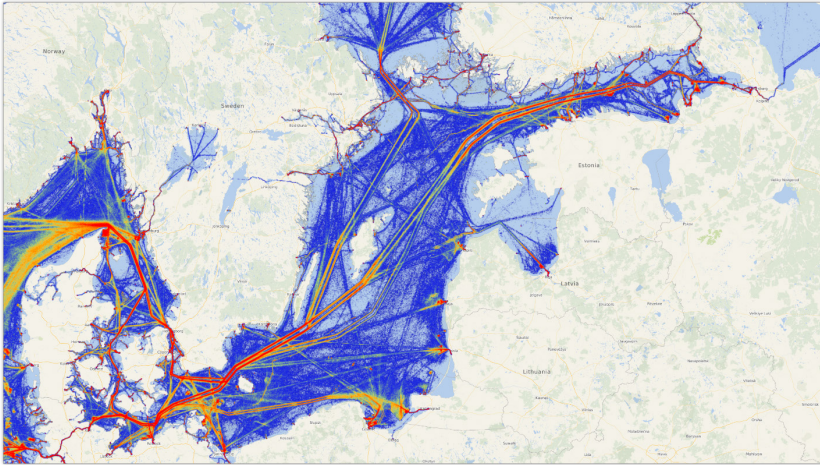


Figure 20.4: Shipping Traffic Density in the Baltic Sea during 2019.
Source: Vesselfinder.com.

other pollutants, and the natural physical conditions in the region. Since the early 1900s, the sea has changed from an oligotrophic clear-water sea to the current eutrophic environment with high nutrient concentrations leading to an imbalanced ecosystem. The Baltic Sea receives 75 percent of its nitrogen load and 95 percent of its phosphorus load via rivers or as direct waterborne discharges; of this, 25 percent of the nitrogen load is discharged via airborne pollution. The 2007 HELCOM (Helsinki Commission) Baltic Sea Action Plan sought to draw up guidelines for reducing eutrophication and returning the Baltic Sea to a good state of health (HELCOM 2007). In the agreement, it was recognized that the use of phosphorus and nitrogen in agricultural fertilizers was the main source of nutrient loading in the Baltic Sea. In addition, other forms of natural resource exploitation—such as forestry, peat mining, aquaculture, and fur farming—also have a big impact on the levels of eutrophication in the sea. It was also understood that large amounts of nutrients flow into the Baltic from states such as the Ukraine and Belarus, which are outside the agreement area, due to its large geographical catchment area. Further bilateral agreements will tackle these issues.



Figure 20.5: Large areas of algae are experienced when sailing in the Baltic Sea. This is between Gotland and mainland Sweden, 25 July 2018. Photo: Andy Best.

HELCOM's vision for the future of the Baltic Sea:

A healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable economic and social activities.

HELCOM (2007)

From their own experience and observations, Puustinen and Best can see that the Baltic is far from being an oligotrophic clear-water sea, and from reaching the goals set out in the original Baltic Sea Action Plan 'aiming at reaching good ecological and environmental status by 2021'. According to the European Union's Water Framework Directive, between the years 2006 and 2012, only 25 percent of Finnish coastal waters were defined as being in good condition (Ferreira et al. 2007). During 2012–2017, Finnish coastal waters were in moderate condition, while none of the open sea assessment areas had reached a good level. In fact, during this period, 96 percent of the entire Baltic Sea was at worse than 'good' status, while 12 percent was in the worst possible state with regards to eutrophication (HELCOM 2018). It is clear, therefore,

that much still needs to be done to reduce the flow of nutrients and other pollutants into the sea. The goal for *Imagining Godzilla* is to help to draw attention to this situation by inviting artists and other researchers to experience the sea for themselves, and so to reflect on that experience through their work. Some projects may be directly political or activist in nature, but this is not a condition of participation. Works should connect in some way with the sea, the wind, the waves, and the wildlife.

The network platform is focused on the sailing catamaran *Godzilla*, with the Bioart Society in Helsinki as a co-developer. The aim for the coming years is to expand the network to include other partner organizations such as artistic residencies and scientific research centres as additional co-developers. Each partner brings its own body of users, whether as participating artists or members of the public as audience (Eizenmann, Parker and Van Alstyne 2007). During 2020–2022, *Imagining Godzilla* is part of the State of the Art Network, ‘a Nordic-Baltic transdisciplinary network of artists, practitioners, researchers, and organizations who have come together to discuss the role, responsibility, and potential of art and culture in the Anthropocene.’¹ Academic and scientific partner organizations have their own specialist user groups that serve to enrich the opportunities for interdisciplinary collaborations. It will be possible in the future for the network platform to include other vessels in the Baltic or other regions of the world. As the platform grows, so the artistic and scientific results and findings will spread more widely, leading to further dissemination of knowledge and understanding of the ecological, cultural, and political issues threatening the Baltic Sea ecosystem.

The goal for *Imagining Godzilla* is to build an international network together with artistic residency centres and scientific research laboratories around the coast of the Baltic Sea. The sailing catamaran will host artist-researchers during visits to partner locations, as well as being a focal point for public presentations.

¹ See State of the Art Network, <https://bioartsociety.fi/projects/state-of-the-art-network>.



Figure 20.6: The algae particles seen underwater. Photo: Andy Best.

Key targets include site-specific working, coupled with dissemination and discussion of previous artworks and research to local audiences. Research and artistic outcomes can include unique artworks, performances, exhibitions, journal articles, and research papers. According to the European Union Policy Handbook on Artistic Residencies (HAR), many contemporary artists engage in practice that closely resembles research (European Commission 2014). The type of support that artists need is not so dissimilar to that of scientific researchers, and therefore the practical support provided on *Godzilla* should be suitable for both. The definition for artistic residencies provided by the HAR emphasizes the opportunity for time for reflection: ‘Artists’ residencies provide artists and other creative professionals with time, space and resources to work, individually or collectively, on areas of their practice that reward heightened reflection or focus’ (European Commission 2014). With *Imagining Godzilla* the emphasis is on focused reflection within the specific context of the Baltic Sea. The value framework for an artist residency may also be evaluated.

What are the wider benefits of the residency to the artist, to the residency organization, and to society? Kim Lehman has developed an artist residency value framework matrix (Lehman 2017). He proposes five beneficial value types that affect the individual artist, the host or local community organizations, and the wider society or regional community. According to Lehman, the resident artist gains professional development, economic benefits, and a broadened cultural awareness during the residency. The host organization and regional community also gain economic and cultural benefits from the residency. In addition, the local regional area hopes to gain creative and cultural stimulation that will lead to improved economic activity.

We could question whether the value types proposed by Lehman are suitable for *Imagining Godzilla*. With the tight focus on the ecology of the Baltic Sea, the aim is to bring concepts that are hidden from general view into the consciousness of the audience, with art acting as the mediator. Therefore, we could propose an additional value type of ‘ecological awareness’ that will affect each of the three beneficiary types—artist, host organization, and regional community.

Currently, work is being done to develop the network platform by introducing the concept to potential co-developers around the coastal areas of the Baltic Sea. The aim is to carry out further residency projects at these locations over the coming years. In each location, selected artists and researchers will carry out projects related to the environmental crisis facing the marine ecosystem as well as projects that reflect more generally on the experience of being in close proximity with the sea. We hope that the unique nature of the sailing catamaran platform will inspire artists, researchers, and audiences, and so help to bring attention to the severe problems facing the aquatic environment in the Baltic Sea region.

The Artists

Ten international and locally based artists participated in 2019, representing a wide cross-section of artistic disciplines. During this first edition of the residency, projects included sound



Figure 20.7: Eva Macali, Mohamed Sleiman Labat, and Andrew Paterson relaxing after a hard day. Andy Best and Merja Puustinen in background, 19 August 2019. Photo: Gary Markle.

art (recording both above and below the waves), video, creative writing including poetry and storytelling, drone photography, performance, and material collection and experimentation. For Best and Puustinen and *Imagining Godzilla*, the aim was to gain an understanding of the needs and desires of diverse artistic researchers and art-science practitioners in order to be able to develop the network platform concept further. The following artists who participated in *Imagining Godzilla* during August 2019 have also contributed to this publication:

Gary Markle

I explore the liminal space between land and sea through the lens of a garment that transforms the wearer into an aquatic creature, just for a brief period of time, to sense what this in-between space might feel like. I evoke the Selkie, a mythical creature—half-seal/half-human—that has the ability to

transition from an aquatic to a terrestrial domain. By shedding its seal skin, it can exist on land, but it must don this skin to return to the ocean. This creature is characterized by a feeling of never being content, neither on land nor sea. This physic state echoes the dilemma of intellectual knowing but not embracing the embodied knowing that, when integrated, allows one to act, to make the sea change needed to stop the environmental degradation of water.

Pekka Niskanen and Mohamed Sleiman Labat

The exhaustion and processing of finite resources such as phosphate are leading to terrible consequences for humans as well as for the environment. Man-made phosphate processing from agricultural activities ends up in the Baltic Sea in large amounts and is creating eutrophication, one of the biggest problems in the Baltic Sea. Thousands of miles away, a huge source of phosphate rock is located in the desert in the northern west part of Africa and is causing the dislocation of a nomadic community.

Samir Bhowmik

Keeping one's data in the cloud entails an increasing reliance on undersea cables, and thus users are entangled in invisible geographies. Analyzing the undersea network as media infrastructures draws our attention to how seemingly immaterial digital flows are anchored in material coordinates and biological strata. The project is an exploration of these dilemmas.

Eva Macali

A visual artist dealing with media arts, new media interaction, art performance, social media, and self-shaping, personal, and group identity. She responds to the sounds made on the boats, the natural elements of water and wind, using this as a starting point for her performance works to evolve and perhaps become mobile concerts.

Till Bovermann

The work addresses the relationship of contradictory elements such as urban/nature, digital/physical, and algorithm/behaviour.

Tivon Rice

An artist and educator working at the intersections of visual culture and technology. His work critically explores representation and communication in the context of digital culture and asks: How do we see, inhabit, feel, and talk about these new forms of exchange? How do we approach creativity within the digital? What are the poetics, narratives, and visual languages inherent in new information technologies? And what are the social and environmental impacts of these systems?

Andrew Gryf Paterson

A Scottish artist-organizer, educator, cultural producer, and independent researcher. His practice has involved variable roles of initiator, participant, author, and curator, according to different collaborative and cross-disciplinary processes. Andrew has worked across the fields of media/network/environmental arts and activism, specializing in workshop design, participatory platforms for engagement, and facilitation. His research interests are socially engaged art; auto-ethnographic and auto-archaeological methodologies and theory; and sustainability issues from the social, ecological, and economic perspective.

**Selkie Skin: or, What to Wear When Floating
in the Gulf of Finland**

Author: Gary Markle

Selkie Skin is a project directly inspired by the call to participate in *Imagining Godzilla*. It is part of a longitudinal research and creation project begun in 2018, titled: *Wear/Where Do We*



Figure 20.8: Gary Markle Imagining. Photo: Till Bovermann.

Belong?, which investigates narratives of identity through the lens of expanded fashion in the Anthropocene. *Selkie Skin* is a materialization of the question ‘What do our fashion choices have to do with the ocean?’

A Selkie is a mythical creature, half-seal/half-human, that can transition from an aquatic to a terrestrial domain with the magic of night under the light of full moon. By shedding its seal skin, it can exist on land, but it must don this skin to return to the ocean. This creature is characterized by a feeling of never being content, neither on land nor in the sea: a psychic state that echoes the



Figure 20.9: Andrew Gryf Paterson testing Gary Markle's Selkie Skin, Helsinki harbour. Photo: Till Bovermann.

dilemma currently being experienced by humanity, manifesting in the schism that exists between intellectual knowing and embodied knowing. This breach in consciousness, this collective neurosis, in turn leads to the conditions that contribute to climate change.

Healing this dysfunction is necessary to make the sea change needed to stop the increasingly global addiction to Fast Fashion. The narrative of the Selkie—a myth found throughout Scandinavia, Iceland, Orkney and Shetland Islands, Scotland, and Ireland—reminds us that cultural regions were and are (re)connected by the waterways that ancient seafarers travelled. The transmission of the myth of the Selkie parallels the spread of trade routes carrying goods, people, and ideas across the world. It also underscores the importance of water as a medium of dissemination.

Exploring the littoral zone of the Selkie, that place between land and sea, this project transforms the wearer into an aquatic creature through a performative garment. This shift in consciousness, even for a brief period, is an attempt to create empathy with the increasingly



Figure 20.10: Mohamed Sleiman Labat on Isosaari, Helsinki. Photo: Gary Markle.



Figure 20.11: Selkie Skin against the Helsinki skyline. Photo: Till Bovermann.



Figure 20.12: Old rope found on Isosaari, Helsinki. Photo: Gary Markle.

plastic-filled waters of the world. Even when invisible, oceanic plastic waste at both macro and micro levels are now ubiquitous.

Ironically/knowingly the base garment is made of reclaimed single-use plastic bags cut into thin strips of tape-like yarn that is simplistically crocheted into a multicoloured fishing net-like matrix. It was created ahead of arrival to Helsinki to take full advantage of the available residency time for completing the ‘fur’ for the Selkie Skin.

The fur materials were scavenged over the course of this short but very intense residency from different sites at which Godzilla came to shore. The random nature of the collection process determined the final look of the outer coating of the garment, manifesting a site(s) specific material map of the weeklong travelling residency/sailing adventure/journey. Non-permanently attached to the crocheted plastic base by simple weaving and knotting processes, the fur was comprised of organic aquatic flora and other non-toxic postconsumer materials collected from the shoreline and other areas as possible.

Evoking the archetype of the Selkie, this liminal garment is designed to allow the wearer to float in an altered state of contemplation and heightened awareness. It slows down quotidian thinking, inviting a state of communion. Ears filled with water, sounds are muffled; nose, eyes, and mouth are aroused by the tang of salt water. Breathing is not as easy as on land, and becomes a conscious act. The mild sensory deprivation sparked by the bracing chill of the sea is strangely calming. Mutable and transi-



Figure 20.13: Gary Markle floating in the Selkie Skin. Photo: Till Bovermann.



Figure 20.14: Andrew Gryf Paterson wearing the Selkie Skin on the dock beside Godzilla, Helsinki harbour. Photo: Gary Markle.

tory, this fur layer is a snapshot of the specific time and place of Imagining Godzilla in August 2019. It will never be repeated in this iteration.

The coolness and isolation experienced while floating in the *Selkie Skin* was balanced by the warmth of the group dynamic. Significantly, the encouragement and enthusiastic help of fellow explorer/scavengers helped me realize my proposal. Their willingness to engage with my project increased both the range of interesting materials collected and the enjoyment of discovering them. The interconnectivity of the group experienced through sharing skills, images, meals, stories, and linkages created a wonderful bricolage, the collective spirit at the heart of *Imaging Godzilla*.

PhosFATE

Authors: Pekka Niskanen and Mohamed Sleiman Labat

In August 2019, Mohamed Sleiman Labat and Pekka Niskanen took part in the Imagining Godzilla project during Sleiman Labat's residency period at the Kone Foundation's Lauttasaari Manor. They went sailing for two days with a floating research platform, looking for evidence of the algae in the Baltic Sea. As it was late August, the blue-green algal blooms had almost disappeared and there was hardly a visible trace left of them. The micro-residency functioned as an opportunity for the PhosFATE project to film and record above and under water. This was a unique opportunity to gather material for Sleiman Labat's and Niskanen's future video installation and a film. On the final day of the micro-residency, they gave a talk about their PhosFATE project at the SOLU Space of the Bioart Society.

The PhosFATE project addresses key issues of phosphorus pollution in the Baltic Sea and the exile of the Saharawi refugees living in southwest Algeria (Fiddian-Qasmiyeh 2011; Herz 2013: 371). The Saharawi refugee camps and the Baltic Sea region share the problems of phosphate fertilizers even though the consequences are very different. PhosFATE seeks to unfold the story of this valuable mineral through interconnected layers: evoking

understanding of ecological practices, the very food on our tables, world politics and economics, and the everyday stories we tell. The project involves special and unpaired connections: a sea whose bottom is turning into a desert (Vuorinen 2017: 19), and a desert deprived of its own phosphate yet blooming with thousands of family gardens planted by a community that never settled down to farm. An artist and researcher, Pekka Niskanen works and lives in Helsinki by the Baltic Sea. A poet and artist, Mohamed Sleiman Labat was born in a refugee camp in the Hamada desert in Algeria, where he currently works as well.

The PhosFATE project began in Helsinki in July 2019 when Saharawi artist Mohamed Sleiman Labat was working as an artist in residency at the Lauttasaari Manor. The two artists collaborated for four months on a ‘laboratory phase’ of the project to explore the potential for art projects and artistic research. From July to October they used a Saharawi tent to collect information for the project and met researchers from different disciplines and research institutions.

Sleiman Labat brought a nomadic tent from the Hamada desert, designed and hand-sewn by the women in the Samara camp. The tent served as a space to interact with people from time to time. Sleiman Labat and Niskanen experimented with the tent at different events, using it as a moving sculpture and a space for people to discuss and share stories and poems as well as to simply experience the tent, a typical home for Sleiman Labat and his people. The PhosFATE nomad tent became a film and photography studio, a meeting place, and a public presentation forum for the project. The artists documented the tent and the meetings inside it for future parts of the project.

Many Saharawis have been forced out of their own land in the Western Sahara to the Hamada desert in Algeria due to the phosphate mines in the Western Sahara. Morocco has taken over both the Saharawi homeland and their phosphate reserves. (Leite 2006: 13, 16). Phosphate from the Moroccan mines is used in Europe to fertilize fields and forests (Lécuyer 2014: 5–6). Eventually, it will end up eutrophizing marine areas, including the Baltic Sea. Eutrophication is most evident in the form of cyanobacteria

blooms (Kahiluoto et al. 2015: 4), especially in the summer, sometimes also as traces in the frozen sea (Olofsson et al. 2019: 12). The consequences of eutrophication are oxygen depletion and changes in the fish species and the marine ecosystem, besides the increased amount of cyanobacteria (Ahtiainen et al. 2014: 9). All these signs refer to the condition of the Saharawi as refugees; the signs are not a metaphor about the condition.

Climate change is affecting everyone, including the Saharawi, many of whom live in an almost uninhabitable place in the Hamada desert. As the global temperature rises, the conditions in the refugee camps become unsustainable for several months a year. Every year, unpredictable weather phenomena and rains destroy the clay buildings that have replaced the traditional Saharawi tents in the refugee camps. Currently, during the hottest months, there is a shortage of water and food, although the Saharawi have sought to establish small gardens in the middle of the desert to secure their food supply. The new generations of the Saharawi community are highly educated and know the principles of both permaculture and circular economy.

The European Union's trade policy contains contradictions that also concern the Saharawis. In January 2019, the EU signed a trade agreement with Morocco that includes vegetables and fishing products from the Western Sahara, even though Morocco conquered the area without the approval of the international community.² The European Court of Justice has ruled the agreement to be illegal. The court requires the legal agreement to have the consent of the Saharawis.³ Morocco holds more than 72 percent of the world's phosphate reserves.⁴ Although Western Sahara phosphate is excluded from the trade agreement, it legitimates Morocco as one of the main phosphate producers for the European fertilizer industry. Phosphorus is an essential plant nutrient (Kaakinen 2016: 40). The EU trade agreement makes it practically impossible for the UN to hold a referendum on the Western Sahara in the future.

² See European Parliament (2019a).

³ See European Parliament (2019b).

⁴ See Daneshgar et al. (2018).

The PhosFATE project also focuses on the problems of the mining industry in northern Finland. In Finland, agriculture uses phosphorus from the Norwegian company Yara. The phosphorus for the fertilizer is processed from phosphate from the Finnish Siilinjärvi mine (Geissler, Hermann, Mew and Steiner 2018: 14). Yara is possibly expanding its mining operations in Finland to Sokli, in Savukoski municipality's phosphate deposits. The mining project and its continuation will be decided on in 2021. The noise and lighting of the mining area would disturb reindeer herding in the Kemi-Sompio reindeer herd. The Supreme Administrative Court dismissed the petitioner's appeal against the Sokli mine in 2017. The mine would significantly burden the river Kemi and the Baltic Sea with phosphorus emissions.⁵ The Administrative Court's decision highlights the global conflicts between the mining industry and the interests of the Indigenous people of Northern Europe. The mining industry in Finland too often ignores the natural balance of the local areas and traditional livelihoods such as reindeer herding. On the other hand, the growth of lichen that the reindeers eat has declined in Lapland, partly due to the land use and reindeer herding. Lichen only grows a few millimetres a year.⁶

PhosFATE sheds light on the global environmental problems from which Indigenous and ethnic groups have suffered for decades. Many of the nomadic communities that have been forced to settle down possess experiences, knowledge, and stories that are important for our time. The global economy's dependence on raw materials benefits some of the world's population but often overshadows the lives of minorities and their knowledges. Securing access to raw materials is important to Western societies. Quite often, it forces populations out of their native areas. This can result in irreversible changes in the lifestyle of those groups to whom the colonized land belongs, as is the case with the Saharawis.

Sleiman Labat's and Niskanen's project will highlight at least two different areas of Saharawi knowledge: their knowledge of the desert and the new knowledge of the refugee camps. The Saharawi exile in refugee camps is a result of Western food production's

⁵ See Torikka (2019).

⁶ See Saikkonen (2019).

dependency on fertilizers—in the case of the Saharawi, on phosphates. The work discusses and explores phosphate mainly through Western knowledge, while the situation of Saharawi refugees is told through their own knowledge. The Saharawi artist Sleiman Labat has collected a video and audio archive of Saharawi life from the 1930s to the present day. The archive brings up the efforts of the Spanish colonial powers to incorporate the Saharawi into the colonial system before World War II.

The postcolonial Saharawi have produced a new cultural narrative in refugee camps by practising art, building permanent houses, and developing hydroponic agriculture. In hydroponic agriculture, barley plants receive nutrients from solutions, developing up to twice as fast as in traditional farming and using 90 percent less water.⁷ These three activities form the key practices in the camps, besides the activities in some Western institutions such as schools, hospitals, and libraries. All these elements mentioned above have become permanent structures in the new Saharawi narrative and for the Saharawi living in refugee camps.

Unknown Flows

Author: Samir Bhowmik

Under the Baltic Sea runs a vast network of data and electricity cables and gas pipelines. These cables belong to EstLink (power) and Telia Carrier (data), among others, that connect from Tallinn, Estonia to Helsinki, Finland. Pipelines such as Nordstream 1 and Nordstream 2, travel under the Gulf of Finland, carrying gas from Russia to Germany. In particular, submarine cable infrastructures in the Baltic Sea lie far under and beyond the public eye, and their flows remain unknown—although they cut through marine habitats and might have environmental implications. While underwater imagery might be available from the above corporate entities, gaining access to these assets is usually impossible.

Today, keeping one's data in the cloud, running the power grid or having a reliable gas supply entails an increasing reliance on

⁷ See Anthem (2019).

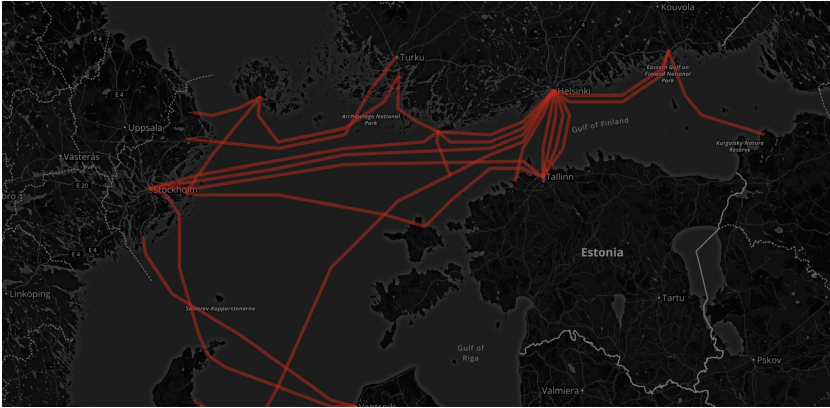


Figure 20.15: Submarine cables in the Baltic Sea. Source: Telegeogra-
phy, Submarine Cable Map.

undersea cables, and users are often entangled in invisible geographies. The residency project *Unknown Flows* was an exploration into these dilemmas. Analyzing the undersea network as media infrastructures draws our attention to the ways in which supposedly immaterial digital flows are anchored in material coordinates and biological strata.

The project used underwater mapping technologies, such as side-scan sonar, to map the Baltic seabed, following the laying route of submarine cables. It also conducted photo documentation of the cable landings on either ends of the cables. The residency provided a wooden catamaran as a platform to conduct artistic research. The twin-engine sailing catamaran was well-suited to the exploration of underwater infrastructures. It allowed for an easy installation of the side-scan sonar, a flat work area around the main mast, and unobstructed views of the shorelines.

Before sailing, we charted the routes, and decided upon which cables and pipelines to chase. Most of the underwater infrastructure within the Helsinki archipelago can be found as graphical markings from marine maps, although they do not indicate their ownership. These markings serve no other purpose than to warn fishing trawlers, or for divers and exploration vessels. After charting, we sailed along the path of a cable, with the side-scan sonar running. At the end of the cable, the landings were photo-documented. This process was repeated several times

during the allotted sailing days. The sonar scans were video-recorded and screenshots of particular infrastructures taken. The concerns and findings were presented at the end of the residency to a public audience at the Bioart Society.

The residency revealed new insights into the nature of the sea floor, as well as limitations of exploration. For example, infrastructures depicted on charts might not be exactly where they are actually located on the seabed. Sonar imagery brings into focus discrepancies between the accuracy of the chart markings and what is expected to be situated at an exact coordinate. There is a wide tolerance, of up to several metres, in the precision of the markings. This was the primary insight from the residency.

Much of the sea in and around the Helsinki archipelago is under military jurisdiction. As such vast swathes fall into a security zone; these remained beyond the scope of underwater exploration during the residency. One needs permission from Finnish Border Security to conduct any maritime research. Although most of the archipelago is cleared, dredged of obstacles from the main shipping routes, the Baltic seabed is still littered with cables and pipes and even old, unmarked structures. This is not surprising, as this has been a busy commercial route as well as a theatre of conflict during the World Wars.

In 2017 alone, the CO₂ emissions from 23,985 different ships plying in these waters amounted to 15 Metric tonnes.⁸ Recently, energy companies such as Nord Stream have been building gas pipelines on the Baltic seabed that have raised environmental questions and concerns about marine habitats. The HELCOM report mentions the endangerment of several species due to intensive shipping, fishing, and infrastructure construction on the seabed.⁹

During the recording sessions, one could not help but wonder about the extensive criss-crossing of energy cables, data cables and gas pipelines that showed up on the sonar, and how they might be damaging the marine life of the Baltic Sea.

Conducting an underwater survey is both time and energy-consuming. The side-scan sonar works with sound frequencies.

⁸ See Maritime Working Group (2018).

⁹ HELCOM (2007); See also Kontula and Haldin (2013).



Figure 20.16: Side-scan sonar image of a pipeline. Photo: Samir Bhowmik.

The sonar used during the residency emits fan-shaped pulses toward the seabed perpendicular to the path of the catamaran. Each reflection of the pulses creates just a tiny slice, and a series of reflections creates a stream of slices that form the whole image.

To acquire underwater sonar imagery, the vessel must travel slow. The speed of the boat thus has to be maintained between 5 and 7 kilometres per hour. When sailing with the wind is not an option, and if the wind is blowing against, one needs to use the engines to manoeuvre the boat slowly along the line of the underwater infrastructure. This requires precision navigational skills and considerable use of gasoline. One can imagine the fuel consumption of large cable-laying ships that take months to lay data or energy cables on the seabed.

Sonar itself is not enough to conduct a thorough undersea exploration of media infrastructures. The imagery gathered by a side-scan sonar is merely an operational image; that is, it is acquired by non-visual instrumentation and programming. It is not a true image of the seabed, merely a digital abstraction, without a broader context. There is hardly any colour differentiation, nor is it representative of the materiality of the seafloor. Undoubtedly, sophisticated devices are needed to conduct research, and this is beyond affordability in an artistic research context.

To understand and address the environmental damage to the Baltic Sea caused by underwater infrastructure, more awareness among the public is needed. In addition, cable-laying entities should be required to communicate about their activities by providing detailed seabed information thorough public environmental reports. Grassroots and activist organizations must demand more justifications and assessments from the state and transnational organizations about shipping routes, cable-laying, and construction through fragile marine habitats.

Underwater Godzilla Notes

Author: Eva Macali

UNDERWATER GODZILLA

I can change the name the change, can I
 how do you do you do how
 the change has a name has a-change-the
 there is only love only is there
 underwater godzilla is saying is godzilla underwater?

I need peace that is pace
 I need peace at a fast pace
 rauha rauha rauha

© Eva Macali 2019

In the harbour, in Katajanokka, the magnetic keys to enter the gate were shaped like little sky-blue tiles, the girls at the marina counter with light blonde hair, the always alarming weather forecasts that never came true because every day was a sunny day. Rain showers only on Monday and on Friday, like decorations at the margins of the week. Lots of coffee with milk macchiatura, but then, sleep was coming so early, earlissimo, because of the weariness of navigating and researching.

On the catamaran, I've been eating all the time and sometimes drinking wine, often Italian. The only smoking one was Samir

and an artist from Morocco who showed up at the presentation night at the end of the week. The other ones just drank, and when they drank, their personality changed a bit. In Finland, I feel fascinated by the prodigious way people deal with technology. They use technology in their everyday lives instinctively, and combine this inclination with a deep connection to nature. I found myself asking: how can I express the sweetness of the latitudes where I grew up? The Mediterranean sweetness is something that deals with the pleasure of living and has something to do with pleasure. In this regard, I had three sauna baths in the public bathroom of the harbour. The sauna was scarily hot (100 degrees Celsius); therefore, I was doing very short sauna sessions with iced shower breaks to resist just a little bit more. It's a different kind of pleasure.

I went to visit Petri Kuljantausta, a gorgeous and generous sound artist who provided me with the submarine microphone I used to record the underwater poetry. He was busy and did not make it to get on board and visit *Godzilla*—a little masterpiece of boat-making and the result of a ten-year restoration. *Godzilla* is a catamaran with a fair number of imperfections that make it lovely; a work of art brut with a hybrid Viking-Polynesian aesthetic and all the basic comforts, including a solar panel-powered fridge and adjustable multichromatic led lamps. On the *Godzilla*, I was not the only one focused on the underwater world. Samir was also working on a project on underwater cables. There were conversations about what was happening under the water line. Andy and Merja, while sailing off the coast a few weeks before, saw a Russian submarine passing below. There was a big debate about a project for an underwater tunnel to be built between Helsinki and Tallinn.

Just behind the harbour in Katajanokka, there was a building site full of Estonian workers. Every morning, they started the workday by playing a Tallinn radio station at high volume; that became our wakeup ringtone. One day after the other, we became affectionate toward them, and they started recognizing us because we were going back and forth to SOLU space, and we were looking at

them. Some of us also started wearing Estonian t-shirts from their t-shirt collections. The other boats in the harbour were luxury motorboats, spit-shined by silent and zealous crews; the owners never showing up. We were always saying hello moi, but we were inhabiting the jetty with our accessories and art objects, and the crews kept their distance. While navigating on the catamaran, we lay on the wooden slats and the spurts between the fissures reminded us of the sea below us. It felt so good.

I think 'Underwater Godzilla' is a sound poem that can be related to the experimental writing practices of twentieth-century avant-garde movements such as dada and futurism, among others. It's a voyage whose destination can be found between sound and meaning; a place whose perimeter is blurred by definition but has been widely inhabited in European literature (for example, with madrigal in Italian middle-age times) and, in general, in folk oral poetry at multiple latitudes and longitudes, when onomatopoeia is employed.

'Underground Godzilla' has been written following the scheme of underwater sound propagation: many sea creatures emit pulses of sounds and listen for echoes in order to orientate themselves in the 3D space. The first recorded use of the technique was by Leonardo da Vinci in 1490, when he used a tube inserted into the water to detect vessels by ear. This mechanism, which can also be compared to an idea of mirroring, is the grid where the poetry text has been written. This same mirroring idea can be seen visually as a symmetry concept, since the poetry text uses symmetry in sentence building through the rhetorical figure of palindrome, applied not to a single word but to a sentence.

At the end of the project, I had the chance to pair the poetry with video footage shot by Mohamed, who is Algerian, showing a point of view just below the water line. We did not say a word about the video, but I could not help thinking about what is happening in the Mediterranean sea, far away from the Baltic Sea, where migrants from Africa and the Middle East escape intolerable situations and consciously run the risk of drowning while crossing the great water.



Figure 20.17: Godzilla's mast. Photo: Till Bovermann.

Imagining Godzilla—Memories of an Excursion

Author: Till Bovermann

How to approach a complex environment such as the Baltic Sea with its unique interrelations and cultural connotations? How to deal with its insurmountable borders between rock, air, and water, separating the above from the below, the wet from the dry? Sound and augmented listening is a powerful instrument to convey feelings and evoke emotions. The absence of (moving) images allows the listener to focus on the imaginative, the implicit. As Hildegard Westerkamp puts it

on her website,¹⁰ [...] conscious listening and soundmaking is a way of placing ourselves inside the workings of our cultures, societies, and landscapes as involved, living participants.’ ‘Imagining Godzilla—Memories of an Excursion’¹¹ is an attempt to tell a story sonically about the week of Imagining Godzilla mini residencies through sounds and sonic impressions I collected during my stay on the vessel. It is a sonic narration in which I did not try to provide objective truth but rather focused on collecting subjective impressions, inviting listeners to associate with the narrated situation through their senses. They are invited not only to take my position as a passenger on the vessel, but also to listen through the boat itself, its structural elements and moving, creaking joints. Hence, the aim of my work was to give voice to both human as well as other-than-human participants of our journey. The piece is divided into six parts:

- Excitement—There was a feeling of excitement among travellers, paired with a certain unsettledness caused both by the novelty of being on a catamaran and by being surrounded by unknown people. The typical chatter that arises in such situations was soon drowned out by the overwhelming drone of Godzilla’s twin motors moving us out into the archipelago.
- Coordination—The silence after this motorized entrance introduced a strange calmness in me, paired with the slightly discomfoting feeling of not being in control. Heavily rocking over the waves, it took lots of coordination by our skippers to make our way through the surprisingly heavy gusts.
- Internalization—After listening out, we now turn to listening into and through the boat’s structure: how it is moving and twisting, rigging banging the metallic mast, the hulls shifting slightly in their dynamic suspension to the platform.
- Perspective—Shifting perspective, slowly moving from the inside to the outside; listening to stories told by the wind, the waves, and the skippers.
- Inspection—We listen to the sounds of approaching an island, connections between the floating raft and the seemingly stable ground of a large, solid rock were established, if only temporarily and with the help of rubber bumpers.

¹⁰ Westerkamp (n.d.) Hildegard Westerkamp: Inside the Soundscape.

¹¹ Bovermann (2019).

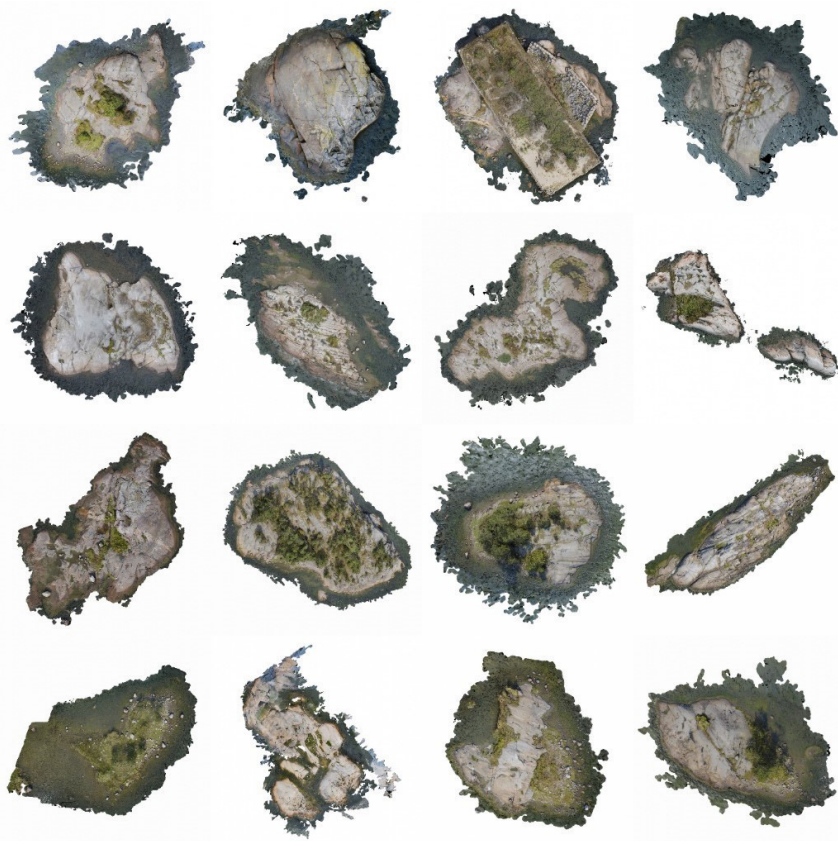


Figure 20.18: Images of islands created using photogrammetry. Image: Tivon Rice.

- Return—We eventually return, recognition of the repetitive rolling sounds of the wind turbine is slowly overridden by the twin motors bringing us back to the Helsinki harbour.

You may listen to *Imagining Godzilla—Memories of an Excursion* at <https://archive.org/details/imagininggodzilla>.

Photogrammetry of the Finnish Archipelago

Author: Tivon Rice

Throughout the northern Baltic Sea, thousands of small islands reveal the traces of glacial scarring—evidence, etched in stone, of events occurring long ago. Fast-forward 10,000 years, and we

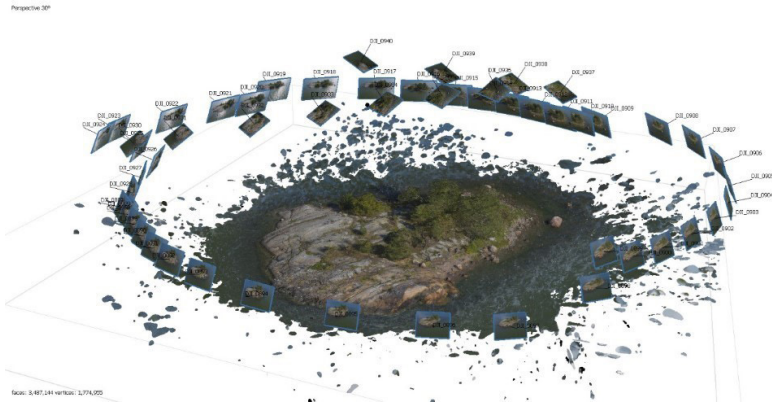


Figure 20.19: Illustration of how a single 3D image of an island is created using photogrammetry technique. Image: Tivon Rice.

find the process is still unfolding, as post-glacial rebound lifts the Finnish archipelago twice as fast as the pace of sea-level rise. With the paradoxes of these human and non-human timeframes in mind, I joined Bioart Society's residency *Imagining Godzilla* to explore the islands surrounding Helsinki.

Launching a drone from the deck of the catamaran *Godzilla*, I flew above dozens of the small granite masses emerging from the water. By taking hundreds of high-resolution photos, I was then able to create 3D virtual reconstructions using a process called photogrammetry. This archive of digital models creates a kind of machinic view of the landscape—point clouds, vertices, pixels, and textures representing the island's topography.

Brackish Water A–Z

Author: Andrew Gryf Paterson

Reflections on *Imagining Godzilla*

I sit here writing in April 2020, during the coronavirus pandemic. How clearly we now see that mankind is intrinsically linked to the natural world. Globally, entire industries are shut down, travel restrictions in place, national populations in lock-down.

Brackish Water A-Z

lovers

Many land-lubbers will tell you that there are no such things as sea monsters. Sailors are full of stories however. They might exaggerate, or draw one out in spoken words as the wind lulls, and nothing, no-one, no sail boat at least, is moving. To pass the time. In the Baltic Sea, or more specifically the Gulf of Finland, they will say: Here are no such things as sea monsters. Just brackish water-y ones.

Ones tae smack yer lips wi' in appreciation. A wee bit salty. Not enough tae die fae they say. Unless yer guts were filled tae the brim wi it. But that's another story.. So, lets get this straight eh. Or bent, or twisted. Queerish sorts. Ahve never heard o Brackish water monsters ye say. Aye. Ye Will..

Because the fluid is not circulating and changing thanks to the lunar tidal motion. Because there is fresh water continuously flowing inwards and not much outwards. Because of the neck of Öresund is not broad, and not much salt ocean water floods in. With all these fluid realities, actual pleasures and horrors develop over time, years, centuries, millennia. In the age of imbalance or unbalance, monsters form and take shape in unexpected forms. It is an incomplete encyclopediac alphabet. The totality of A to Z, hopefully, will never be filled.

Agriculture

Asphyxia - deficient supply of oxygen

- A for Asphyxiation
- B for Bashing the WAVES - 'NEED FOR SPEED' / petrod monster
- C for CRUISE LINERS / COLD WAR
- D for Drones / DESERT / DATA
- E for ~~El~~ FAR RIGHT / Fascism
- S for Sinileva gelkie
- N for NETWORK FALL-OFF (that point where cells don't work)
- X for Year for the 'Gulf of Finland' 2014

Imagining Godzilla notes

P for Phosphates / Park / Peers

that green patch might be Sinilevä we need to get closr. to find out. Maybe it is maybe not.

What does the ugly sea look like. Nasty. Dark, Heavy, smaller ripples make it very dark

S for Salt minerals / site of organisms

Far right / Nazis - know your enemy, opposition

Posphates from south Algeria

law of sustainability

H for Harddisks / Hybrid Warfare

baltic sea cowbods/boysandgrils. galloping, bashing the waves, yeehaal

white horses

W for White Horses / Wisdom

edge of internet international waters drop off the mobile cell into the waters

G for Gulag culture / Ghost sailors (Russian Macks pateradise)

O for OPEN DATA

UNSEEN ROCKS

I Intergenerational trauma
V vibration capturing devices

SULKA - RIKU THOMPSON - LOON
ENVIRONMENTAL ACTS OF PEDAGOGY
PRAVI BARKA
FRIENDS OF BALTIC
DATA

Sinileva

MIScommunication

Law -
F - forgetfulness

N
G
S
culture

Posts on social media tell of amazement at clear skies over cities, the ‘noise’ of long-forgotten birdsong. Sea turtles mass to lay their eggs on beaches deserted by tourists, while wild animals dare to roam our cities and suburbs now that the humans are nowhere to be seen. Given the opportunity, Nature tries her best to restore balance to the world. With *Imagining Godzilla*, we too try to imagine an alternative world: a world where agriculture is in balance with the natural world; a world where natural resources are utilized using sustainable methods, not by exploitation and destruction.

The artists who have written about their experiences while taking part in the residency onboard the sailing catamaran *Godzilla* use artistic methods to tune in to and communicate with the natural world—above, below, and at sea level. We humans are land-based creatures, and so it takes time to get used to being at sea—to ‘get your sea legs.’ This is the point of the residencies—to give time for reflection, understanding, and getting to know this Other, the Baltic Sea. The view of the sea from land is like a magnificent shimmering vista, yet, out on the sea, one is immediately confronted by wind, waves, unfamiliar noises, and sensations. The aesthetic experience at once becomes corporeal. Eva Macali, Gary Markle, and Till Bovermann all speak of this bodily experience in their project descriptions, yet each has approached this communion with the sea through very different mediums. Eva has used language, a very human-specific form; yet, by trying to recite her poem underwater, it enters the realm of the absurd. Who is her poem for—the fish swimming nearby? Gary links myth with the reality of ever-present plastic pollution and so creates his *Selkie Skin* with which he transforms himself to that Other, the creature—or is he just more flotsam? A metaphor not only for the degradation of the sea itself, but also for the countless human lives made worthless by globalization, condemned to lives of homelessness, drifting as waste on the edges of society. Till Bovermann records the sounds he experiences while he is on *Godzilla* and visiting islands. These become snippets of audio storytelling, the layers of sound waves reflecting Till’s own (very physical) experience of waves, wind, rock, and sand. And while we speak of rock, Tivon Rice uses state-of-the-art technology to recreate islands and

islets into virtual 3D landscapes. The eye of the machine gazes at the natural world, but what does it understand?

But this other, the sea, does not escape our political clutches, our human power grabs. Pekka Niskanen and Mohamed Sleiman Labat's PhosFATE project weaves together the fates of the Saharawi people, driven into exile from the Western Sahara, with that of the highly polluted Baltic Sea. The sea is in a high state of eutrophication due to fertilizer run-offs from agriculture all around the Baltic Sea basin. Phosphate—access, exploitation, and use—is key to solving both these issues. Samir Bhowmik's interest is under the waves. Where is data flowing, and who controls that flow? Searching for clues on the seabed is challenging when owners want to keep the networks hidden from public scrutiny.

We artists, just as scientists and other researchers, are searching for the answers to our riddles. We pose research questions, and, using artistic strategies, try to move closer bit by bit to a solution, or at least toward finding some meaning. Andrew Gryf Paterson provides the guidebook for our struggles—Brackish Water A–Z. Just as in days gone by, when sea charts were marked with 'Here be monsters,' so Andrew reminds us that the Baltic Sea, this hardly-sea 'Brackish Water, is more than just a pretty stretch of water for tourist trips and ferries to Tallinn.'

And so now we wait in our man-made cubicles for the coronavirus all-clear. But while most people wait to go back to their normal, everyday lives, we wait to get back to *Godzilla*, to continue imagining with other artists and researchers. We seek to expand the network and continue using artistic methods to highlight the problems and challenges facing the Baltic Sea. Through the art research network platform, we can disseminate the knowledge and information that our guest artist-researchers uncover, as well as showcasing the unique artworks developed during Imagining Godzilla residencies. We can hope that these efforts will lead to attitudes changing; that there will be some new-found respect for the environment from politicians and industry. We must act now to save the Baltic Sea ecosystem. It must be given the chance to come back to life.

Andy Best

Espoo 12 April 2020

Here you can find information about the network platform and documentation from the summer 2019 edition of Imagining Godzilla:

Website for Imagining Godzilla—<http://imagininggodzilla.fi>

Informal logbook recordings by Bioart Society—<https://bioartsociety.fi/posts/imagining-godzilla-logbook>

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Index

Page numbers in **bold** indicate figures.

A

- 2030 Agenda for Sustainable Development 8
- education 65
- Finland and 58
- human rights and 52, 54, 56
- Indigenous peoples and 56
- inequality 138, 139
- nuclear energy 107
- activism, resistance to
 - extractivism 245
- Advisory Board on Gypsy Issues, Finland 144
- Advisory Body for Roma Affairs (RONK), Finland 145
- Aesthetic Footprint 262
- aesthetics 255
 - aesthetic sustainability 260
 - environmental 257
 - everyday 256, 258, 260, 263
 - Green Aesthetics 262, 264
 - intergenerational change in 261
 - manipulation of values and 257
 - of evolutionary origin 260
 - philosophical 256, 257, 260
- Agenda 21 224
- Agroecological Symbiosis 196, 203, **204**
- agro-extractivism 242, 248
- Airbnb 224, 226, 227, 229, 231
- AirDNA 232
- Albrecht, Glenn 121, 122
- algae blooms **295**, 296, **298**, **300**, 310, 312, 327
- Algeria
 - see* Saharawi refugees
- Amawtay Wasi University, Ecuador 69
- Amazon rainforests 248
- Amazonian Indigenous peoples
 - Anthropocene narratives 45
 - Apurinã people 185, 188
 - cultural assimilation
 - policies 97, 188
 - extractivism and 45, 97, 99, 245
 - kawsak sacha* 45

- Amazonian Indigenous peoples (*continued*)
 Kichwa people 45, 69, 98
 Manchineri people 185, 188
 scale politics 96
 spiritual practices 46, 186
sumak kawsay 69
 traditional ecological knowledge 185, 188
- American Federation of Teachers 108
- American Museum of Natural History 100
- anaerobic digestion 197, 203
- ancestral lands metaphor 93, 101
- animism 188
- Antariksha Sanchar video game 218
- Anthropocene 39
 biological 42
 cultural 42
 ecomodernist narrative 44
 geological 41
 indigenous narratives 45
 social 42
- anxiety 122
 environmental 127
 existential 121
 practical 127
 punishment 127
see also eco-anxiety
- Apurinã people 185, 188
árbediehtu (inherited knowledge) 187
- Arizona State University 29
- art research
see Imagining Godzilla
- articulation 6
- artificial intelligence (AI) 26
- Ash, J. 96
- Ash, M. G. 27
- Australia, heritage naturecultures 216
- B**
- Baltic Sea
see Imagining Godzilla
- Barash, David P. 111
- behavioural economics 259
- behaviourism 27
- Bender, Barbara 272
- Berkes, Fikret 183
- Bettini, G. 142
- Bhachau, Gujarat, India 168, 172, 176
- Bhowmik, Samir 303, 314, **317**, 327
- Bhuj, Gujarat, India 169, 176
- Bioart Society
see Imagining Godzilla
- biodiversity
 governance 157, 159, 190
 scale politics and 99
 traditional ecological knowledge and 190
- bioeconomies 242, 249
- biofuels 197, 203, 242, 249
- Blouin, M. 113
- Booking.com 226
- Borges, Jorge Luis 270
- Bovermann, Till 304, **305**, **306**, **307**, **309**, **321**, 326
- Brand, Fridolin 82, 85, 87
- Brazil, traditional ecological knowledge 185, 188
- Breakthrough Institute 44
- Brenner, Neil 154
- BRIDGES project 271, 290

Brundtland report 3
buen vivir principle 67, 72, 99
 Burtynsky, Edward 40

C

Capitalocene 42, 46, 47
 Cappadocia University
 Environmental Humanities
 Center 290
 Carbon Conversations
 method 128
 Carlowitz, Hans Carl von 4
 Chakrabarty, Dipesh 95
 Chandler, David 139
 Chernobyl disaster 106, 108, 113
 Chuetsu earthquake 2004,
 Japan 168
 Clark, Timothy 41
 Clayton, S. 121
 climate change 312
 climate anxiety 123, 124
 climate migration 143
 extractivism and 241, 249
 governance 157
 heritage naturecultures and
 211, 212, 215
 Climate Emotions Survey,
 Finland 124, 125
 Club of Rome 3, 290
 Coddington, Kate 156, 157
 cognitive science 26
 Cole, Georgia 156, 157, 159
 Collingwood, William
 Gershom 277
 Collins, Harry 25
 Columbian exchange 41
*Complexity and Stability in
 Model Ecosystems* (May)
 83, 85

Confederation of the Indigenous
 Nationalities of Ecuador
 (CONAIE) 98, 99
 consumer activism 247
 Convention on Biological
 Diversity 158, 190
 Convention Relating to the Status
 of Refugees 155
 corporate greenwashing 264
 corporate social
 responsibility 246
 Corres, A. 126
 Cosgrove, Denis 272
 Costanza, R. 26
 Council of Europe 145
 coupled social-ecological
 systems 27
 COVID-19 pandemic 128, 233
 crimes against humanity 246
 Crumley, Carole 284
 Crutzen, Paul 40
 cultural assimilation policies
 97, 188
 cultural heritage
 see heritage naturecultures
 cyanobacteria blooms 295,
 296, 298, 300, 310,
 312, 327

D

Daewoo 101
 Dauvergne, C. 141
 Decade of Education for Sustainable
 Development 65
 Declaration on the Rights of
 Indigenous Peoples 9,
 56, 66
 deforestation 248
 Degeorges, Patrick 283

- dependency theory 244
- Derissen, S. 81
- Derrida, J. 112, 113
- Diderot effect 259
- digital heritage
 - naturecultures 213, 218
- digital platforms
 - see tourism platforms
- disaster recovery
 - see owner-driven housing recovery
- disciplinarity 23
- discrimination
 - see exclusion and inequality
- Durham Region community, Toronto, Canada 109, 110

- E**
- Earth Day 3
- Earth Journalism Network 290
- earthquake recovery
 - see owner-driven housing recovery
- eco-anxiety 119
 - climate anxiety 123, 124
 - emotions and 123, 126
 - sustainability efforts and 128
 - sustainability studies and 126
 - varieties and dimensions of 121
- ecocide 246
- ecological economics 26, 27
- ecological emotions 123, 126
- ecological knowledge
 - see traditional ecological knowledge.
- Ecomodernist Manifesto*, An 44
- economics, ecological 26, 27
- ecosystems, stability-diversity hypothesis (SDH) 82
- ecotourism 224
- Ecuador
 - buen vivir* principle in education 67, 72, 99
 - scale politics of Indigenous peoples 96
- education 63
 - buen vivir* principle in Ecuador 67, 72, 99
 - Education for Sustainability (EfS)* 66, 73
 - Education for Sustainable Development (ESD)* 65, 66, 73
 - Global Citizenship Education (GCED)* 66, 73
 - Indigenous peoples and 66, 68, 73
 - intercultural bilingual education (IBE) 68, 72, 99
 - nuclear awareness 109, 110
 - Roma children in Finland 145
 - sustainability in national curriculum of Finland 70
- Elton, Charles 82
- emotions, ecological 123, 126
- environmental anxiety 127
- environmental conservation 47, 99
- environmental economics 26
- environmental governance 157
- environmental issues
 - see eco-anxiety; *Imagining Godzilla*.
- Environmental Justice Atlas 246
- environmental memory
 - mapping 269
- Emily Lethbridge 271
- Steven Hartman 271, 283

- environmental protection, human rights and 55
 ethical codes of investment 247
 ethical consumerism 247
 ethnobiology 182
 ethno-mapping 187
 European Capital of Smart Tourism 232
 European Court of Human Rights 55
 European Court of Justice 312
 European Society for Environmental History (ESEH) 286
 European Union
 Handbook on Artistic Residencies (HAR) 300
 refugee governance 140, 156
 trade agreement with Morocco 312
 Water Framework Directive 298
 eutrophication **295**, 296, **298**, **300**, 310, 312, 327
 EU-Turkey agreement on refugees 141, 142, 156
 evolutionary psychology 260
 exclusion and inequality 137
 defined 138
 migrants with irregular status in European Union 140
 Roma minority in Finland 140, 143
 sustainability science and 139
 existential anxiety 121
 extractivism 239
 agro-extractivism 242, 248
 concept of 240, 242
 contemporary 247
 global and historical process 244
 human rights treaty approach 246
 Indigenous peoples and 45, 97, 99, 245
 lived experiences of 242
 post-extractivism 245
 progressivist governments and 247
 resistance to 245
- F**
- fear, ecological 124, 126
 feminism 92, 95
 Ferrarese, Estelle 55
 fertilizers
 Agroecological Symbiosis 203
 pollution of Baltic Sea 296, 297, 310, 327
 financial crisis (2008) 99, 248
 Fineman, Martha 139
 Finland
 Agroecological Symbiosis 196, 198, 203, **204**
 climate anxiety 124, 125
 heritage naturecultures 214, 216
 mining industry 313
 Roma Minority in 140, 143
 Sámi people 56, 313
 sustainability in national curriculum 70
 tourism platforms in Helsinki 224, 225, 230
 World War II remains in Lapland 214, 216
 Fishing Act, Finland 58
 Folke, C. 81
 food security 201, 203, 206
 food sovereignty 201, 203, 206

- food systems 195
 Agroecological Symbiosis 196, 203, **204**
 agro-extractivism 242, 248
 global-level pressures
 on **199, 200**
 livestock products 201, 249
 sustainability and 202
 food-web 83
 forced migration
 governance 155
 forestry extractivism 243
 Forét, Philippe 283
 Framework Convention on
 Climate Change 158
 Framework Convention on
 National Minorities 145
 Framework for Addressing
 Climate Change with
 Cultural Resources 215
 freshwater management 157, 159
 Fromm, Erich 196
 Fukushima Daiichi disaster
 106, 110
 Funtowicz, Silvio 24
 Future Earth 290
- G**
- Geneva Convention 1951 141, 155
 Ghosh, Amitav 41, 215
Global Citizenship Education
 (GCED) 66, 73
Godzilla catamaran
 see Imagining Godzilla
 Goodbody, Axel 284
 Google Maps 227, 230
 governance 153
 environmental 157
 polycentric 158, 160
 refugees and migrants 140, 155
 sustainability science and 140
 Greece, refugees 142
 Green Aesthetics 262, 264
 green jurisprudence 55
 greenhouse gas emissions
 241, 249
 Greenpeace 59
 greenwashing 264
 grief, ecological 124, 126
 Grober, Ulrich 4
 group monopolies paradigm of
 exclusion 139
 Gualinga, Patricia 46
 Guha, Ramachandra 4
 guilt, ecological 124, 126
 Gujarat earthquake 2001,
 India 165, 166, 175
 Gulda, Friedrich 110
 Gulda, Yuko 110
- H**
- Hacking, Ian 86
 Hamada desert, Algeria 310
 Hameiri, S. 154
 Hamilton, Clive 44
 Hansson, Bengt 25
 Haraway, Donna 5, 42, 197,
 213, 225
 Hardin, Garret 157
 Harper, K. H. 262
 Harrison, Rodney 214, 215
 Hartman, Steven 7, 271, 283
 Heiskanen, Heta 55
 HELCOM (Helsinki Commission)
 297, 298, 316
 Helsinki Institute of Sustainability
 Science (HELSUS) 30,
 32, 128

Helsinki, tourism platforms
224, 225, 230

heritage naturecultures 211

climate stories in United States 215

disrupting heritage 212

material memory in Finnish Lapland 214, 216

video games in India 218

Herva, V-P. 217

Higginbotham, A. 114

Hoggett, P. 123

Holling, Crawford 83, 85

housing recovery
see owner-driven housing recovery.

Hreinsson, Vidar 285

human rights 51

as politics and law 52

cultural heritage as 212

extractivism and 246

neoliberalism and 54

of Indigenous peoples 9, 52, 53, 55, 56

of Sámi people 56

sustainability and 54

Humanities for the Environment
global observatory
network 290

I

Iceland 270

ICECHANGE project 271, 285

Icelandic Saga Map (ISM)
project 271, 273, 277

Inscribing Environmental
Memory (IEM) project
271, 283

place-names 272, 274, 276, 280

Imagining Godzilla 293

aims and overview of
project 294, 295, 296,
297, 298, 300

artists 301, 302

Brackish Water A-Z 324, 327

Imagining Godzilla-Memories
of an Excursion 321

PhosFATE 310, 327

Photogrammetry of the Finnish
Archipelago 323, 324

Selkie Skin 304, 305, 306, 307,
308, 309

Underwater Godzilla 318

Unknown Flows 314, 315, 317

India

heritage naturecultures 218

post-disaster housing
recovery 165, 166, 175

Indigenous and Tribal Peoples
Convention 60

Indigenous languages 188

Ecuador 68, 72, 73, 97, 98

Sámi 57, 145

Indigenous peoples 8

Anthropocene narratives 45

Apuriná people 185, 188

climate change mitigation 215

cultural assimilation
policies 97, 188

education 66, 68, 73

extractivism and 45, 97, 99, 245

heritage naturecultures 215

human rights of 9, 52, 53, 55, 56

kawsak sacha 45

Kichwa people 45, 69, 98

Kogi people 290

Manchineri people 185, 188

non-governmental organizations
and 58

- Indigenous peoples (*continued*)
 Sámi people 56, 187, 313
 scale politics 96
 spiritual practices 46, 186, 188
sumak kawsay 69
 Tsimihety people 99
see also traditional ecological knowledge.
- inequality
see exclusion and inequality.
- Ingimundarson, Jon Haukur 285
- Inscribing Environmental Memory (IEM) project
 271, 283
- Inside Airbnb 229
- interactional expertise 25
- intercultural bilingual education (IBE) 68, 72, 99
- interdisciplinarity 21
 dimensions of 22
 historical and comparative perspectives 25
 resilience and 29, 86
 sustainability science and 28
- International Atomic Energy Agency (IAEA) 107
- International Council for Philosophy and Human Sciences 290
- International Covenant on Economic, Social and Cultural Rights 52
- International Covenant on Political and Civil Rights 52
- International Criminal Court 246
- International Dalit Solidarity Network 177
- International Day for the Total Elimination of Nuclear Weapons 111
- international human rights law 52
- International Labour Organization (ILO) 60
- International Science Council 290
- Internet-based tourism
see tourism platforms.
- invisible power 143
- Iran, post-disaster recovery 175
- Italy, tourism platforms in Venice 224, 225, 228, 233
- J**
- Japan, post-disaster housing recovery 168, 169
- Jax, Kurt 82, 85, 87
- Jensen, S. 139
- Jensen, Tim 125
- Johnson, Adam 214
- Johnson, Martha 183
- Jones, L. 154
- Juliusson, Árni Daniel 285
- Jylhä, Kirsti M. 124
- K**
- Kant, Immanuel 257
- Kappal, B. 219
- Kates, Robert 28
- kawsak sacha* 45
- Kichwa people 45, 69, 98
- Kissinger, Henry 109
- Knehtilä Farm, Finland 196
- Kobe earthquake 1995, Japan 168
- Kogi people 290
- Kothari, Ashish 95
- Kreditanstalt für Wiederaufbau (KfW) 100
- Kuhn, Thomas 24
- Kuljantausta, Petri 319
- Kumar, Avinash 218
- Kurth, Charlie 126

L

- La Via Campesina 203
 LaDuke, W. 190
 land grabbing 239, 241, 248
 language minorities, Finland 145
 languages, Indigenous
 see Indigenous languages.
 Latour, Bruno 44, 213, 283
 Lawrence, J. C. 140
 Lehman, Kim 301
 Lertzman, Renée 128
 Lethbridge, Emily 271
 Lewis, S. 42
 libertarian paternalism 259
 Lifton, Robert Jay 121, 127
 Li-Ming Yap, M. 8
Limits to Growth 3
 literature
 see environmental memory
 mapping.
 livestock products 201, 249
 local ecological knowledge
 see traditional ecological
 knowledge.
 LUCID (Lund University
 Center of Excellence for
 Integration of Social and
 Natural Dimensions of
 Sustainability) 30, 32
 Lukes, Steven 143, 147

M

- Macali, Eva 302, 303, 318, 326
 MacArthur, Robert 82
 Madagascar, scale politics of
 Indigenous peoples 99
 Management of Social
 Transformations (MOST)
 intergovernmental
 programme 290

- Manchineri people 185, 188
 Markle, Gary 302, 303, 304, 305,
 306, 307, 308, 309, 326
 Marojejy National Park,
 Madagascar 99
 Martinez-Alier, Juan 4
 Maslin, M. 42
 May, Robert 83, 85
 McCue, Maureen 110
 McGovern, Thomas 285
 McGregor, Deborah 183, 184
 meat production 201, 249
 ‘Medieval Iceland, Greenland,
 and the New Human
 Condition A Case
 Study in Environmental
 Humanities’ 286
 Meerow, Sara 85
 Millennium Development
 Goals 64
 missionaries 188
 Moore, A. 94, 95
 Moore, Jason W. 42
 Morocco 311, 312
 Morris, William 276, 277
 Mukherji, Anuradha 168,
 169, 171
 multidisciplinary 23

N

- National Campaign for Dalit
 Human Rights, India 177
 National Parks Service, US 215
 natural resources
 environmental economics 26
 Indigenous peoples’ rights
 to 55, 57
 see also extractivism; traditional
 ecological knowledge.
 naturecultures
 see heritage naturecultures.

- neoliberalism
 extractivism and 244
 food systems and 202
 human rights and 54
 resilience and 139
 sustainability science and 140
 sustainable tourism and 224
- Niezen, Ronald 53
- Niskanen, Pekka 303, 310, 327
- Non-Discrimination Ombudsman,
 Finland 146
- non-governmental organizations
 rights of Indigenous peoples
 and 58
 Roma 145
- Norgaard, Richard 284
- norm uncertainty 127
- novelty value 259, 260
- nuclear awareness 105, 121
 Chernobyl disaster and 106,
 108, 113
 history of 108
 role of nuclear fiction 111
- Nuclear Awareness Days 110
- Nuclear Security Project 110
- Nuclear Threat Initiative 109
- nudging 259
- Nunn, Sam 109
- Nye, David 284
- O**
- Odum, Eugene 82
- Ogilvie, Astrid 285
- oil palm 247
- Olwig, Kenneth 284
- organic farming 197
see also Agroecological Symbiosis.
- Organization of the Indigenous
 Peoples of Pastaza (OPIP),
 Ecuador 98
- Our Common Future* 3
- overtourism 227, 228
- owner-driven housing
 recovery 163
 genealogy of 164
 Gujarat, India 165, 166, 175
 Japan 168, 169
- P**
- palm oil 247
- Palopuro AES, Finland 196,
 198, 203, **204**
- Parasites Like Us* (Johnson) 214
- Paterson, Andrew Gryf **302**,
 304, **306**, **309**, 324, 327
- peer-to-peer platforms
see tourism platforms.
- Penn Program in Environmental
 Humanities 290
- Perry, William J. 110
- Petman, Jarna 53
- Petrov, Stanislav 111
- Phillips, B. D. 175
- phosphorus pollution 310, 327
- Pidä Lappi siistinä ('Keep Lapland
 Tidy') 217
- Pimm, Stuart 83
- planetary boundaries **200**, 201
- Plantationocene 42, 46
- platform tourism
see tourism platforms.
- plurinationalism
see Ecuador.
- Pocantico Call to Action on
 Climate Impacts and
 Cultural Heritage 212
- Pohl, F. 114
- pollution, Baltic Sea 294, **295**,
296, **297**, **298**, **300**,
 310, 327

polycentric governance
 158, 160

Popper, Karl 23

Porsanger, J. 187

postcolonial theory 95

post-extractivism 245

practical anxiety 127

progressivist governments,
 extractivism and 247

Project Inside Out 128

punishment anxiety 127

R

Ramanujan, Srinivasa 218

Randall, Rosemary 128

Ravetz, Jerome 24

Reagan, Ronald 108

Refugee Convention 141, 155

refugees
 governance 140, 155
 Saharawi refugees in
 Algeria 310, 327

Reid, Julian 139

resilience 79, 139
 concepts 80, 85
 ecological roots 82, 85
 in sustainability science 29,
 80, 86
 interdisciplinarity and
 29, 86

'Resilience and Stability of
 Ecological Systems'
 (Holling) 83

Rice, Tivon **294**, 304, **323**,
324, 327

Rio Conference on Environment
 and Development 224

Robin, Libby 284

Roma people 140, 143

Romano Missio 144

S

sacred practices
 Amazonian Indigenous
 peoples 46, 186
 Sámi people 188

sagas, Icelandic
see Iceland.

Sagasteads of Iceland, The
 (Collingwood and
 Stefánsson) 277

Saharawi refugees 310, 327

Said, Edward 7

Saito, Yuriko 261, 262, 264

Sámi Parliament, Finland 57

Sámi people
 human rights of 56
 mining industry and 313
 traditional ecological
 knowledge 187

Sápara language 98

Sara, Mikkel Nils 189

Sarayaku community,
 Ecuador 45

scale politics 91
 rescaling strategies of
 Indigenous organizations
 in Ecuador 96
 rescaling/scale-jumping
 defined 95
 standardized and kinship
 scales in Northeast
 Madagascar 99
 theory 93

Schaeffer, J.-M. 112

self-help housing
 reconstruction 165

shame, ecological 124, 126

sharing economy 227

Shipley, M. 113

Shultz, George 109

- Silver, Hilary 139
- ‘Situated Knowledges: The Science Question in Feminism and the Privilege of the Partial Perspective’ (Haraway), 5
- sixth mass extinction 42
- Sleiman Labat, Mohamed 302, 303, 307, 310, 320, 327
- solastalgia 122
- solidarity paradigm of exclusion 138
- Soper, Kate 284
- Sörlin, Sverker 283
- specialization paradigm of exclusion 138
- spiritual practices
 Amazonian Indigenous peoples 46, 186
 Sámi people 188
- Srnicek, M. 227
- St Andrews Prize 286
- stability-diversity hypothesis (SDH) 82
- State of the Art Network 299
- Stefánsson, Jón 277
- Stockholm Resilience Centre (SRC) 30, 31, 32
- Stoermer, Eugene F. 40
- Storm, Anna 283
- Struckmann, Christine 8
- style of reasoning 86
- submarine infrastructure,
 Baltic Sea 314, 315, 317
- Sugiman, T. 112
- sumak kawsay* 69
- Sustainability: Approaches to Environmental Justice and Social Power* (Sze) 5
- sustainability, defined 154
- Sustainable Development Goals (SDGs) 8
- education 63, 65, 66
- emotional competencies 126
- human rights and 52, 54
- Indigenous peoples and 55, 56
- inequality 139
- mental health and 122
- nuclear energy 107
- tourism 224
- Swedish Centre for Biodiversity 290
- Swyngedouw, E. 154
- Sze, Julie 1, 5, 197
- T**
- Thiruppugazh, V. 176
- Three Mile Island disaster 106
- Tilley, Christopher 272
- Tilly, Charles 146
- Toivanen, Tero 41
- tourism platforms 223
 genealogy of 226
 Helsinki 224, 225, 230
 overtourism and 227, 228
 sustainability in tourism 224
 Venice 224, 225, 228, 233
- traditional ecological knowledge 181
 Amazonian Indigenous peoples 185, 188
 heritage naturecultures 213, 215
 in sustainability issues and science 189
 interconnectedness in 182
 Sámi people 187
- transdisciplinarity 23, 29

Transforming our World

see 2030 Agenda for Sustainable Development.

trophic-network 83

Tsimihety people 99

Tsing, Anna 42

Tsosie, Rebecca 183

Turkey, refugees 141, 142, 156

Turner, John 165

U

Uber 226, 231

UNESCO (United Nations Educational, Scientific and Cultural Organization)
65, 66, 98, 271, 290

United Nations 202

Agenda 21 224

Convention on Biological Diversity 158, 190

Convention Relating to the Status of Refugees 155

Declaration on the Rights of Indigenous Peoples 9, 56, 66

Framework Convention on Climate Change 158

General Assembly 52, 54, 111

Permanent Forum on Indigenous Issues 8, 56

Refugee Convention 141, 155

Rio Conference on Environment and Development 224

Special Rapporteur on the Right of Indigenous Peoples 57

Watercourses Convention 158

see also 2030 Agenda for Sustainable Development.

United Nations Economic Commission for Europe (UNECE) 158

United Nations High Commissioner for Refugees (UNHCR) 155

United States, heritage naturecultures 215

Universal Declaration of Human Rights 52

University of Helsinki
see Helsinki Institute of Sustainability Science (HELSUS).

urban tourism
see tourism platforms.

V

Venice, tourism platforms 224, 225, 228, 233

Vernadsky, Vladimir 40

video games 218

vulnerability 55, 139

W

Wallace, R. L. 126

wartime mobilization of science 27

Watene, K. 8

water management 157, 159

Watercourses Convention 158

Westerkamp, Hildegard 321

Western Sahara 311, 312

Wharram, James 294

Whyte, Jessica 54

Wilbanks, T. 154, 155

Willett, W. 201, 202

Williams, Julie 112
Williams, Raymond 7
Woods, Kerri 55
Workers' Party, Brazil 248
World Academy of Art and
Science 290
World Commission on
Environment and
Development 3

World War II remains, Finnish
Lapland 214, 216
World Wildlife Fund
(WWF) 99, 100
world-systems theory 244

Z

Zetter, R. 156

Situating Sustainability reframes our understanding of sustainability through an emerging international terrain of concepts and case studies. These approaches include material practices, such as extraction and disaster recovery, and extend into the domains of human rights and education.

This volume addresses the need in sustainability science to recognize the deep and diverse cultural histories that define environmental politics. It brings together scholars from cultural studies, anthropology, literature, law, behavioral science, urban studies, design, and development to argue that it is no longer possible to talk about sustainability in general without thinking through the contexts of research and action. These contributors are joined by artists whose public-facing work provides a mobile platform to conduct research at the edges of performance, knowledge production, and socio-ecological infrastructures.

Situating Sustainability calls for a truly transdisciplinary research that is guided by the humanities and social sciences in collaboration with local stakeholders informed by histories of place. Designed for students, scholars, and interested readers, the volume introduces the conceptual practices that inform the leading edge of engaged research in sustainability.

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