Mahendra Sethi

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Preface

We are living in challenging times for the planet earth and human development. In search of authentic ideas and viewpoints that can steer sustainable transformations, this book navigates through a multitude of ideas, concepts and principles. Certain theories considered specific and intrinsic to the knowledge of any particular discipline, that tends to blur the focal thought of this research for an uninitiated or inter-disciplinary audience to fully comprehend have purposely been omitted. These include demand and supply theories in economics like *The Principles of Economics* (Marshall 1890), the theory of biological evolution and natural selection in *The Origin of Species* (Darwin 1859), the likes of of *Idealism* in philosophy as well as similar puritan theories in psychology-anthropology, political science, international relations and global trade that are ancillary to the subject. In particular, politically enthused constructs like Social Darwinism, Feminism and Cultural Marxism have not been considered.

Concepts promoted through international conventions and policies like the Millennium Development Goals or the Sustainable Development Goals for which aplenty of awareness and data exists have deliberately been excluded. Certain umbrella terms like 'Development Theory' are not used or studied as such in this book, but instead its key concepts like the *structural model*, *linear stages of economic growth* and the *basic needs approach* have been thoroughly considered individually.

The most investing but interesting task while compiling and presenting different theories was to deal with the some of the most inter-disciplinary concepts like the Garden City movement, Neighourhood Unit, Ecological Systems Theory, Diffusion of Innovations and few others. How do you classify these? Do these pertain more to the environment discipline, sociology or economics? In fact, these exactly lie between the inter-spatial scopes of either environment-society, society-economy or economy-environment. Thus, upon a careful consideration of their relevance in further contributing to the thought of a discipline, these have been suitably classified. This is only a subjective and perfunctory classification and

practitioners and students of sustainability should not consider this as sacrosanct by any means. This further encourages me to ask the readers to study the book with an open mind. In case of any comments, suggestions, queries or noticed aberrations, they can feel free to communicate. I hope this book instils knowledgeable insights in unfolding sustainability and greater commitment and energy in contributing to its actualization in public policies, community programmes and development projects.

Marshall, A. (1890). *Principles of Economics*. London: Macmillan.

Darwin, C. (1859). *On the origin of species by means of natural selection, or, the preservation of favoured races in the struggle for life*. J. Murray.

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I am grateful to my family members for backing me in this meticulous project.

The views presented by myself as the author of this extensive volume are objective, independent and without any influence or conflict of interest.

List of Figures

Figure 1: The most fundamental and common representation of the sustainability concept 2

Figure 2: Conceptual diagram demonstrating disintegration of the sustainability model and surfacing of the intervening knowledge gaps 12

Figure 3: Theocentricism overwhelms the humanistic and environmental worldview 36

Figure 4: The determinism theory posits that environment determines cultural factors 40

Figure 5: The cultural factors in a region are selective to its environmental limits 42

Figure 6: The "Town-Country" magnet would provide all vital benefits of both town and country life 46

Figure 7: The concept of Garden City 47

Figure 8: The group of garden cities with respect to central city 48

Figure 9: The ecocentricism worldview considers all ecosystem entities 51

Figure 10: The broad schema of the Neighbourhood Unit within a radius of ¼ mile 52

Figure 11: The Apron Diagram is often used to demonstrate Deep Ecology 60

Figure 12: Bronfenbrenner's ecological systems theory 65

Figure 13: Relationship between the Working Class and the Capitalist Class under the Marxist theory 90

Figure 14: The Geddesian Triad of place, work and folk and the Outlook Tower in Edinburgh 98

Figure 15: The Valley Section Principle 98

Figure 16: Akin to the ecological pyramid, Park devised the societal pyramid that shows how human communities form ecological, economic, political and moral order 103

Figure 17: The Burgess Model or the Concentric Zone Model demonstrates how the communities settle evolve around the urban centre 104

Figure 18: The construct of "I" & "Me" is mutually contributing, helping to form an individual's identity between the culture and its self-image 108

Figure 19: The knowledge in a society is often created by partially known facts or widely spread beliefs that generally forms the dominant public opinion 109

Figure 20: The deviance behaviour in a society can be understood by the means & goals criteria to justify it. The resulting permutations of this is characterized by conformity, ritualism, innovation, retreatism and/or rebellion 115

Figure 21: Ekistics is a combination of diverse disciplines in shaping human settlements 116

Figure 22: Maslow's Hierarchy of Needs 117
Figure 23: The Dynamic Hierarchy of Needs with respect to stages of personal development over time 118
Figure 24: Instead of creating grand speculations on social systems, the middle range theory is keen to study actual problems that can be substantiated with empirical data 119
Figure 25: The diffusion of innovations curve (the percentage showing proportion of adopters), along with representation of the chasm in case of certain technologies 124
Figure 26: The Urban Information Model is a means to structure & classify layers of different information contained or flowing in networks crucial to realize smart cities 134
Figure 27: The theory of distribution explains how in steady state, the real wages will stagnate at subsistence level, the interest rate of capital will stay at zero and rents will maximize 150
Figure 28: The General Equilibrium Theory can be understood simply as an economy with two sectors, the household and the business, that works on exchange of goods and services (real flows) and monetary flow between these 152
Figure 29: According to the Harrod-Domar Model, growth occurs in a circular manner, increased investments leading to higher capital stocks, economic growth and savings 158
Figure 30: The Clark's sector model explains the sequential evolution of primary, secondary, tertiary and quaternary sectors of economy. 160
Figure 31: The Lewis Structural Change Model of Growth is largely a labour equivalent to what Harrod–Domar model, arguing for increased savings and investments to usher growth in the manufacturing sector in under developed countries. 164
Figure 32: The Rostow's Model demonstrates the five stages of development in a traditional society transforming into a high mass consumption economy 167
Figure 33: Simon Kuznets curve and the following EKC show how poverty and environmental degradation (pollution) diminish with prosperity 174
Figure 34: The evolution of different concepts and perspectives in the environmental system 188
Figure 35: Sustainable societies and their transformation should be visualized as a part of the co-evolutionary process of diverse interacting systems 203

List of Tables

Table 1: The three intellectual stages (theological, metaphysical and positivism) of social progress 88
Table 2: The Geddesian Triad of place, work and folk 97
Table 3: The distinction between unsustainable and sustainable societies 197

List of Boxes

Box 1: Principles of the Stockholm Declaration 3
Box 2: The 17 SDGs to transform our world 8
Box 3: A broad typology of sociological theories 27
Box 4: Descriptions of Co-benefits 75

Contents

Preface *V*
Acknowledgements *VII*
List of figures *VIII*
List of tables *X*
List of boxes *X*

Chapter 1
Introduction to Sustainable Societies **1**
Background 1
Multiple Facets of Sustainability 5
Why are Sustainable Societies So Elusive? 8
Knowledge Gaps in Actualizing Sustainable Transitions 12
Research Questions 20
The Intent of This Research 23
Research Methodology 24
Practical and Academic Significance 29

Chapter 2
Environmental Theories & Principles **36**
Theocentricism 36
Anthropocentrism 37
Catastrophism 38
Uniformitarianism 39
Environmental Determinism 40
Possibilism 42
Neo-determinism 44
Garden City Movement 46
Biocentrism Theory 49
Ecocentrism 51
Neighborhood Unit 52
Probabilism & Cultural Ecology 54
Environmentalism & Green Theory 55

Tragedy of Commons 57
Deep Ecology Movement / Ecosophy 59
Sustainability 61
Ecocities 63
Ecological Systems Theory 65
New Urbanism 67
Healthy City Movement 69
Ecological Modernization 70
Technocentrism 71
Environmental Governance 72
Adaptive Governance & Resilience 73
Co-benefits Approach 75

Chapter 3
Social Theories & Principles 85
Ancient Sociological Theories 85
Social Contract Theory 86
Theory of Human Progress 88
Marxist Theory 89
Social Conflict Theory 90
Cultural Determinism 92
Gemeinschaft und Gesellschaft 93
Sociological Theory 94
Looking Glass Self 95
The Metropolis and Mental Life 96
Town & Country Planning Theory 97
“Ideal Type” and “The City” 99
Social Disorganization Theory 101
Human & Urban Ecology 102
Concentric Zone Theory 104
Theory of Generations 105
Thomas Theorem 106
Mead's Theory of the Self 107
Sociology of Knowledge 109
Critical Theory 110
Structural Functionalism 111
Social Theory of Urban Space 113

Theory of Deviance / Anomie Theory 114
Ekistics 116
Maslow's Hierarchy of Needs 117
Middle Range Theory 119
Socialization 120
Social Exchange Theory 121
The Study of City 123
Diffusion of Innovations 124
Symbolic Interactionism Theory 125
Principles of Intelligent Urbanism 126
Pure Sociology 127
Communicative Rationality 128
Theory of Structuration 129
Rational Reconstruction / Reconstructive Science 131
Theory of the City as Object 132
Theory of Reflexivity 133
Theory of Smart Cities 133

Chapter 4

Economic Theories & Principles 142

Arthashastra 142
Free Market Theory 143
Utilitarianism 144
Theory of Malthus 146
Ricardo Theory of Rent 148
Absolute and Comparative Advantage 149
Theory of Distribution 150
General Equilibrium Theory 151
Theory of Surplus Value 153
Economic Base Theory 154
The Debt-Deflation Theory of Great Depressions 155
General Theory of Employment, Interest and Money 156
Harrod-Domar Growth Model 157
Stage and Sector Theory 159
Input–Output Model 161
Game Theory 162
Dual-Sector / Lewis Structural Change Model 163

Modernization, Structural & Dependency Theory 165
Rostow's Model: 5 Steps of Economic Development 166
Rational Choice Theory 168
The Quantity Theory of Money / Monetraism 169
Basic Needs Approach 170
Neoliberalism 171
Human Development Index 172
Kuznets Curve & the EKC 173
Trickle Down Growth & Development Model 175
Theory of Asymmetric Information 176
Behavioral Economics & the Prospect Theory 177
Management of Common Pool Resources 178

Chapter 5

Transition to Sustainable Societies: From ideas to practice 185

The Evolution of Sustainability Theory 185
Growing Relevance of Sustainability Transitions 198
Way Forward for Sustainability Transitions 203

Chapter 1
Introduction to Sustainable Societies

1. Background

The national economic situation, rapidly changing societies, increasing environment pollution amidst global warming around us are some of the most burning topics in both day-to-day discussions, news and scholarly discourses. What we see are only the consequences of protracted actions, policies and decisions. The issues associated with these phenomena are highly complex that challenge a direct interpretation of their root causations, indications, results and long-term impacts. For instance, is the issue of managing natural resources for industry & business operations within a country an economic problem? Or is it an ecological one? Or rather a social one? Could it be resolved with theories and techniques of either of these fields? Well, the issue and its redressal requires a combination of all the three disciplines. And yet actions to integrate all of these fields have typically by-passed one or more.

We commonly observe that progressive solutions driven by industrial and economic concerns are known for processes disregarding nature, assuming those can be substituted by technological and management solutions. Projects inspired by natural conservation motives frequently overlook the economic aspects like financial feasibility, human enterprise and institutional arrangements that define relationships between nature and the society. Future proposals driven by social groups tend to behave as if individual rights of a local community are supreme devoid of any national economic and global environmental responsibility. Thus, the composite idea that unifies these speckled perspectives and objectives in environment, sociology and economics forms the core concept of sustainability.

The framework that has over the years most commonly explained the convergence of the three diverse spheres of disciplinary knowledge into sustainability is demonstrated in Figure 1.

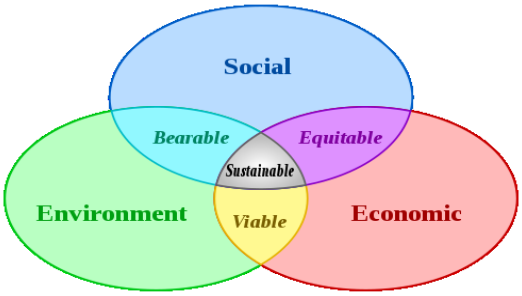

Figure 1: The most fundamental and common representation of the sustainability concept Source: Johann Dréo / Translation: Pro bug catcher (https://commons.wikimedia.org/wiki/File:Sustainable_development.svg), "Sustainable development", https://creativecommons.org/licenses/by-sa/3.0/

Sustainability has been a key slogan or agenda for governments, institutions, corporates, social-groups in the last three decades, ever since it became popular with the Brundtland Report (United Nations 1987). Here, it was outlined as a guiding principle for development, as in *Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of* the future (WCED 1987). What becomes obvious in this formulation is that sustainability has a particular temporality: it is a future-oriented model that is to take effect in the present. It stands as a societal goal that aspires to enable a common future hinging on today's equilibrium between the consumption of resources and their conservation. In the time horizon of the present, sustainability is understood as a mode of action by means of which overexploitation of resources can be curbed and the developmental goal of resources security achieved (Neckel 2017). It is further argued that social and ecological demands that are linked with the guiding principle of sustainable development, are much older than the Brundtland Report itself. By some accounts, the concept started gaining public currency with the Report for the Club of Rome in the 1970s. Yet only few experts would know that the pursuit of discerning sustainability has been an ongoing and evolving academic process (as a comprehensive investigation on theories from different fields in this book would reveal). For instance, the socialist movements in the 19th century were already demanding more social fairness and equality. The contemporary environmental movement began around 1962 in the USA with the publication of Rachel Carson's Silent Spring (Diekmann & Preisendörfer 2001). The consciousness brought by the foundation of Earth day in 1970, the release of the Limits to Growth (1972) are also a fundamental aspect of a culture of Sustainability (Meadows 1972, Hirsch 1981), followed by the

Dag Hammarskjöld-Foundation's document, namely *What now? Another Development* (1975) presented to the UN-General Assembly.

The first affirmative step in the evolution of global sustainability policy can be traced back to 1972, when national governments met in Stockholm for the United Nations Conference on the Human Environment. The meeting agreed upon a Declaration that contains 26 principles concerning the environment and development (see Box 1); an Action Plan with 109 recommendations, and a Resolution (Baylis & Smith 2005). One of the key issues that emerged from the conference was the recognition of poverty alleviation for protecting the environment. The Indian Prime Minister Indira Gandhi in her seminal speech in the conference brought forward the connection between ecological management and poverty alleviation (Vidya 2017), and further motivated countries around the world to monitor environmental conditions as well as to create environmental ministries and agencies (Meyer et al. 1997, Linnér & Selin 2013).

Box 1: Principles of the Stockholm Declaration

1. Human rights must be asserted, apartheid and colonialism condemned
2. Natural resources must be safeguarded
3. The Earth's capacity to produce renewable resources must be maintained
4. Wildlife must be safeguarded
5. Non-renewable resources must be shared and not exhausted
6. Pollution must not exceed the environment's capacity to clean itself
7. Damaging oceanic pollution must be prevented
8. Development is needed to improve the environment
9. Developing countries therefore need assistance
10. Developing countries need reasonable prices for exports to carry out environmental management
11. Environment policy must not hamper development
12. Developing countries need money to develop environmental safeguards
13. Integrated development planning is needed
14. Rational planning should resolve conflicts between environment & development
15. Human settlements must be planned to eliminate environmental problems
16. Governments should plan their own appropriate population policies
17. National institutions must plan development of states' natural resources
18. Science and technology must be used to improve the environment
19. Environmental education is essential
20. Environmental research must be promoted, particularly in developing countries
21. States may exploit their resources as they wish but must not endanger others
22. Compensation is due to states thus endangered
23. Each nation must establish its own standards
24. There must be cooperation on international issues
25. International organizations should help to improve the environment
26. Weapons of mass destruction must be eliminated

In 1983, the United Nations created the World Commission on Environment and Development (later known as the Brundtland Commission), which eventually defined sustainable development. In 1992, the first United Nations Conference on Environment and Development (UNCED) or Earth Summit was held in Rio de Janeiro, where the first agenda for Environment and Development, also known as Agenda 21, was developed and adopted. Thereafter, global policy discourse and academic interest in the topic has seen exponential growth as evident in scholarly research and publications (Wilkinson et al. 2001, Brandenburg et al. 2014, Carter and Rogers 2008). Gonzaleza et al. 2015 argues that sustainability has been defined in the triple bottom-line context where organizations should integrate economic, social and environmental objectives into their business strategies and seek to optimize the balance amongst these three dimensions (Székely and Knirsch (2005). By 2050, it is expected that mankind will probably consume three times its current annual consumption, or an estimated 140 billion tons of minerals, ores, fossil fuels and biomass per year (UNEP-IRP Report 2011), and the human civilizational progress would have to invariably address the impending challenges, through a sustainability led course. The concept of sustainable development offers a process of advancement that accommodates the needs of current and future generations while successfully integrating economic, social, and environmental considerations in decision making.

In 2012, the United Nations Conference on Sustainable Development (UNCSD), also known as Rio+20, was held as a 20-year follow up to the UNCED. During its run-up, there were many discussions about the idea of the Sustainable Development Goals (SDGs). At the Rio+20 Conference, a resolution known as "The Future We Want" was reached by member states (Vidya 2017) agreeing to key themes on poverty eradication, energy, water and sanitation, health, and human settlement. In January 2013, the 30-member UN General Assembly Open Working Group (OWG) on SDGs was established to identify its specific goals. After 13 sessions, the OWG submitted their proposal of 8 SDGs and 169 targets to the 68th session of the General Assembly in September 2014.

The SDGs were in fact developed to succeed the Millennium Development Goals (MDGs) which were about to end in 2015. Instead of merely approaching national development indices without environmental sustainability within a donor-recipient relationship, the new SDGs tend to involve development that meets global sustainability with collective

participation by all member countries. As a process of ratification, on 25 September 2015, the 193 member countries of the UN General Assembly adopted the 2030 Development Agenda titled "Transforming our world: the 2030 Agenda for Sustainable Development". This agenda has 92 paragraphs, the 17 Sustainable Development Goals and the associated 169 targets and 232 indicators.

In the current discourse, sustainable development and sustainability are often used interchangeably. More often than not, sustainability is highly associated to ecological paradigm and the expression of environmental sustainability fundamentally underscores it. Similar emphasis is seen in the use of terms like economic sustainability and cultural sustainability. The local sustainability discourse stresses upon the significance of place and corporate sustainability on endurance of the individual or group of enterprises. Meanwhile, *a sustainable society is largely understood as one that has learned to live within the boundaries established by ecological limits*. In a nutshell, the idea of sustainability that rose as a gradual response to the modern industrialized paradigm, presents an alternative to immediate, short-sighted and consumptive behaviour.

2. Multiple Facets of Sustainability

Sustainable solutions are pursued by multiple groups, either a state, private enterprise, industry association, non-governmental organization, environmental group, etc. as a policy prescription packaged in seemingly technical terminologies (ban, subsidy, stakeholder participation, innovation, price cap, market liberalization, management plan) that tends to nurture their views. The view is not wrong by itself, it only presents an incomplete picture. How? The groups depend on insights, principles and conventional solutions from their own discipline or policy arena, that may be too simplistic or specific for a multifaceted and inter-twined sustainability problem to be dealt with.

Working within a particular knowledge domain, they neither question its key framing argument nor its scoping boundaries. The economist relies on free-market principles, the environmentalist on ecological & energy models while the social workers on theories of ethics, community interactions and organization. None of these ideologies in seclusion, can address a genuinely responsive pathway of innovations, technology, policy-making and management practice. There is dearth of a sustainable approach that

acknowledges the potential and constraints between environmental, social and economic aspects to transpire a theory that can inform sustainability and demonstrate it into practice. By default, sustainability entails dealing with complexity and future insecurity, thus working with disciplinary knowledge would question the efficacy of such an endeavour. An overview of the three key domains- environment, social and economic and their perspectives is key to understand the dichotomies and challenges in pursuing a comprehensive sustainability approach.

2.1. Environmental dimension: While numerous practices are cited as threats to human sustainability on this earth, such as political corruption, social inequality, the arms race, and profligate government expenditures, environmental issues remain at the heart of the discussion (Meadowcroft 2019). The planned management of environmental resources, fossil-fuel consumption, air and water pollution, depleting biodiversity, piling up of plastic and hazardous waste, and abatement of greenhouse gas (GHG) emissions are some of the most hotly pursued challenges. Of course, what is conducive to environmental sustainability remains a matter of intense debate. Approaches can range from moderate "greening" by institutions to a radical transformation of the global political and economic order (Meadowcroft 2019). Several approaches resist a decisive solution because tackling unsustainable practices is wrought with compound values, vested interests and a political-economy involving profiteering motives, deep states and institutional inertia. Within these, there are gradations of attributing ideals and priorities. For instance, ecosystem services that may not have a tangible or immediate benefit to individuals or the society like minimum flow in surface water bodies, wildlife habitat or corridors and sustenance of gene pool are often undervalued environmental facets in several sustainable development policies led by governments. A colossal example of this dilemma is that scientists and policy experts perceive climate change only as an environmental or economic problem, rather than a human rights issue where every individual on this planet is legally entitled to his/her fair-share of carbon space and a right of being protected against catastrophic impacts.

2.2. Social dimension: Numerous organisations, businesses and public entities in modern societies invoke sustainability as a core value and as a guiding principle for their actions. The notion of sustainability has diversified in many directions and often seen to support quite contradictory social agendas. For instance, to uphold their claims of sustainability and social justice, NGOs across the globe have been campaigning both in favour and

against of coal miners, tobacco farmers, consumers of exotic imported meat and sea-food. For social scientists, with such an interpretational diversity, sustainability needs to be treated not as the long-sought solution to every environmental and societal issue but approached as a problem itself. A sociological approach addresses sustainability not as a normative guiding principle that designates something desirable per se, or something that can be investigated simply in terms of the societal conditions and functional requirements for its implementation—the procedure most often followed by current sustainability research like the Future Earth programme. Instead, it will take up a problem-oriented and reflexive stance towards sustainability, a perspective that does justice to sustainability's contradictions, dilemmas and paradoxes (Neckel 2017). Social sustainability necessitates research into several fault lines in ongoing transformations, for instance: (a) equitable distribution of resources and access to markets both for producers and consumers, (b) of maintaining cultural diversity or mitigating social hierarchies and inequalities, (c) sustainability criteria being objectively analysed and internalized in cultural values and society's institutions, (d) structures of global capitalism with its socio-political consequences, (e) cultural interactions that shape relations, practices, norms and behaviours. A sociological perspective of sustainability would have to inevitably address these issue directly—dealing with different social actors like citizens, consumers, producers (includes both the capitalist and labour), state institutions, etc. in addition to environmental and economic stakeholders to generate a win-win situation for sustainable development to be actualized. This is plausible through a critical and reflexive viewpoint that looks beyond: (a) the theoretical constructs of social justice and socialism, (b) the normative and narrow expectations of a sustainability or social appraisal of public projects (Bond & Morrison-Saunders 2009). This requires a comprehensive understanding of what the true knowledge and practice of social studies stand for.

2.3. Economic dimension: One finds that sustainability makes itself felt everywhere in economic, market and financial discourses. Numerous institutions, organisations, business and public entities invoke sustainability as a core value or a guiding principle for their actions. What is understood by sustainability in any one case has not remained consistent in the course of this development. The notion has diversified in multiple ways, being influenced by different motivations, perspectives and interests. Sometimes, one and the same idea of sustainability has been cited to support quite contradictory social agendas. Advocates of a "green economy" and "smart"

growth programmes (Fücks 2013), for example, regards sustainability as a vital precondition for future economic growth (Jänicke 2012), whereas proponents of the degrowth movement or convivialism (Adloff and Heins 2015, Les Convivialistes n.d.) see that very focus on economic growth as a serious obstacle to sustainable development (Muraca 2014, Paech 2014, Fatheuer et al. 2015, Brand & Wissen 2017). Examples of both are seen in the field, where genuine carbon footprint reduction efforts by corporates are dwarfed and tarred by shady and unethical "greenwashing" of certain companies. In spite of such varied nuances, it can be reasonably deduced that to the economics discipline and practice, sustainable development is undoubtedly an approach that attempts to foster economic and business growth while preserving the quality of the environment for future generations.

Different groups are trying harder than before to interpret and argue about sustainability from different standpoints. Consultations for finalizing the SDGs brought demands from these diverging stakeholders together. As a principle, these groups stand unison on the issues of global environmental conservation, peace and social justice, quality of life, etc. recognizing an integrated view and multi-dimensionality to implement the 17 SDGs (Box 2). As evident, most goals are aimed towards long-term well-being of human community, yet one fails to decode why sustainable societies remain so elusive.

Box 2: The 17 SDGs to transform our world

1: No Poverty
2: Zero Hunger
3: Good Health and Well-being
4: Quality Education
5: Gender Equality
6: Clean Water and Sanitation
7: Affordable and Clean Energy
8: Decent Work and Economic Growth
9: Industry, Innovation and Infrastructure
10: Reduced Inequality
11: Sustainable Cities and Communities
12: Responsible Consumption-production
13: Climate Action
14: Life Below Water
15: Life on Land
16: Peace and Justice Strong Institutions
17: Partnerships to achieve the Goal

3. Why are Sustainable Societies So Elusive?

A fundamental difference between the sustainability thought of the second half of 19th century and that of the present times is its increasingly resounding acceptance across the board. It is now more difficult to find an individual, profession or country claiming that sustainability is unnecessary

and irrelevant, although the nature of its criticism has variedly evolving undertones. So if sustainability has indeed become such an existential and an un-ignorable model for the entire humankind, why does it fail to capture the dominant public perception, the political agenda and the mainstream media? An overview of the plausible reasons demonstrates a broad pattern to how individuals, communities and nations respond to the sustainability challenge and inhibit in actualizing sustainable societies, these include:

3.1. The classic naysayers: Though a diminishing population, a small number of such species still exist. The archetypal denier's outlook completely repudiates and dismisses the proposition that the world is heading on an unsustainable pathway. The origin of this anthropocentric thought has a long history claiming nature to have unlimited powers for humans to exploit. The usual arguments to defend this proposition are: (a) The bounties of nature are vast, unexplored and humans are still unfolding several new mysteries, virgin areas and productive frontiers, (b) The environment has innate and exceptional powers to rejuvenate itself beyond the human capacity and speed to exploit it, (c) If the world was unsustainable it would have doomed already, and (d) Humans have an undisputed right and precedence over nature. So, any environment protection at the cost of people's energy needs, freedom of movement and jobs is unacceptable within a responsible society. In addition, the general attention of such disapprovers in the 21st century has visibly shifted from sustainability to climate change. They falsely implicate that since it is difficult for the mankind to agree on global concerns like climate change, it is futile to deliberate and make attempts to achieve sustainability.

3.2. The perpetual doubter: This viewpoint has been fundamental in limiting the promotion of sustainability agenda in both developed and developing societies. It relies on the time tested logic that if you could not defeat your opponent, belittle its trustworthiness in the society. Thus, while its now difficult to find sustainability doubters in the scientific peer-reviewed literature, articles in the business periodicals, development or industry journals (posing as scientific), discussion in public forums, political debates and popular media with vested interests tend to undermine environmental research. The vested interests are multifarious- politico-economical nexus between energy firms, petrochemical giants, business tycoons, mine holders, livestock/farm owners that control environmental resources on one side and public representatives, political parties, media houses, etc. that legitimate their ownership on the other. Interestingly, a lot of this

propaganda is an artwork of learned intellectuals, columnists and anonymous writers who gloss or spin scientific facts in current research with a finesse of raising doubts over their accuracy, precision, reliability or applicability results. The most evident example of a contemporary sustainability challenge that has been consistently enduring political and popular media suspicion (and even ridicule) is the scientifically proven fact of global warming. Ironically, while school education across the world teaches environmental conservation in their primary and secondary curriculums, when it comes to circulating factual information amongst responsible adult citizens, the main socio-political institutions and communicators like politicians, journalists, social-leaders, celebrities, etc. fall considerably short of a responsible and legitimate conduct. Consequently, in absence of a credible and decisive knowledge, the ordinary citizen remains in a perpetual confusion.

3.3. The elitist perspective: Most countries and their citizens perceive sustainability through the dualism of East-West cultures or global North-South, which is an obvious extension of the rich-poor. They may accept that sustainability is a global concern, but believe that it has nothing much to do with them because either they have not caused it or more so, because any negative impact occurring far away is not going to affect their every-day life. An extreme would be to combine both these arguments with disdain—others have caused it and since they are not fit to manage it, they be doomed. It shows an "elitist" outlook, for some this attitude reflects a not in my backyard (NIMBY) syndrome, but most people on this planet do not have the luxury to debate it as a rich-poor or North-South divide, it is a fact of life that their springs are getting polluted every year, they have to walk extra miles to fetch potable water & fodder, their crops and livestock are dwindling, they experience scorching summers and heat waves they didn't endure during their childhood; cyclones, floods and mudslides and increasing, their villages are getting abandoned as more people are migrating to cities already seaming with filthy slums and insanitary conditions. What most entitled people discount is their own consumerist lifestyles and wasteful attitude—for food, meat, goods and services perpetuates a natural resource exploitation, deforestation, environmental pollution, socio-economic inequality and poverty in the developing societies. In addition, they disregard that if people in deprived societies start living with the same economic, space, energy and quality of life standards considered as basic needs in developed cultures, they would lose their very share of resources, energy and global carbon space entitlements.

3.4. The hyper-visionary technologist: The continuance of the ecological modernization approach still makes believe that technological solutions would bring greater efficiency in resource consumption and thereby enable sustainability. For instance, while responding to the impending threat of global climate change, there is still a dominant group that asserts that geo-engineering solutions (even with environmental and social costs) can arrest climate change (Govindasamy & Caldeira 2000, Stuart et al. 2020), and as an offshoot permits business as usual polluting activities. Although most innovators, technologists and entrepreneurs would claim to be believers of a sustainability doctrine, their perspective is inherently anti-sustainability. The over-reliance on an uncertain, undeveloped and perhaps non-viable technology could not presume unlimitedly greater benefits in the future at the cost of future generations' ability to decide for their future. If the present generation is unable to ensure the sustainability of future generations at current level of sophistication and technological advancement, it is futile to depend on undiscovered technologies to solve inevitably larger and complex problems to unfold ahead.

3.5. The modernist view of transferring solutions: The true tradition of sustainability can be found in the customs and practices of indigenous communities. Many of these native cultures were shredded by colonization, modernization and are facing an uphill task to keep themselves together against the onslaught of globalization. The authentic sustainability approach that emanates from these local cultures is in direct contrast with the structures and institutions that host the globalized version sustainability. For instance, all aboriginal civilizations are known to build their houses through indigenous techniques using adobe, stone or timber construction, thick walls built with mud-reinforced mortar, insulated roofs, etc. Such construction relies on local materials, craftsmanship and are thus both environmentally and economically sound. On the other hand, the global sustainability paradigm pushes international building rating systems like Leadership in Energy and Environmental Design (LEED) and its country variants like The United States Green Building Council (USGBC) that not just disrespect locally time-tested techniques but rather push ultra-modern and industrialized solutions like pre-stressed steel, multi-layered glazing systems, thermally insulated synthetic wall-panels and cool roofs that are a product of a top to bottom globalized economy. No wonder, cities around the world hosting global multinational companies look alike with their jungles of steel and glass architecture. Thus, the narrow view of borrowing proven efficient technologies (mostly dominant in the developing countries) and

transferring obsolete solutions and their burden of pollution (dominant in the developed world) nefariously undermines sustainability and fails to pose it as a worthwhile challenge to be pursued for human survival.

4. Knowledge Gaps in Actualizing Sustainable Transitions

For the American biologist Barry Commoner, the first principle of ecology is: *Everything is connected to any other thing* (Commoner 1972). This principle should become central also in our worldview: nature is connected to individual, the individual to the society and a society to the economy. In addition, all these interactions occur within the environment, and it is inseparable from the society or economy. So now we see what appeared to be a harmonious synthesis of environmental, economic and social domains (set in stone in 1987), is actually a complex dynamic pulling itself apart from each other giving way to tensions or gaps. These gaps are arising between all the major purviews of sustainability, as illustrated in our conceptual diagram (Figure 2).

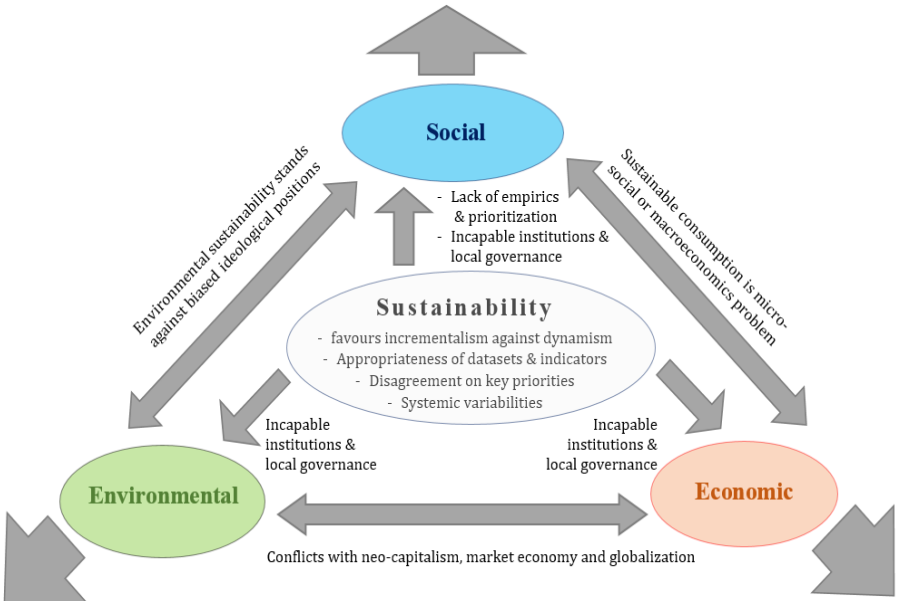

Figure 2: Conceptual diagram demonstrating disintegration of the sustainability model and surfacing of the intervening knowledge gaps

4.1. Sustainable development favours incrementalism against dynamism: The pursuance of SDGs relies on relatively stable environmental, economic and socio-political regimes for transformational governance. In front of global emergencies like climate change, pandemics, natural resource & biodiversity depletion, a sustainable society should usually invest resources towards a radical turn in the economic & governance structures. Unfortunately, the combination of liberalization, privatization and globalisation has seen most democratically elected governments giving-away their instruments to uphold markets at the cost of environmental extremes and social uncertainties looming large. Then all the hopes are projected onto technologies: Does this hope have to protect the economic dogma and interests in front of the possibility of a radical change? (Brocchi 2010). It could be argued with reasonable degree of certitude that the prevailing sustainable development paradigm discounts extreme and uncertain scenarios seeking decisive action in favour of incrementalism. The dichotomy of adopting incremental technologies and policy measures versus certain radical and game changing ones (Lenssen et al. 2013) against the status quo in economies, environmental management, jobs, socio-cultural behaviour, is a key gap between sub-domains of sustainability. For how long would current sustainability paradigm continue to overlook dynamism in favour of incrementalism is a vital query?

4.2. Sustainability science stands against biased ideological positions: For a genuine sustainability paradigm to flourish, how does environmental principles deal with conventional ideologies and worldviews like national growth, market economy, free competition, socialism, religious faiths, etc. that act as a given and limit its evolution. These worldviews offer a biased and finite position in favour of their selective principles and beliefs. The problem gets further complicated because of modern specialisations where disciplinary ideologies and part-information get much more attention than the whole. Brocchi (2010) argues that parcelling of perception and of knowledge combined with the power of technology can transform the smallest particle into a bomb, but missing woods for the tree. The consequences can be highly contradictory in attaining a globally sustainable society. For instance, as per modern economic theory and principles, market expansion and rising purchasing power is a reasonably progressive goal, yet as per ecological reasoning the opposite goal seems to be a more logical and balanced approach to attain sustainability. For a long time, the human race has learnt to successfully master new technologies in harnessing environmental resources to its benefit. Intensive agriculture, livestock

farming, modern-medicines, vaccination and curative surgeries have enhanced life expectancy. This was supported by modern-sanitation, electricity, transportation and communication solutions that make life easy. The certitude makes economic progress appear finite and unquestionable even though it continues to tarnish natural environment and cultural values. Could the humankind re-establish its balance with nature through a fresh study on sustainability? Another relevant example is how several developed countries like Japan, Germany (and now China) are promoting childbirth programmes although several developing countries are teeming with overpopulation, scientists persistently focus their research on vasectomy amidst some religious bigots that continue to banish it for being against their holy texts. Thus there still exists a gap between science and people's idiosyncrasies, which seems to be getting wider and wider. Is the newly established discipline of sustainability science sufficient to actualize sustainable societies? Can part knowledge, norms and principles in individual disciplines that contribute sustainability and sustainable development (like ecology or economy) holistically comprehend its overall theoretical and methodical characteristics?

4.3. Global sustainability is challenged by systemic variabilities: The current thought of global sustainability is fraught with systemic variabilities in terms of both geographical and conceptual differentiations. Geographic differentiations include national (and sub-national) variabilities on the lines of natural vulnerability, technical prowess, institutional capacities and financial robustness of economies. The variability of these societies are played out in international debates on sustainability issues like access to energy, natural resource consumption, industrialization & economic growth, air quality, public health and well-being, greenhouse gas emissions, climate vulnerability, biodiversity, marine pollution, to name a few. The situation becomes extremely complicated as numerous powerful corporations of developed economies have their factories, investments and pollution intercontinentally expatriated to other countries. Most of these are located in China, India, Vietnam, Bangladesh, etc. that are now witnessing growing GHG emissions in their urbanizing settlements (Sethi & de Oliveira 2015).

On the top of it, these very developing and urbanizing societies in the global South are most susceptible to natural hazards like heat waves, cyclones, sea-level rise; rapid socio-economic changes in the form of rural to urban migrations, growing inequities and institutional inertia (Ecologic Institute 2011, Revi 2014, Seto et al. 2014) that would rather tend to buckle under

crony-capitalism than evolve towards market reforms and an egalitarian society. Then there are conceptual variabilities in comprehending sustainability itself. In addition to centrifugal forces of environment, society and economy that tend to unbalance and disembark sustainability from its pivotal position, there are growing voices within the small discipline that offer critiques imploding the concept of sustainability itself. These question its simplistic framework and limited instrumentality through new, related and alternative concepts like *global commons* (Bollier and Helfrich 2012, Cairns Jr 2006, Weeden & Chow 2012), *adaptive governance* (Folke 2007, Heuer 2011), *earth systems governance* (Biermann et al. 2012, Reid et al. 2010), *democratic experimentalism* (Brunkhorst 2015), the *economy for the common good* (Felber 2015), *greater transformation* (Abson et al. 2017, Patterson et al. 2017, WBGU 2011, Wiek et al. 2012) or *transition management* (Kemp & Loorbach 2003) and *resilience* (Fiksel 2006, Redman 2014). Nevertheless, this phenomenon does a greater good by bringing the element of temporality, space, public health, performance based management and community perceived well-being in the narrative of sustainability.

4.4. Lack of empirical assessments in social aspects of sustainability: As a survey of decision support models and tools to make real progress toward more sustainable societies analysed, the majority of the research i.e. 74 % focuses on environmental and economic dimensions. Only 26 % integrated social dimensions with them (Gonzaleza et al. 2015). It was further argued that there is a three-fold challenge associated with integrating social dimensions into sustainability: first how to measure and second how to model their impacts and third how to solve the problems in an integrated manner. Many sustainability concerns are "wicked problems" or "messes" that are typically beyond the reach of the traditional, mathematical modelling methods. While the over-reliance on quantitative methods and tools in economic, environment and energy assessments is undisputed, does their limited application in societal studies further contribute to this knowledge gap?

4.5. Disagreement on key priorities within the scientific community: It is an acknowledged fact that sustainability is a highly inter-connected complex of several disciplines, their theories, practices and expertise, yet a basic consensus is expected, at least from scientists when it comes to strategizing actions. While some would attribute it to scientific novelty and diversity of thought, the inability in identifying key priorities for sustainable societies

amongst the scientific community is quite apparent. To cite a small example, during the preparation of a compendium for the 4th International Workshop Advances in Cleaner Production held in São Paulo in 2013, the participants focused on defining and solving problems with emphasis on varied sustainability strategies, namely raw material replacement, renewable energy, technological developments, product, and policy changes amongst others (Almeida et al. 2015). While some contributors proposed to improve assessment tools for environmental accounting at the biospheric scale, others focused on greater cooperation among governments, industrial sectors and companies to accelerate the integration of cleaner production into policies and practice. A globally up-scaled example of this disagreement became visible during the preparation of the SDGs when 8 fundamental sustainability goals agreed upon by the Open Working Group (OWG) in 2014 expanded to 17 goals by the time of adopting the 2030 Development Agenda by the UN General Assembly in 2015. The priorities are expected to be skewed or diluted further when scientists and academicians have to deliberate with bureaucrats and policy experts in finding a common ground on implementation of sustainability goals.

4.6. Appropriateness of datasets and indicators in sustainability practice: To effectively envision, propose and implement solutions for making progress on forming more sustainable societies requires the capacity of increasingly complex mathematical models and decision-support systems (Gonzaleza et al. 2015). And how can we tell when we are on a suitable path of sustainable development? We need appropriate indicators. Finding an appropriate set of indicators of sustainable development for a community, a city, a region, a country or even the world is not an easy task. It requires knowledge of what is important for the viability of the systems involved, and how that contributes to sustainable development. The number of representative indicators should be as small as possible, but as large as essential (Bossel 1999, de Oliveira et al. 2013). Likewise, the preparation of global SDGs underwent an intense deliberation to eventually finalize 169 targets for the 17 goals. Each target has between 1 and 3 indicators used to measure progress toward reaching the targets. In total, there are 232 approved indicators to measure compliance. The United Nations Development Programme (UNDP) has been entrusted to provide easy to comprehend lists of targets, facts and figures for each of the 17 SDGs. Building-on the rapidly developing research on digital technologies and the strengths of information systems, researchers have conceptualized *big data and analytics ecosystems* to propose models that can pave the way towards

digital transformation and sustainable societies (Pappas et al. 2018). Meanwhile, over the time scholars and practitioners have developed multiple sustainability measures like the *Environmental Sustainability Index, Environmental Performance Index. Circles of Sustainability, Triple Bottom Line* used for measuring and reporting sustainability for select purposes. Nevertheless, it becomes crucial to test how these indicators are appropriate to theoretical constructs of sustainability and sufficiently measure its actual and target manifestations. For instance, the choice of indicators must reflect important characteristics of dynamic sustainable system as well as its ethical concerns. In addition, how effective are these indicators and analytics to help in creating a decision support system for sustainability practice is a gap that needs further empirical assessment.

4.7. Sustainability is at loggerheads with neo-capitalism and globalization: The relationship of tension between sustainability and capitalism, the question of whether sustainability can necessitate an exit from the growth economy or itself be turned to profit making, and the ways in which global economies are changing due to sustainability– all these are crucial fields of enquiry for a sustainability research programme informed by a theory of capitalism (Neckel 2017). A direct response to this prototypical development that fuelled globalization and mass consumerism from the World War reconstruction era to the first decade of this century is the emergence of green capitalism. Boltanski and Chiapello (2005) argue that capitalism renews and reproduces itself by recuperating and internalising whichever critique of capitalism is socially relevant at any one time. For instance, during 1980's, ecological modernisation started as a socio-political strategy that undertook enlisting the institutions of modern society, and especially its economy, for the purposes of an ecologically defined reorganisation (Neckel 2017).

In post-2008 global financial crisis, the same ideology metamorphosed into *green growth* and later *smart cities* to be more amenable to the ongoing sustainability paradigm, consultations of the SDGs and negotiations for a new climate deal. Such an approach shifts the balance of sustainability towards meeting economic goals of corporations, markets and nations that benefit out of them. Is a similar kind of polarity evident in environment or social facets of sustainability? As an analogy, if growth is an obvious goal of economic development and market economy, protection of ecological cycles, resource conservation and waste minimisation are ideals for environment. Similarly, social cohesion, well-being and equity are hallmarks of any

civilized society. In comparison to green growth, do we find an equal balance of sustainability research and practice in these fields too? Contrarily, fields like ecological economics, climate change and social well-being or quality of life often face greater, apprehensions, subjectivization and funding constraints.

4.8. Is sustainable consumption micro-social or macroeconomics problem? Capitalism and globalization have collectively promoted an imperial lifestyle (Brand and Wissen 2017) that tends to rapidly proliferate universal market goods, global supply chains, consumptive behaviour, formal social interactions, a surge in depletion of natural resources and ecological networks that cause an enduring damage to environmental sustainability. But the issue of scale confounds appropriate contextualization of a dynamic market problem. The implicit assumptions of sustainable consumption centre on the rational individual, his or her needs and wants, and while doing so neglect the significance of consumption practices as embodying the relations between individuals. Acts of consumption are not in opposition to, and prior to, macro structures and processes; they are macro processes at work (Dolan 2002). In fact, the consumers practicing sustainability are often misjudged. For instance, in Sweden many citizens acting in the interest of sustainability are misunderstood to promote popular conceptions like the growth of "sustainable consumerism" that are often explained by generalized theories of reflexive modernization (Isenhour 2010). The current sustainability paradigm would have to address this knowledge gap having linkages between ecological, societal and economic aspects with significant repercussions.

Missing links between sustainability and local governance: It is widely acknowledged that governance is central to the successful implementation of sustainable development policies and measures (Shah 2008, Krishna et al. 2017). Through Goal 17, the SDGs consider strengthening governance mechanism and global partnerships for transitioning to sustainable societies. Yet, there is a paucity of sufficient evidence based studies that explore the linkage between sustainability and good-governance at multiple scales, especially at the local scale. The limited know-how about actualizing sustainability transitions amongst development planners and decision-makers; the deficiencies in policy integration, inter-sectoral cooperation, municipality and stakeholder collaboration and urban management practices are major reasons for weak governance practices in sustainable development (Leal Filho et al. 2016). The gap is evident at multiple levels of

institutional governance and is predestined to be torn-open by rampant urbanization in the global South. The next 30 years would see a sea of migrants overwhelming cities of Asia and Africa. By 2050, 68 % of the world's population is projected to be urban by 2050 (UNDESA 2019). There is a rising concern on how rapidly thriving, vulnerable and poor cities in the developing world would address their contributions to global sustainability challenges like carbon footprints, biodiversity and climate-induced threats (Satterthwaite et al. 2007, UN Habitat 2011, Revi 2014, Sethi & de Oliviera 2015). The climate change impacts would be severe on Asian societies, as its urban centres continue to exhibit high natural hazard exposure with limited techno-financial capabilities for adaption (Ecologic Institute 2011, Seto et al. 2014, Sethi & de Oliviera 2018). Despite growing acknowledgement of urban societies in the global energy and climate discourse in the last decade (UN Habitat 2011, World Bank 2010, GEA 2012, IPCC 2014, UN 2015), there is little clarity on how these can be efficiently governed to attain long-term sustainability. This investigation makes an effort to deal with this necessity by analysis of governance roles in facilitating and perhaps even promoting a transition towards sustainable societies.

4.9. Modern socio-political institutions incapable to handle transitions: Social order and political stability can be assumed to be the bedrock of environmental sustainability and equitable access to natural resources across cultures. While this relation is quite obscured in traditional societies having informal systems, it is more evident in the developed nations where formal mechanisms and socio-political institutions invest on large amount of materials and resources, regrettably from outside their boundaries to protect their societies against vagaries of nature, many a times at the cost of exporting carbon emissions and environmental pollution elsewhere. For example, Europe and North America rely on intense structural measures like building huge embankments with imported cement to make their cities flood-proof to raging rivers, coastal storms in event of ever-increasing climate events. On one hand, this kind of formalization is an exemplification of their techno-centric worldview, while on the other it legitimizes their socio-political arrangements to exercise uninhibited and uncompromising control over the dynamic environmental systems.

Interestingly, institutions of these advanced societies are working hard to retain modern development practices and supporting governance models even though newer forms of ecological problems and their social implications confront a globalized society. This impels to reason whether

present setup and its functioning can adequately manage sustainability issues or do we now need alternative arrangements altogether?

4.10. Transposing solutions misplaces social priorities: The contemporary sustainability model perpetuates a globalized macro-economic system that converts the world into a huge market and thrusts itself as an unquestionable solution for development, prosperity and governance. A noteworthy example is how on the pretext of progress and development, the market driven sustainable development paradigm of governments and non-government philanthropies introduce techno-centric or consumption related products in developing societies without any sensible assessment of the local needs. As a result, many villages in some of the most least developed countries in Africa and Asia requiring basic health, sanitation and education are provided with tablets and mobile devices (Tamim 2015). This not just misplaces their real socio-economic needs, but creates disparity and conflicts with those who are not able to get the same tangible benefits. In doing so, sustainability promotes free-market economy, mass-production and consumerism over other life dimensions in the ecological, social, political, ethnic and emotional domains. With the oversimplification of further nailing sustainability into these sub-systems, the wedge or polarity between North and South, rich and poor, governments and governed, elites and masses, producers and consumers, higher educated and lesser educated people further widens leading to an undesired complexity, socio-economic inequity and conflicts. Just like attaining a truly perfect and egalitarian society was an ideal during the modern times, is the proposition of sustainable societies also utopian?

5. Research Questions

All major agencies—multilateral organisations, national governments, corporations, universities, municipalities and social groups have asserted their commitment to sustainability. A constant pursuit of the above dichotomies and gaps by assorted interest groups would anywhere lead to an inevitable revolution, yet it does not happen for the cause of sustainability. The groups rather adopt a steady approach of attending to the difficult questions of implementing sustainability. Astoundingly, in spite of honouring the ideals of liberty, creativity and equity in civilized societies, it is still regarded politically incorrect to show a tough resolve and aggressive attitude for a noble cause like sustainability that most likely includes all such ideals. *What stops sustainability to become a dominant culture in civilized*

societies? It is argued that if the ecological crisis is rooted in structures that are produced by determined values and categories, then a radical change won't be achievable without a correction of those values and categories (Hösle 1991). *This inspires into ponder whether the current strategies are sufficient and timely enough to apply sustainability without altering what we continue to perceive as sustainable and implementable within the existing socio-political structures?*

This reminds us of Einstein's observation that we cannot solve today's problems with the same kind of thinking that led to these problems in the first place, holds true even more today. Putting it more appropriately, *if sustainability was and continues to be the West's anti-thesis to blind modernization, is continuing of globalisation as "westernisation of the world" (Sachs 1998) a sustainable or an unsustainable development model?* This new kind of thinking requires that we cannot think about sustainability in terms of problems that are out there to be solved or "inconvenient truths" that need to be addressed, but to think in terms of challenges to be taken on in the full realization that as soon as we appear to have met the challenge, things will have changed and the horizon will have shifted once again (Wals 2007). *Does the concept and theory of sustainability propounded over three decades ago definitively address problems of the present times? Are there any new sustainability challenges appearing in event of changing dynamics like global climate change, pandemics, trade-wars, rapid industrialization and urbanization in the global South, biodiversity loss, political conflicts and mass-migrations, to name a few and do human societies stand prepared against these?* In addition, after studying multiple knowledge gaps, *a fundamental and erudite question is that why does the society continue to remain missing in attaining sustainable societies?*

Alternatively, how can we live, breathe and act sustainably? How do we evolve the way people think about this idea and adopt a culture of sustainability? Developing a culture of sustainability would be incomplete without understanding the role of culture in social studies. We can describe the interrelationship of social and cultural processes with Pierre Bourdieu's concept of "structured structuring structures" or more simply by Winston Churchill's timeless quote that first we shape our buildings, thereafter they shape us. Similarly, the manual of Sociology (Giddens & Sutton 2009) claims that no culture could exist without a society, as no society could exist without culture. Thus culture helps interpreting the reality (includes natural, social and built environment) to the society and in turn shapes it too.

This notion of cultural evolution is an outcome of cultural ecology, which is the study of the adaptive processes by which the nature of society, and an unpredictable number of features of culture, are affected by the basic adjustment through which man utilizes a given environment (Steward 1955). Historically, the notion of separation between humans and nature, society and nature (or culture and nature) has a long tradition (Ort 2003). In the West, the belief maintained continuity, through the Christian religion, the Renaissance and the scientific Revolution (Prigogine & Stengers 1993). In the middle-east and South Asia, the medieval Persian gardens were laid-out to recreate the Islamic notion of paradise on earth. This approach further gained currency during the modern age giving way to capitalism, imperialism, colonialism, environmental destruction, followed by consumerist globalization and global climate change. The modernist conception of environment (as most things around us) reduces it to the ecological environment, distancing human beings from nature.

Humans are an integral part of nature and vice versa is still a challenge to contemporary fields, be it natural or the social sciences (includes, economics & cultural studies). For instance, the science of environment, ecology as well as systems & complexity theories, amongst others would have very different approach about the same observation. For communities living in the Himalayas or along the Amazon, the mountains and the river are their inherent systems, but for scientists and the social groups, it is their environment. Would the globe's dominant academic theory and non-government think-tanks support the rights and decision making powers of these people over their own land, forest and water resource or rather recommend its astute protection for biodiversity conservation, global climate mitigation and inter-generational sustainability? Furthermore, would an appropriate decision aimed at sustainability be affected by the social hierarchy of these communities within their local, country and global political or governance structure? A discussion on these issues would surely determine how the dominant class that thinks and deals with sustainability would deal with these environmental systems and their native people. *The recognition of the genuine stakeholder who can veto in policies and decision-making may have no clear answers in complex sustainability problems, but can a proactive theory on sustainable societies review it with a fresh perspective?*

Sustainable living requires a deliberative effort to continuously shape and re-shape dynamically changing conditions amidst multiple actors. A dialogue here requires that stakeholders involved can and want to negotiate

as equals in an open communication process which celebrates diversity and conflict as the driving forces for development and social learning (Wals & Bawden 2000). It is essential to reaffirm that local cultures amass a wealth of non-proven (by current scientific standards) but highly time-honoured indigenous knowledge in sustainability, but what impedes its dissemination and representation in the popular culture? *Does promotion of sustainability have to do with the evolutionary tract from where the concept of sustainability emanates and through which institutional modes & social structures is it implementable?* Does the source and the mediums of top-down transfer of knowledge on sustainability alter the true message? *If in deed, sustainability messages are subject to gatekeeping, what is the most appropriate apparatus and scale to realize sustainable societies?*

This necessitates to ponder several pertinent supplementary questions, like: (a) How did the concept of sustainability come upon the global consciousness? (b) If sustainability is so imminent and real, how could human activities threaten their own world in the manner it is being observed? and (c) Does the current scenario restore any sense of trust in the development models, systems and institutions to pave way for a better common future? (d) What are the barriers and facilitators in realizing sustainable societies to inform policy innovations, integrated/systems thinking, socio-technical transitions and management decisions at multiple levels, and most importantly? (e) How could the fundamental knowledge in environment, sociology and economics help redefine and reason sustainable societies, to meet contemporary challenges? The answers are actually difficult to fathom and certainly demand a herculean task of revisiting the idea of sustainability, through its evolution in the past, the current times and what we make out of it, that this book aims to engage with.

6. The Intent of This Research

As evident from the study of different sustainability perspectives and the gaps therein, it would be too naïve to assume that human societies fully know the right path to sustainability. This research deviates from the prevailing, status-quoist and for-given perspective of sustainability. It does not pre-suppose sustainability as a formal guiding norm or a solution that calls for an urgency to intervene all current development models and policies. Alternatively, *this research unfolds the inherent dilemmas, contradictions and paradoxes within the current sustainability paradigm to form a rather nuanced and inside view of what constitutes sustainability and*

how it could be realized with socio-technical, institutional, policy and management solutions.

In absence of a critical theory on "sustainable societies", the contemporary development model is misinformed by vague notions of greening, green growth, eco-development, ecotourism, smart cities, etc. largely steered by corporates and vested business groups. The contemporary societies exist and continue to develop without genuine knowledge about sustainability that lies fragmented in its contributing disciplinary streams. Are we missing something from our collectively accumulated wisdom? In a first of its kind undertaking, *this research comprehensively reviews about hundred most notable concepts and theories from environmental, economic and social domains surfaced primarily in the last two centuries, to reflect upon their relevance and applicability in realizing sustainability during the present times.*

In addition, while fostering or converging inter-connections between differing facets of sustainability, this research would also delve into an outcome oriented inquiry about key capacities, governance modes and socio-technical solutions that could be developed to actualize and implement sustainability. For a critical investigation of the above goal, this research outlines the following key inter-related yet methodically executable objectives:

1) To analyse interdisciplinary connections between environmental, social and economic aspects of sustainability and upcoming transdisciplinary themes through better understanding of scattered knowledge in the form of theories, concepts and principles.
2) To gain deeper insights on which capabilities need to be developed to harness greater conservation, knowledge integration, innovation, value creation in sustainability
3) To formulate strategies that foster knowledge from theories, principles and technological imperatives in informed policymaking, development governance and managerial efficiency to realize sustainable transitions in the society.

7. Research Methodology

The approach taken to study the subject of sustainable societies was based on a systematic bibliometric analysis based literature review and deliberative methods. Our literature review of "sustainable societies" is based on two search methods. First, we searched for articles in Google

Scholar containing the term "sustainable/sustainability" and "society/ societies" in the title or abstract, which yielded a core set of texts on this topic. The results were discussed and categorized into three major strands or groups- environmental, social and economic, such that each researcher's group studies its respective strand in detail.

Secondly, utilizing a snowball method, each of the three literature groups is reviewed for key references, their titles in reference lists to ascertain more keywords, theories and authors. This yielded a wider range of complementary literature. Combining these two methods generated a comprehensive literature base covering explicit and implicit concepts and theories in this field. Full texts were referred, reviewed and distilled for the core theories by respective researcher groups. These were then presented in form of chronological order and discussed at length. The substantive, sequential and cross-temporal linkages were drawn between these theories. The deliberations with respect to each theory was noted and added to its reporting by each group. All the theories were then reported and complied to form a comprehensive text. We understand that this experimental approach of actively involving young scholars in a focussed investigation, review and collective deliberation of about a hundred relevant theories is acutely different from normative approaches adopted in sustainability research.

In addition to introducing sustainable societies, this chapter discusses at length the theoretical gaps and research questions within the sustainability paradigm. This process assists in scoping key classical, modern and contemporary theories and concepts relevant to sustainable societies that need to be reviewed. These range across the field of environment, sociology and economics. Chapters 2–4 elaborate on the contents from each of these disciplines, as briefly summarized below:

7.1. Environmental Theories & Principles: Even though growing public awareness about environmental issues is evident, lack of adequate environmental knowledge can play a big role as an obstacle towards achieving a sustainable future for humankind at both global and local scales. Proper media-assisted civic education and awareness campaigns regarding the importance of environmental issues are vital to enhance the protection and well use of natural resources, and to reach a sustainable future in any community. This research tries to develop understanding the relationships between different kinds of concepts, movements and theories; we reviewed various papers, with a focus on more recent papers, covering the following

major themes: Anthropocentricism, Theocentricism, Utilitarianism, Catastrophism, Uniformitarianism, Tragedy of Commons, Ecocentricism, Garden City Movement, Environmental Determinism, Possibilism, Neo-Environmental Determinism, Biocentricism, The Neighborhood Unit, Probabilism, Diffusions of Innovation, Environmentalism, Green Theory, Eco-Cities, Deep Ecology Movement, Sustainability, Ecological Systems Theory, New Urbanism, Ecological Modernization, Healthy City Movement, Techno-Centrism Theory.

7.2. Social Theories & Principles: The classical sociological theories are theories of great scope and ambition that either were created in Europe between the early 1800s and the early 1900s or have their roots in the culture of that period. The works of such classical sociological theorists as Auguste Comte, Karl Marx, Herbert Spencer, Emile Durkheim, Max Weber and, Georg Simmel were important in its time and played a central role in the subsequent development of sociology. Additionally, the ideas of these theorists continue to be relevant to sociological theory today, because contemporary sociologists read them. They have become classics because they have a wide range of application and deal with centrally important social issues. In contemporary social theory, certain core themes take precedence over others, themes such as the nature of social life, the relationship between self and society, the structure of social institutions, the role and possibility of social transformation, as well as themes such as gender, race and class. The theories covered in this research would include macro and micro as well as positive and anti-positive typologies (see Box 3), covering the following sociological theories:

Social Contract Theory, Theory of Human Progress, Marxist Theory, Social Conflict Theory, Gemeinschaft und Gesellschaft Theory, Socialization, Looking Glass Self, Sociological Theory, The Metropolis and Mental Life, Geddesian Planning Philosophies, The Ideal Type, Social Disorganization Theory, The City (Max Weber), Theory of Generations, Urban Ecology, Thomas Theorem, Mead's Theory of the Self, Sociology of Knowledge, Critical Theory, Structural Functionalism, Social Theory of Urban Space, Theory of deviance or the Anomie Theory, Ekistics (CA Doxiadis), Maslow's Hierarchy of Needs, Middle Range Theory, Social Exchange Theory, The Study Of City, Rational Choice Theory, Symbolic Interactionism Theory, Principles of Intelligent Urbanism, Donald Black's Sociology Theory, Communicative Rationality, Theory of Structuration, Reconstructive Science, A Theory of the City as Object, Theory of Reflexivity, A Theory of Smart Cities.

Box 3: A broad typology of sociological theories

Macrosociology Vs. Microsociology: The study of everyday behaviour in situations of face-to-face interaction is usually called microsociology. Macrosociology is the analysis of large-scale social systems, like the political system or the economic order. It also includes the analysis of long- term processes of change, such as the development of industrialism. At first glance, it might seem that microanalysis and macro analysis are distinct from one another. In fact, the two are closely connected. Macro analysis is essential if we are to understand the institutional background of daily life. The ways in which people live their everyday lives are greatly affected by the broader institutional framework, as is obvious when the daily cycle of activities of a culture like that of the medieval period is compared with life in an industrialized urban environment.

Optimistic (Positivism) Vs. Anti-Positivism: The overarching methodological principle of positivism is to conduct sociology in broadly the same manner as natural science. An emphasis on empiricism and the scientific method is sought to provide a tested foundation for sociological research based on the assumption that the only authentic knowledge is scientific knowledge, and that such knowledge can only arrive by positive affirmation through scientific methodology. Pessimistic (Anti-Positivism): Reactions against social empiricism began when German philosopher Hegel voiced opposition to both empiricism, which he rejected as uncritical, and determinism, which he viewed as overly mechanistic. Karl Marx's methodology borrowed from Hegelian dialecticism but also a rejection of positivism in favour of critical analysis, seeking to supplement the empirical acquisition of "facts" with the elimination of illusions. He maintained that appearances need to be critiqued rather than simply documented.

7.3. Economic Theories & Principles: The economic theories are classified as Classical, Monetarist or Keynesian according to the different periods in which they came. The Classical theory came after the mercantile theory which was the primary economic system of trade used from the 16th–18th century. When mercantilism replaced the older feudal economic system in Western Europe, it encouraged political oversight and control over economy. The system was based on the understanding that a nation's wealth and power were best served by increasing exports and collecting precious metals, such as gold and silver. In the 18th and 19th centuries, much of this work was developing theories about the way markets and market economies work. Economists believed that the government should not intervene to try to correct this as it would only make things worse and so the only way to encourage growth was to allow free trade and free markets. Any imperfections in the market that prevented this process should be dealt with by government (Anon n.d.).

Keynesian Theories: During the Great Depression of the 1930s, British economist John Maynard Keynes spearheaded a revolution in economic thinking that overturned the then-prevailing idea that free markets would automatically provide full employment. He asserted that an economy's output of goods and services is the sum of four components: consumption, investment, government purchases, and net exports. Accordingly, Keynesian economists justify state intervention specially to moderate the booms and busts over free markets having no self-balancing mechanisms to achieve full employment and price stability. This economic theory dominated the public policy after World War II until the 1970s, when many advanced economies suffered in absence of providing any solution to a condition dubbed *stagflation*, i.e. inflation and slow growth, thereby leading to popularity of monetarist theories (Anon n.d.).

On the other hand, the monetarist economists doubted the ability of governments to regulate the business cycle with fiscal policy and argued that judicious use of monetary policy could alleviate the crisis. Monetarism maintains that the money supply (the total amount of money in an economy) is the chief determinant of current dollar GDP in the short run and the price level over longer periods. It believes that the objectives of monetary policy are best met by targeting the growth rate of the money supply. The policy gained prominence in the 1970s—bringing down inflation in the United States and United Kingdom, and greatly influenced the U.S. central bank's decision to stimulate the economy during the global recession of 2007–09.

Further, Neoclassical economics considers both exogenous and endogenous models of growth (Ganti 2020). It is argued that proponents of exogenous growth models argue that technological progress is the key determinant of long-run economic growth as well as international productivity differences. Within the endogenous growth models, there are two notions that are propagated. The first postulates that capital used for innovative purposes can exhibit increasing returns to scale and thus account for the international productivity differences we observe today. The key determinants include knowledge, human capital, and research and development. The second argues that factors that affect the efficiency of capital, and hence cause capital flight, can also explain international productivity differences. These factors that affect the efficiency of capital include government spending, inflation, real exchange rates, and real interest rates (Chirwa & Odhiambo 2018).

The economic theories covered in the book include: Free Market Theory, The Discovery of The "Ricardian" Theory of Rent, Absolute and Comparative Advantage theory, Alternative Theories of Distribution, General Equilibrium Theory, Theory of Surplus Value, Law of Malthus, Concentric Zone Theory, Economic Base Theory, Debt Deflation Theory, Employment Multiplier, Rural Urban Linkages and Theories of Economic Growth, Harrod Domar Growth Model, Stage and Sector Theory, Input Output Analysis, Export Base Model, Lewis Structural Change, The Lewis-Fei-Ranis Model of Economic Development, Rostow's Model, The Quantity Theory of Money, Theory of Trickle Down Growth And Development.

7.4. Transition to Sustainable Societies: This research concludes with an elaborate discussion in Chapter 5, on how the interplay of economic, sociological and environmental theories can influence sustainability in contemporary societies. It expounds on the most crucial and relevant paradigms in the construct of sustainable societies for the present times, the growing relevance of sustainability transitions in the contemporary times. The chapter explores at length the way forward, considering that sustainability is a politico-economic and socio-cultural challenge, the transitions need to be culturally diverse and inter-generational, requires fresh values, messaging and leadership while conserving traditional knowledge, prevailing institutions. The chapter culminates with a transition architecture bearing policy recommendations for governing without governmentality with plausible regulatory instruments, capacitating mechanisms, planning and voluntary measures that can be implemented in practice.

8. Practical and academic significance

Sustainable transformation is an upcoming professional practice and academic programme in university education (at both undergraduate & graduate levels), yet there is no clear and accepted methodical approach or reference materials to study and practice it. My first-hand experience of working on sustainability projects and plans met with a highly inter-disciplinary and evolving field that is extremely challenging for even the well-read and initiated experts to scope, interpret and be in command. One is always barraged with new ideas and postulates that your existing knowledge always seems insufficient.

I have also been fortunate to teach sustainability as an academic course for graduate programmes, essentially in settlement studies. My interactions with the class revealed that students misinterpret sustainability as environmental sustainability and thus it becomes challenging for them to appreciate the sociological and economic underpinnings of this holistic field. A part of the problem is that students have not been acquainted with the scientific and complex aspects of sustainability during the undergraduate studies. In addition, most tutors teaching sustainability courses themselves belong to a particular academic discipline or rooted in a specific school of thought that limits their aptitude to cross-over and appreciate the multi-disciplinary facets of sustainability. The absence of any textbook on this subject makes teaching of this course even more cumbersome. In such situations, the normative pedagogies concentrate on some of the following learning methods or a combination of these:

a) Tutors giving lectures on some key theories, that too the classical ones in economics and sociology with little explanation to their relevance in the present situation. For e.g. how would Karl Marx's 19th century Social Conflict Theory can be pertinent to inform sustainable development debates today?
b) Assignments by students on latest environmental phrases and concepts (eco-development, green growth, etc.) without fully comprehending their true background or context, appropriateness with respect to time and place.
c) Limited interaction between the scholars on the applicability of sustainability theories in a society, inter-relationships between two or more thoughts, evolution of a theory and its maturation or desertion in practice over the years.

This book aims to fill the above academic gaps. As an explorative research outcome of my tutorial, assignments and classroom exercises with scholars that addresses the complex scope of purposely creating sustainable societies by studying universal environmental, social and economic theories threadbare and deliberating on their applications in the present-day real world. The exercise was enthusiastically participated by the students and well received by the course coordinator.

This book engages with not just the concepts of sustainability, but its manifestation in the civil society, environmentalism, social action, participatory governance, place making, smart paradigm, among others and will thus promote to an enriched comprehension of existing theories in

economics, policy studies, sociology and urban studies. The research is based on extensive literature study that would simultaneously inform to both theory and practice. Therefore, the target audience of the book could be all and one who is interested in deeper understanding of the diverse and multiple dimensions of the contemporary societies across the globe. It would be of particular interest in the developing world where under continuing industrialization and urbanization, societies are rapidly transforming.

The book will serve as a comprehensive source for researchers and students specializing in societal and policy aspects of economy, environment, anthropology, urban studies, etc. In universities, the book can be used for graduate and post-graduate academic programmes in economic sociology, environmental economics, environmental sociology, human geography, urban sociology, anthropology, policy studies, area studies, settlement studies, urban design, architecture, etc. In addition to finding its basic target readership of university scholars in sustainability studies, social sciences, settlement studies, etc., this primer will be an indispensable guidebook for young professionals, independent scholars, social workers entering into the practice as experts, advisors, counsellors, etc. The book will stand out for its easy to read language for readers of varied backgrounds.

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Chapter 2
Environmental Theories & Principles

Theocentricism (5th–16th Century)

St. Augustine of Hippo (354–430), St. Thomas Aquinas (1225–1274), Gottfried Leibniz (1646–1716), Henry Wieman (1884–1975), Charles Hartshorne (1897–2000)

Theocentricism is the belief that God is the central aspect and ultimate concern of our existence. In this view, meaning and value of actions done to people or the environment are attributed to God. It is a medieval theory that extends from the rise of Christianity, the expansion and fall of the Roman Empire in 5th century CE up till the Renaissance period around the 16th century CE, although the paterocentric view, with man and nature sharing the same Father fairly persists across all Abrahamic theologies, including Judaism and Islam. After creating the terrestrial world, the plants, animals and birds, the God of Genesis creating the man said; "And let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth" (Hamilton 1990).

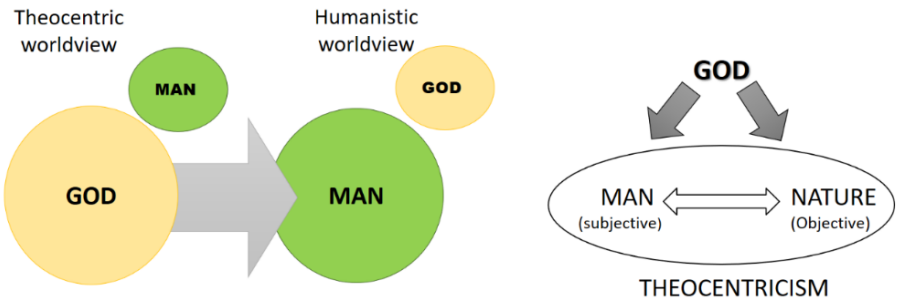

Figure 3: Theocentricism overwhelms the humanistic and environmental worldview

In modern theology, theocentricism is often linked with stewardship, where human beings should look after God's creations—from animals to plants to human beings themselves as guardians (Figure 3). Theorists like Kuyper, Leibniz have revived the significance of knowing nature, as a way of better appreciating God's wisdom. Further, Hoffman & Sandelands (2005)

argue that the values of theocentricism, such as humility, respect, moderation, selflessness, and mindfulness, can lend themselves towards a form of environmentalism. At the same time, Lynn White Jr thoroughly criticizes theocentricism in his famous paper, *The Historical Roots of Our Ecologic Crisis* (White 1967).

Anthropocentrism (16th Century onwards)

Francis Bacon (1561–1626), René Descartes (1596–1650), Gifford Pinchot (1865–1946)

The concept of Anthropocentricism considers humans as the key element of the universe, interpreting reality exclusively in terms of human values and experience. It is thus a theory that places human beings at the center of something, giving preference to human beings above all other considerations (Merriam-Webster n.d.). The human-centered view holds that unlimited human progress is possible through the exploitation of nature's infinite resources (Hoffman & Sandelands 2005). Keeping with assertion of Francis Bacon (1561–1626 CE) that that we must "torture nature's secrets from her"; this concept considers man separate from and superior to nature, and nature as an inert machine, infinitely divisible and moved by external rather than internal forces (Gladwin, Kennelly & Krause 1995, Merchant 1980).

The traditional mechanism and dualism of Descartes (1596–1650 CE) emphasize absolute subject-object distinction and the human subject and its dominion over natural objects. Also identified by terms like humanocentricism, human exceptionalism (Henriques 2013) and human supremacism (Plumwood 2002), this philosophical viewpoint argues that human beings are the most exclusive and empowered entities on this Earth, attributing reason to dominate their environment and the authority to develop the world.

Anthropocentrism is believed by some to be profoundly embedded in many modern human cultures and conscious acts, particularly having a systematic bias in traditional Western attitudes to the non-human world (Naess 1973), often considered to be the root cause of environmental crises by human action within the ecosphere (Beck 2013). It is argued that with Renaissance, Reformation and the industrial revolution, man gave away its theocentric views, and the exploitation of natural resources and environmental destruction continues to this day. During 1940s and 50s,

anthropocentrism gave rise to existentialism in humanities—a philosophy of subjectivity that takes man to be everything. It defines man by his free will and finds that man exists only as he exercises his freedom in the world and over nature (Hoffman & Sandelands 2005). Existentialism inter-twines several concepts like *existence preceding essence* of a thought, confusion and absurdum, *facticity* (being and not-being), t*he Other and the look* (inter-subjectivity and objectivity), *dread and despair*, but most importantly the *authenticity* of experience.

Catastrophism (17–18th Century)

Buffon Leclerc, Comte de Buffon (1707–1788), Joseph Fourier (1768–1830)

Catastrophism presents an evolutionary theory that Earth's features—including mountains, valleys, and lakes are primarily formed and shaped as a result of the periodic but sudden forces as opposed to gradual change that takes place over a long period of time (GES 2020). It was first theorized by Buffon Georges-Louis Leclerc (1707–1788), a French naturalist, cosmologist and mathematician, and Joseph Fourier (1768–1830), a physicist and mathematician. According to Catastrophism, one might interpret the origins of the Rocky Mountains or the Alps, as resulting from a huge earthquake that uplifted them quickly. In terms of modern geoscience, strict catastrophic theory (e.g., a world shaped by large single floods, or massive earthquakes) finds little evidence or support.

The concept was developed during the 17–18th Century, when by tradition and even law, scientists used the Bible and other religious documents as a scientific document. The Irish scholar Bishop James Ussher (1581–1656) during the mid-1600's, counted the ages of people in the Bible and proclaimed that Earth was created in 4004 BC. The current research estimates Earth at 4.5 billion years old. Hence in its original form, catastrophism eventually lost recognition amongst the scientific community as they started arguing more reasonable explanations for natural evolution.

Uniformitarianism (Late 18th to 19th Century)
James Hutton (1726–1797), Baron Cuvier (1769–1832), Charles Lyell (1797–1875)

In 1788, a Scottish geologist James Hutton suggested for *gradualism,* a doctrine wherein geologic processes operate at the same rates and with the same intensity now as they did in the past. The French naturalist Baron Georges Cuvier (1769–1832) avoiding religious or metaphysical speculation in his scientific writings (McGowan 2001, Rudwick 1972) reconciled both the biblical evolution (theocentric worldview) with fossils recorded at periodic intervals giving way to the neo-catastrophic school that attempts to explain geologic history as a sequence of rhythms or pulsations of mountain building, transgression and regression of the seas, evolution and extinction of living organisms (EEB 2013).

In the three volume of *Principles of Geology* (1830-1833), Charles Lyell presented a variety of geologic evidence from England, France, Spain and Italy to verify Hutton's gradualism and disapprove catastrophism. The term uniformitarianism was formally used in 1832 by William Whewell, a University of Cambridge master. It suggests that the continuing uniformity of existing processes should be used as the framework for understanding the geomorphic and geologic history of the Earth. In 1980, catastrophism regained popular interest with the event impact hypothesis that the earth's evolution has been significantly altered due to sudden asteroid impacts and mass extinctions (Alvarez et al. 1980). Today, most geologists and landscape experts combine both views that Earth's evolution is a slow, gradual story (uniformitarian) occasionally punctuated by sudden natural events (catastrophic) affecting the world.

The explanation of Earth's geological evolution through uniformitarianism was later extended into biological science in the eminent work of Charles Darwin and Alfred Wallace on the theory of evolution (1859). It propounded that the diversity seen in the Earth's species can be explained by the uniform modification of genetic traits over long periods of time.

Environmental Determinism (19th Century)

Zhong (720–645 BC), Hippocrates (720–645 BC), Ibn Khaldun (1332–1406), Ellen Churchill Semple (1863–1932), Friedrich Ratzel (1844–1904)

The environmentalists argue that nothing is free of the influence of environment, "peoples and their environments are inseparable" (Fekadu 2014). The environmental determinism, also known as geographical or climatic determinism, is a principle which states how the physical environment shapes or controls human activity, culture, societies and states (Figure 4) towards particular development pathways (Keighren 2015, Lewthwaite 1966). The concept was assumed in pre-modern Chinese, Indian, Greek & Medieval Islamic cultures. The ancient Indian philosophy of Vedas is based upon realizing the strong forces of nature by mankind (Dwivedi 1997, Renugadevi 2012, Tiwari 2016). In early China, Zhong (720–645 BC), a chancellor believed that swift and twisting rivers made people greedy, uncouth, and warlike (Rickett 1998). In 4th century BC, the Greek philosopher Hippocrates (720–645 BC) combined the physical elements of earth, air, fire and water with geographic location to demonstrate economic and communal health (Lewthwaite 2001, Lefkowitz 2005). During the classical period, Strabo, Plato, and Aristotle used climatic factors to explain why the Greeks were more advanced than societies in extreme hot and cold climates. With his climate classification system, Aristotle explained why people made settlements in certain areas of the world (Briney 2020).

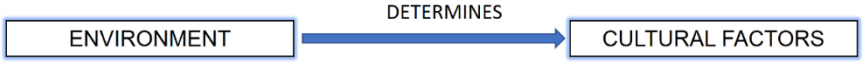

Figure 4: The determinism theory posits that environment determines cultural factors

During the medieval times, Al-Jahiz (776–868), a writer from East Africa, cited environmental factors as the origin of different skin colours. Ibn Khaldun (1332–1406) who wrote the complete world history extended this argument to non-physical factors, suggesting that soil, climate, and food determined people's nomadic or sedentary habits, and customs & ceremonies followed by them, later followed by similar views by the 18th century French Jurist Montesquieu (Gates 1967). It was generally articulated that humid climates, torrential rains and fertile soils in the hot and tropical regions produced abundant food, laziness and incapacitated people with passionate natures. Contrastingly, cold climates and barren

landscapes in temperate regions produced brave, bodily strong people with higher intellectual acumen and work ethics.

The concept was brought to the center stage between 1870 and 1940 by German geographers Alexander von Humboldt (1769–1859), Carl Ritter (1779–1859) and Friedrich Ratzel (1844–1904). Ritter produced a seminal work in German, Geography in Relation to Nature and the History of Mankind elaborating the influence of the physical environment on human activity. Ratzel coalesced society with nature through the idea of Lebensraum (living space or habitat) heavily following evolutionary biology (Darwin's theory of evolution in 1859) and the impact an individual's environment has on their cultural evolution. The concept was popularized by his student Ellen Churchill Semple (1863–1932), introducing this theory in the USA. Ellsworth Huntington (1876–1947), another Ratzel's student, expanded the subset of climatic determinism arguing that temperate climates with short growing seasons (and frequent weather changes) stimulate achievement, economic growth, and efficiency, while ease of growing things in the tropics hindered their advancement (Briney 2020).

Despite its early popularity, the theory lost favour owing to two major reasons: (a) As more and more lands were explored and examined by the Western modernists, its theoretical claims could not be fully corroborated in newer contexts (Sluyter 2003, McGregor 2004,), (b) Since determinists believed that all events, including human actions, were predetermined, determinism was typically thought to be incompatible with free will (Fekadu 2014), and (c) the critics claimed that the theory rationalized racism, ethnocentricism and imperialism (Painter & Jeffrey 2009, Gilmartin 2009). For instance, Thomas Jefferson, the 3rd President of USA legitimized African colonization by arguing that tropical climates encouraged laziness, relaxed attitudes, promiscuity and generally degenerative societies, while the frequent variability in the weather of the middle and northern latitudes led to stronger work ethics and civilized societies (Jefferson 1961). Similarly, in his speech at the Hofbräuhaus, "Why We Are Antisemites" Adolf Hitler is believed *to use* this theory to assert supremacy of the Nordic race (Carolyn 2013). With the experience of holocausts and bloodshed in World War II followed by adoption of *The Universal Declaration of Human Rights* (1948), the idea of differentiating people for geographic location and physical contexts lost credibility and academic interest, giving way to Possibilism.

Possibilism (20th Century)

Franz Boas (1858–1942) Lucian Febvre (1878–1956), Vidal de La Blache (1845–1918), Isaiah Bowman (1878–1950), Griffith Taylor (1880–1963)

In contrast to environmental determinism, the mid-20th century French geographers presented a *genres de vie* (lifestyles) model of people perceiving a range of alternative uses to which they could put the environment and selecting which best fitted their cultural dispositions in varying regions. This point of view was named "possibilism" by historian Lucien Febvre, who professed that the true and only geographical problem is that of utilization of possibilities (Figure 5). There are no necessities, but everywhere possibilities. The natural data (factors) are much more the material than the cause of human development. The "essential cause" is less nature, with its resources and its obstacles, than man himself and his own nature (Febvre & Bataillon 1932). In the ancient times (64 BC), Strabo questioned the assumption that nature and actions of humans were determined by their physical environment and argued that humans can make things happen by their own intelligence over time.

Carl Sauer refuted the concept of environmental determinism for premature generalizations about an area's culture and did not allow for results based on direct observation or other research. The French geographer Blache stated that although the physical environment sets limitations for human development, it does not wholly define culture. Instead, advocating that nature depends on his (human beings) own traditional way of life. The British geographers termed it as "human response" to environmental opportunities (Lewthwaite 2001). The theory is based upon the assumption that environment offers certain constraints or limitations but there are possibilities what man utilizes according to his culture, traditions, and levels of socioeconomic development. The nature is no more than an adviser, while the human being is an active agency that creates possibilities over necessities.

Figure 5: The cultural factors in a region are selective to its environmental limits

By 1950s, environmental determinism was almost entirely supplanted by the possibilism school of thought, effectively ending the former's prominence as the central theory in geography. The range of possibilities in every region is limited more by the price man is willing to pay of what he wants than by the dictates of the environment. For instance, man through his technical skill can grow many tropical plants like rice, banana or rubber in tundra but he has to consider the prohibitive input cost. Conversely, possibilism is criticized on several accounts, most notably that despite numerous possibilities, man has not been able to get rid of the obstacles set by the physical forces, say in the deserts or high mountainous regions.

Isaiah Bowman (1878–1950) asserted that while the physical laws to which mankind responds are available in their application and degree of effect, yet this is also true that all men everywhere are affected to some degree by physical condition. In spite of the fact that man has numerous possibilities in a given physical setting, he cannot go against the directions laid by the physical environment. For instance, in harsh environments like extreme hot and cold and at low stages of cultural evolution, human choice may be extremely restricted. But in favourable temperate zones and periods of highly developed skills, there are numerous possibilities.

At the same time, human can never free himself entirely from nature's control. Griffith Taylor (1880–1963), while criticizing possibilism, opined that society as a whole should make a choice, and since only an advisory role is assigned to geographers, his function "is not that of interpreting nature's plan". Taylor was largely right when he wrote that the task of geography is to study the natural environment and its effect on man, not all problems connected with man or the "cultural landscape". Yet possibilism does not encourage study of physical environment but promotes over anthropocentrism in geography (Anonymous 2020). Possibilism thus overstressed the relevance of culture overlooking the role of natural environment. Thus, both concepts over-simplify the human-environmental relationship and lack sufficient reasoning.

Neo-determinism (Late 20th Century)
Griffith Taylor (1880–1963), Andrew Sluyter (1958–)

The theory in its earliest form was promoted by Griffith Taylor, an Australian geographer who argued that possibilists had developed their ideas in rare temperate environments such as Europe and North America, which offer several viable alternative forms of human occupancies. In most other regions like Australia, the environment is extreme with enormous control over human activity. He substantiated this by limits of agricultural settlements set by physical environment factors such as distribution of rainfall in Australia. He professed that the best economic programme for a country to adopt is significantly determined by nature, and it is the geographer's duty to interpret this programme. He is like the traffic controller in a large city who alters the rate but not the direction of a country's regional development thus coining the term "stop- and go-determinism" (Anonymous 2020).

Taylor further argued that wisdom and folly are human concepts and the nature knows nothing of them. But humans should be wise, not departing from directions as indicated by broad limits set by natural environment. In no environment are the possibilities limitless and for every choice a price must be paid. Man makes his choice and himself judges its relative wisdom or folly by reference to goals he himself has established. In the late-twentieth century, this middle path to environmental determinism and possibilism was coined as neo-environmental determinism by the social scientist and critic Andrew Sluyter.

During the study of Titicaca Basin in South America, the neo-environmental determinist position viewed humans as passive and incapable of adapting to the long-term climatic change beyond some presumed environmental threshold (Erickson 1999). Accordingly, humans are considered active and dynamic agents who not only respond to the challenges of fluctuation of climatic in their environments, but also create, shape and transform those very environments. Thus Febvre's Possibilism (there are no necessities but everywhere possibilities and man as a master of these possibilities is the judge of their use) can be further articulated; man decides but only from the choices presented by nature. In brief, people can moderate the environment to their will, but in perpetuity the environmental principles would prevail obliging humans to negotiate. Similarly, the French geographer Jean Brunhes (1869–1930), famously claimed that nature is not mandatory but

permissive, suggesting that the power and means which man has at his disposal are limited and he meets in nature bounds which he cannot cross. Human activity can within certain limits vary its play and its environment, but it cannot do away with its environment; societies can modify it but cannot surpass it, and will always be conditioned by it.

The theory has been used extensively to explain several complex environment and civilization relationships in the present and past. For example; (a) similarities between the changing climate conditions that brought down the Easter Island civilization as well as the modern global warming (Diamond 2005), (b) direct impacts of geographic and climatic factors on economic development, especially the role of geography on the cost of trade and access to markets, the disease environment, and agricultural productivity (Gallup et al. 1999), (c) The impact that climate and water navigability have on economic growth and GDP per capita (Mellinger et al. 1999), and (d) a society's success or failure (national economy) is based on the underlying strength of its institutions (Acemoglu & Robinson 2012).

Neo-determinism thus explains the concept of *equatorial paradox* in economic geography, which is that about 70 % of a country's economic development can be predicted for distance from the equator. The theory forms the basis of *physioeconomics* that reasons that since humans originated as tropical mammals, those who relocated to colder climates attempt to restore their physiological homeostasis through wealth-creation. This act includes producing more food, better housing, heating, warm clothes, etc. On the other hand, societies continuing to reside in warmer climates are physiologically more comfortable because of temperature, having lesser incentive to work to increase their comfort levels. Thus national economic indicators like GDP and income are a direct product of the natural compensation of humans to their climate.

Garden City Movement (20th Century onwards)

Ebenezer Howard (1850–1928)

The garden city movement originates from a major writing of Sir Ebenezer Howard, *Garden cities of tomorrow.* He is acknowledged to be the father of modern town planning for this work. His vision of a garden city was to make a highly efficient industrial city with 32,000 population making use of advanced technology available. It followed three key aspects: (1) The recognition of the problem; i.e. overcrowding, congestion, crime, poverty etc. (2) A solution i.e. the dispersal of population from London and the new industrial cities to his garden cities, and (3) An appropriate method for achieving this goal; i.e. the nationalization of rural land for building of such new communities beginning with a small scale model on the land acquired. Through his writings, Howard introduced garden cities—new settlements with surrounding agricultural belts—would bring together the best features of town and country while avoiding the disadvantages of both (Howard 1898). He argued for a tree magnet model, the magnets were named as town, country and town-country (Figure 6).

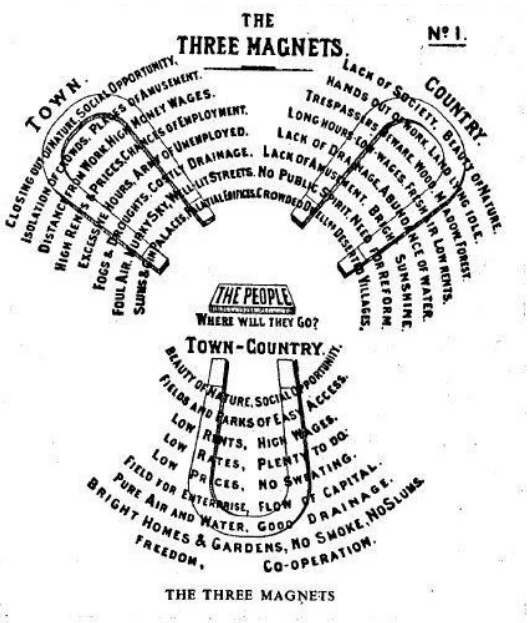

Figure 6: The "Town-Country" magnet provides vital benefits of both town and country life. Source: Howard, E. (1946). Garden cities of tomorrow. London: Faber; p. 46

The town and country both have some distinct advantages and to counterbalance them there some disadvantages also. But Howard a careful forging of a "Town-Country" magnet would provide all vital benefits of both town and country life with none of their drawbacks. One major task was to demonstrate the new town-country magnet so that the force of old attractions (towards the town or a country) shall be overcome by force of new attractions. Howard claimed that, town and country must be married and out of this joyous union will spring a new hope, a new life a new civilization (Howard 1946). The physical plan of garden city by Howard proposed an initial purchase of 6000 acres of agricultural land housing a city of 32,000 residents in an area of 1000 acres be built in the form of series of concentric circles (Figure 7).

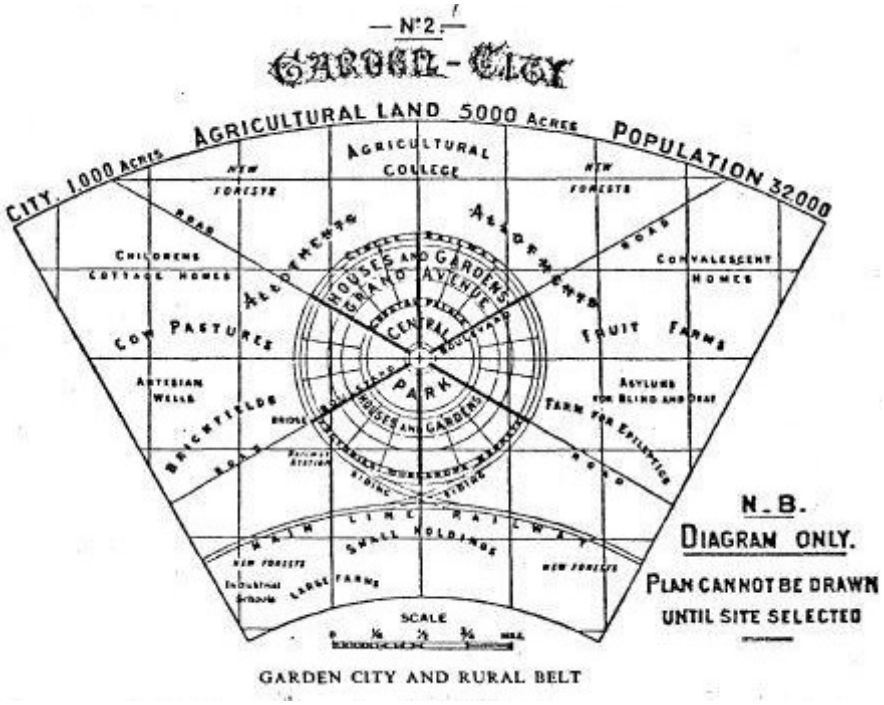

Figure 7: The concept of Garden City. Source: Howard, E. (1946). Garden cities of tomorrow. London: Faber; p. 52

As per the garden city model, all the towns industries are to be situated at the outer ring, fronting into a circular railway which surrounds the built-up area. The grouping of industries allows for the ease of trans-shipments. The next inner ring is Grand Avenue i.e. 420 feet wide. Inward is the

"Crystal palace" of glass and steel arcade containing retail shops in the town. The center of the town contains central park of 145 acres. The inner ring of public buildings contains town halls, hospital, museum, concert hall, library and theatre. Howard also dealt with the problem of economic and physical (urban) growth. As the original settlement expands to the anticipated limit of 32,000 all new growth is to be channelled beyond the agricultural belt into a second garden city (Batchelor 1969), thus creating a series of satellite cities to the central city (Figure 8).

Investing a lot of time and efforts, the garden city model was demonstrated on ground by developing Letchworth and Welwyn towns around London, although showing limited earlier success. Later, it became a popular model for setting up scores of towns in England and other parts of the world. The phrase "Garden city" has thereafter come to suggest a type of settlement distinguished by three main elements: *self-containment*, *limited size and low density*, and an *organic layout* (Gossop 2006). While these design principles can be closely related to virtues of the modern sustainability paradigm, these elements along with the idea of agricultural belt or greenbelt, and public ownership of land for planned growth inspired the modern town planning movement.

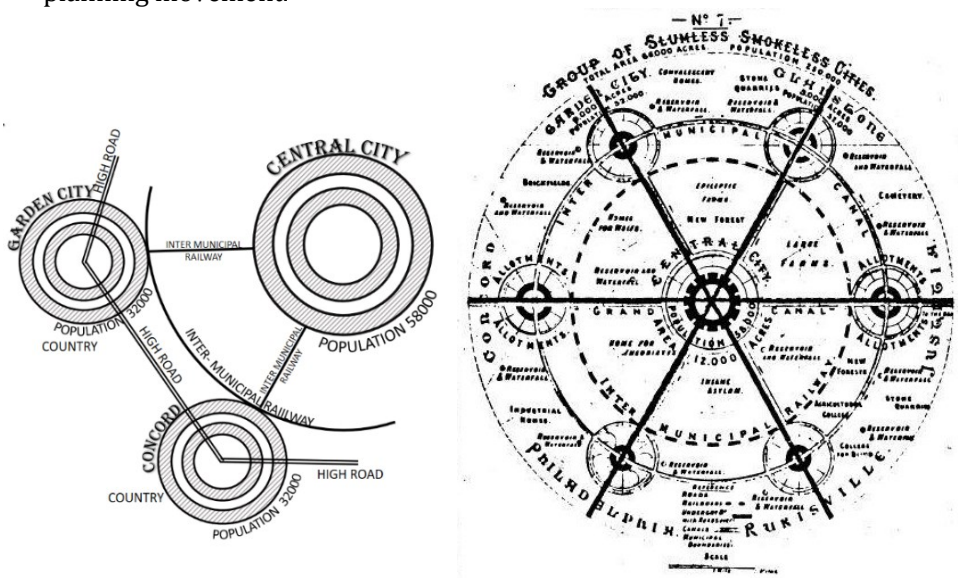

Figure 8: The group of garden cities with respect to central city. Source: Howard, E. (1946). Garden cities of tomorrow. London: Faber; p.143 and Howard, E. (1898). Tomorrow: A peaceful path to real reform, London: Swan Sonnenschein; p. 59

Biocentrism Theory (1923)

Albert Schweitzer (1875–1965), Paul Taylor (1923–2015), Peter Singer (1946–)

Proposed by the likes of Schweitzer, biocentrism is the environmental ethic that propounds all living things as having inherent value and being equal. While traditional theories deal exclusively with human beings, he applied a new depth, energy, and function arguing that animals deserve the equity that is considered for humans. For instance, exhibits in a zoo harm the animal interests as they are not supposed to be caged naturally. It limits their physical & mental growth, interaction with other species and the environment. He thus argued that we should think about what is best for the animals than just ourselves to contemplate for larger exhibit areas where human is also a part of animal habitat (BEE 2012). Similar to the 18th century utilitarian Bentham, Peter Singer attributes intrinsic value to the experience, and thus argued the interests of all sentient beings who are capable of experiencing pleasure or pain. Accordingly, non-human animals deserve the same equality of consideration that we extend to human beings, and biocentrism thus translates into (Singer 1975):

1) Membership in the species Homo sapiens is the only criterion of moral importance that includes all humans and excludes all non-humans.
2) Using membership in the species Homo sapiens as a criterion of moral importance is completely arbitrary.
3) Of the remaining criteria we might consider, only sentient is a plausible criterion of moral importance.
4) Using sentience as a criterion of moral importance entails that we extend the same basic moral consideration (i.e. basic principle of equality) to other sentient creatures that we do to human beings, and
5) Therefore, we ought to extend to animals the same equality of consideration that we extend to human beings.

Biocentrism is heavily associated with the works of Paul Taylor, who maintained that biocentrism is an *attitude of respect for nature*, whereby one attempts to make an effort to live one's life in a way that respects the welfare and inherent worth of all living creatures (Taylor 1981). He wrote 10 lessons for respecting nature. First, humans centered and life centered systems of environmental ethics, second, the good of a being and the concept of inherent worth, third, the attitude of respect for nature, fourth, the justifiably of the attitude of respect for nature, fifth, the biocentric outlook on nature, sixth, humans as members of the Earth's community of

life, seventh, the natural world as an organic system, eighth, individual organisms as teleological centers of life, ninth, denial of human superiority, and tenth, moral rights and the matter of competing claims (Taylor 1986). Therefore, humans have five priority principles which help deal with the conflicts between non-human animals and humans, and each other's values: self-defence, proportionality, minimum wrong, distributive justice, and finally restitutive justice. Later, among others, the concept calls for a fundamental rethink of the relationship between humans and nature, extending the eminence of morality from humans to all living creatures. Nature is not meant to be for human consumption, but that humans are one of the species amongst many. Being a part of one large inter-connected biosphere, any negative actions on other living systems would affect humans too, whether or not he subscribes a biocentric philosophy.

The biocentrists thus believe that all species have inherent worth and humans are not superior to others in any ethical manner. Bari (1995) summarizes the four key constituents of the theory as:

1) Humans and all other species are members of Earth's community
2) All species are part of a system of interdependence
3) All living organisms pursue their own *good* in their own ways, and
4) Human beings are not inherently superior to other living things

Biocentrism may appear to be similar to ecocentrism, but Yu & Lei (2009) argue that these are two distinct theories. Biocentrism is a kind of ethics of individualism in that it emphasizes the value, rights, and survival of individual organic beings, while ecocentrism, on the other hand, takes a more holistic approach, giving moral priority to species and ecosystems rather than the individuals that compose them.

The concept has also faced convulsions for several reasons, including: (a) a hierarchical view, that while all beings have intrinsic value, some of them (e.g., humans) have it to a greater extent (Attfield 1987), (b) it is an anti-human paradigm that will not hesitate to sacrifice human well-being for the greater good (Schiffman 2011), and (c) it emphasizes too much on the importance of individualism (Silva 2011) overlooking the significance of collective groups, such as an ecosystem. Recently, Lanza & Berman (2010), Lanza (2016) presented a revolutionary biocentrism view that life creates the universe instead of the other way around. In this paradigm, life is not just an accidental by-product of the laws of physics but forms the basis for "the theory of everything" to understand the true nature of the universe.

Ecocentrism (Early 20th Century onwards)

Aldo Leopold (1887–1948), Arne Naess (1912–2009)

This theory denotes a nature-centered, as opposed to human-centered system of values. Ecocentrism is the core of a number of environmental positions focused on protecting natural entities such as species, ecosystems and landscapes. The idea of ecocentrism was conceived by Aldo Leopold, an American wildlife conservationist based in Wisconsin in the early 20th century, recognizing that all species, including humans, are the product of a long evolutionary process and are inter-related in their life processes (Lindenmayer & Burgman 2005). In fact, both human and non-human nature (living and non-living) possess the same existential value. It thus goes beyond biocentrism with its fixation on organisms (Figure 9), for in the ecocentric view people are inseparable from the inorganic/organic nature that encapsulates them (Rowe 1994).

In fact, Ecocentrism can be seen as one stream of thought within environmentalism, the political and ethical movement that seeks to protect and improve the quality of the natural environment from harmful human activities. The term also finds expression in the first principle of the Deep ecology movement formulated by the Norwegian philosopher Arne Naess, and American environmentalist George Sessions in 1972 which pitched ecocentrism as the most difficult opponent for anthropocentrism (Naess & Sessions 1984). It is a worldview that recognizes intrinsic value in ecosystems and the biological and physical elements that they comprise, as well as in the ecological processes that spatially and temporally connect them (Gray et al. 2018), reasoning that human needs, like the needs of other species, are secondary to those of the Earth as the sum of its ecosystems.

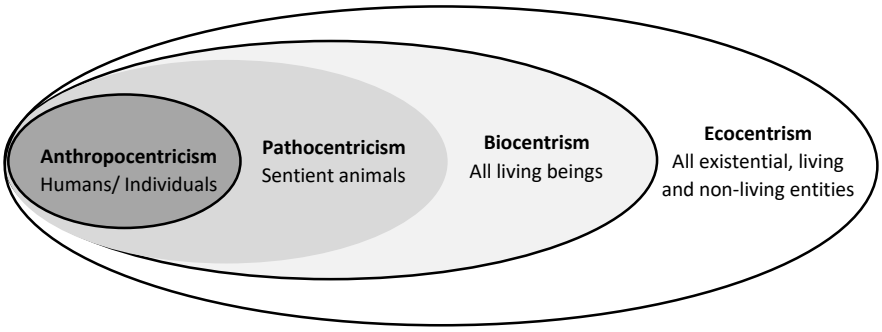

Figure 9: The ecocentrism worldview considers all ecosystem entities

Neighborhood Unit (1929)

William E. Drummond (1876–1948), Clarence A Perry (1872–1944)

How can natural feature like human's walking distance influence socialization and communes in cities? The idea of the neighbourhood unit originated from the prevailing social and intellectual attitudes of the early 1900s, mainly formulated during Chicago's reformist and progressive milieu the architect William E. Drummond. His theory and terminology were widely exhibited and published during the years 1913–22 (Johnson 2002). In 1929, Clarence A. Perry synthesized the concept into a residential planning model for 1920 New York Regional Plan. He also built the concept on one of his earlier ideas to provide a planning formula for the arrangement and distribution of playgrounds in the New York region to counter the rise of the auto-mobile in the early 20th century (Perry 1929). Perry augmented this as a framework to design self-contained, functional and desirable neighbourhoods that segregates pedestrian and motor-based activities and making basic community services accessible on foot. His scheme provided an ideal layout and specific guidelines for spatial arrangement of streets, community facilities and other businesses within a neighbourhood. Perry defines the neighbourhood as a component of a town and defines its size based upon a five-minute walking radius (Figure 10). The radius is measured from the center, and it holds cultural uses, mainly a school. A five-minutes walking distance is about one-quarter to one-half mile, that is reachable without crossing a major arterial street.

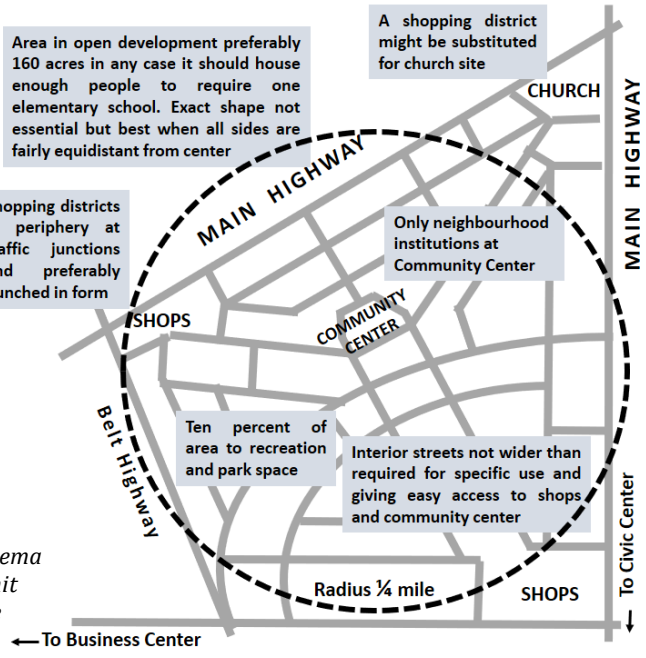

Figure 10: The broad schema of the Neighbourhood Unit within a radius of ¼ mile

The size the neighbourhood to sufficiently support a school, between 5,000 and 9,000 residents, approximately 160 acres at a density of ten units per acre. Implement a wider use of the school facilities for neighbourhood meetings and activities, constructing a large play area around the building for use by the entire community (TCRPC 2004). The other key functional principles (Perry 1929) include: Placing arterial streets along the perimeter so that they define the neighbourhood and eliminate through-traffic into it. The internal streets are designed based on functional hierarchy, using curvilinear street-design for both safety and aesthetic purposes. The local shopping areas are to be restricted the perimeter or perhaps to the main entrance of the neighbourhood, thus discouraging non-destined traffics to disturb the neighbourhood. In addition, at least 10 % of the neighbourhood land area is to be designated for parks and open space, creating places for play and community interaction.

Clarence Stein expanded the definition of neighbourhood center in 1942 by connecting the neighbourhoods together to create towns (TCRPC 2004). Over the time, the concept not just acted as a tool to urban designers and planners in articulating the city into smaller planning units but also evolved to give a distinguished identity to the neighbourhoods. It meant to foster the residents' association with the immediate environment, improve social cohesion and avoid inequity and exclusion. It thus continues to find application in both practice and furthering to support several urban theories like that on the New Urbanism.

In the late 1940s, the concept was acutely criticized for its physical determinism (Lloyd Lawhon 2009). Reginald Isaacs critical opinion of the neighbourhood unit centered on its (mis)use as an instrument for the segregation of racial, ethnic, religious and economic groups by private developers willing to utilize the gated-community aspects of the neighbourhood units physical design for this purpose (Banerjee 2013). It also provided fuel for today's suburbanization and road classification system. Certain false interpretations of Perry's concept have conceived segregation of land uses, further validating the modern-day road classification system and unfortunately created an auto-centric society in today's first ring and outward suburban communities (EV Studio 2019). Following. Isaac, planners began to argue its emphasis on the physical environment as the sole determinant of wellbeing and how its indiscriminate use could promote social exclusion.

Probabilism & Cultural Ecology (1957)

Oskar Spate (1911–2000), Julian Steward (1902–1972)

Environmental probabilism is the notion that a given environment can be modified in numerous probable ways through reasonable interventions to attain a specific purpose, as opposed to environmental determinism. It is thus a careful extension of the environmental possibilism theory. The term was coined by O. H. K. Spate (1957) as a compromise between the warring schools of environmental determinism and possibilism. Determinists thought that the natural environment determined the human response, while possibilists thought that the environment gave people a number of possibilities, each of which could be followed by different groups of people. Spate's probabilism admitted that people had freedom of choice but argued that the choice was highly constrained, and that the environment made some human responses more probable than others. It was an attempt to resolve a debate which geographers had argued over for most of the twentieth century, but it came at a time when the controversy was dying down, as geography switched from debating how the environment affected people to studying how people affected the environment (Flowerdew 2009).

According to Spate, human action was represented as not so much a matter of all-or-nothing choice or compulsion, but a balance of probabilities (Spate 1957). After this concept, the probability theory came to be regarded as an essential component of geographical analysis since it provided a common mode of discourse for *scientific study of the landscape*. This view, in fact, is perfectly compatible with the original Vidalian conception (Lukermann 1964). The geographers started to use the probability theory to determine the man and environment relationship and also to make a scientific study of the landscape (House 1966). The American anthropologist Julian Steward (1902–1972) studied this as cultural ecology, as the ways in which culture change is induced by adaptation to the environment (Steward 1972). This considered that although environment can influence the character of human adaptation, it does not determine it solely. While environmental determinism and possibilism treated environment and culture as separate entities and attributed correlations, probabilism through cultural ecology treated both as an integrated system, a continuous evolution of a society with its environment, through technologies, practices, and knowledge that allow people to sustain. Whereas a conventional study of human culture in an area would argue,

"how does the environment affect culture"? but the probabilism school of thought would ask, "in what ways does human kind adapt to its environment"? It would study functional behaviour of how groups (rather than individuals) utilize or manage environment resources and while doing so how their lifestyles affect their non-material culture.

The probability theory was criticized on several grounds. For example, a complete knowledge about the environment (resources) may not be available; the data available about the resources and their utilization may not be reliable; the perception about resources (environment) differs from man to man, community to community, region to region and country to country. The application of probability model, owing to these constraints, may be difficult and the results thus obtained may not be authentic, close to the ground reality (Anonymous 2020). Similarly, cultural ecology though advanced human-environmental understanding has been criticized for several reasons. Milton (1996) argues that while Steward denounced the deterministic model for being too general and offering no understanding of how specific cultures related to their local environments, Steward's own cultural ecology model merely reproduced environmental determinism albeit at a more precise level. Despite the emphasis of cultural ecology on a more interactive relationship between people and their environment, the process of *linear causality* retained its dominance.

Environmentalism & Green Theory (1962 onwards)

Rachel Carson (1907–1964), Stephen D. Krasner (1942–)

Environmentalism is a movement that seeks to improve and protect the quality of the natural environment through changes to environmentally harmful human activities; through the adoption of forms of political, economic, and social organization considered necessary for, or at least conducive to, the benign treatment of the environment by humans; and through a reassessment of humanity's relationship with nature (Elliott 2020). Through methods of lobbying, activism, and education, the school of thought advocates that the natural environment and non-human living beings are deserving of attention in politics, development and decision making. Environmentalism is associated with the founding of many green political parties and being represented by the colour green (Lincoln 2009), but this association has been mis-appropriated by several industries for the tactic known as *greenwashing*. An environmentalist is a

person who is concerned about the natural environment and the sustainable management of its resources through changes in public policy or individual behaviour. It could include advocacy and action towards nature conservation, judicious resource consumption, energy efficiency, lesser ecological footprints through appropriate regulatory, market and voluntary mechanisms. The movement is largely centered around ecology, health, and human rights and mobilized by grassroots activism, protests and pro-active role of environmental organisations and academia.

Environmentalism has been a recurring thought in the world history. It can be traced to Hindu scriptures—Vedas, Upanishads (Renugadevi 2012) and Jainism, advocating on symbiosis between all living beings and the five elements: earth, water, air, fire, and space form the basis of environmental sciences today (Long 2013). The modern conception of environmentalism developed during the mid-20th century. It evolved and diverged into a complex network of ideas and behaviours, attempts to portray the historical development of environmentalism to the present day allowing the interpretation of shifting patterns in policy and action (Fieldson 2004). There are two broad intellectual underpinnings: those viewed as human-centred or anthropocentric in approach and others are life-centred or simply biocentric. In certain other terminologies, these are described as "shallow" ecology versus "deep" ecology and as "technocentrism" versus "ecocentrism". For example, the North American environmentalism has traditionally highlighted the intrinsic, experiential, and recreational value of nature for humans (an ecocentric view). In Europe, where high population density and industrialization largely preceded the rise of environmentalism, efforts have focused more on managing industrial pollution and waste, protecting human health from toxics and nuclear risks, and energy efficiency (technocentric perspective).

Elliott (2020) argues that the division between anthropocentric and biocentric approaches played a central role in the development of environmental thought in the late 20th century. Whereas some earlier schools, like apocalyptic (survivalist) environmentalism and emancipatory environmentalism as well as its offshoot, human-welfare ecology were animated primarily by a concern for human well-being, later movements, including social ecology, deep ecology, the animal-rights and animal-liberation movements, and ecofeminism, were centrally concerned with the moral worth of nonhuman nature. The rise in ecological problems globally

from the 1970s onwards, primarily focused on the management of common resources such as the rivers, oceans, atmosphere and later global warming saw the emergence with international environmental cooperation. It was not until the late 1980s that a distinctly "green" social and political theory emerged to give voice to interrelated concerns of the new social movements (environment, peace, anti-nuclear, women's) that have shaped green politics. These movements also spearheaded the formation of a wave of new green parties in the 1980s at the local, national, and regional level (most prominently in Europe), based on the "four pillars" of green politics: ecological responsibility, social justice, nonviolence, and grass-roots democracy. These pillars have provided a common platform for new green party formations around the world; including in Africa, Latin America, and Asia (Eckersley 2006).

Green theorists reject the idea that humans are the top of evolution, the centre of value and meaning in the world and the only beings that possess moral worth. Many green theorists have embraced a new ecology-centred (eco-centric) philosophy that seeks to respect all life forms in terms of their own distinctive models of being and not merely for their influential value to human. While the term "green" is often noted to refer environmental concerns, by the early 1990s green political theory had gained recognition as a new political tradition of inquiry that emerged as an ambitious challenger of two political traditions that have decisive influence on twentieth-century politics—liberalism and socialism (Eckersley 2006). Like liberalism and socialism, green political theory has a normative branch concerned with questions of justice, rights, democracy, citizenship, the state, and the environment (Talshir 2004), and a political economy branch concerned with understanding the relationship between the state, the economy and the environment.

Tragedy of Commons (1968)

William Forster Lloyd (1794–1852), Garrett Hardin (1915–2003)

The concept was introduced by the economist William Forster Lloyd in an 1833 essay, hypothesizing the effects of unregulated grazing on the commons i.e. the common land on the British Isles. He argued that each herdsman was guided by self-interest to introduce another animal to the prevailing stock. A similar behaviour by other herdsmen, in the long-run leads to overgrazing, deterioration of soil and degradation of the commons.

The theory gained popularity when the human ecologist Garrett Hardin extended the interpretation of commons to sharing of other unregulated resources such as atmosphere, oceans, rivers or agricultural lands, in his *Science* article (Hardin 1968). He theorized on the population problem, rejecting the wild hope that improved food production technology will allow an indefinite increase in population: *a finite world can support only a finite population*. Hardin put forward a view that biophysically, *both* the population and material quality of life cannot be mathematically maximized at once; thus invalidating Jeremy Bentham's goal of *the greatest good for the greatest number*. Thus, according to this logic, the strategy of decreasing the population by increasing the *standard of living* (and consumption), as predicted by the demographic transition model should be re-examined.

Hardin argued that feeding greater population is not merely a problem of technology, but more pertaining to human values or ideas of morality, as it demands a choice of individuals of availing personal benefit at the expense of the common goods. A self-interested rational actor would decide to increase his or her exploitation of the resource since he or she receives the full benefit of the increase, but the costs are spread among all users. An extension of the herdsman to world population is that each couple expects to experience a large benefit from having another child, but only a little of the full social and ecological cost, thus using the metaphor, the Tragedy of the Commons (ToC). The theoretical formulation and key assumptions include: (1) The world is biophysically finite, (2) Over-population is an example of the ToC, (3) The "commons" system for breeding must be abandoned, as it has been for other resources, and (4) The problem is then to gain peoples' consent to a system of coercion.

Hardin's basic solution is that we must abandon the commons system in breeding (as we have already in food production and pollution- instances where we have used privatization and laws to achieve this). He rejects appeals to conscience, because they would *select for* those without scruples over having more children. It is doubtful however that conscience is entirely genetic, nor perfectly transmitted by learning in families. But people's motivations to have babies are not the same everywhere and at every time. They vary depending on economic circumstances, culture, and gender. Understanding and altering these conditions is another route to changing fertility decisions. Blunt forms or coercion such as China's one-child policy are likely to have negative unintended consequences.

It is articulated that Hardin's work was also criticized (Dasgupta 2001) as historically inaccurate in failing to account for the demographic transition, and for failing to distinguish between common property and open access resources (Ciriacy-Wantrup et al. 1975, Cox 1985). Despite the criticisms, ToC has been instrumental in analysing behaviour in the fields of economics, evolutionary psychology, anthropology, game theory, politics, taxation, management and sociology, to explain problems associate with natural resource management, sustainable development and climate change.

Deep Ecology Movement / Ecosophy (1972)

Arne Naess (1912–2009)

Introduced by the Norwegian philosopher and mountaineer Arne Naess in 1972, Deep ecology or Ecosophy is a highly eco-centric movement promoting social responsibility, ecological and cultural diversity in the belief that the living environment as a whole should be respected and regarded as having certain basic moral and legal rights to live and flourish, independent of its instrumental benefits for human use. Inspired by Gandhi's thought of non-violence, the Himalayan Sherpas friendliness towards nature and fellow beings and Carson's book *The Silent Spring* (1962), Naess erected this philosophy advocating how human well-being depends on the condition of whole biotic communities. He argues how economic growth and increased consumption are prioritized over the environment and our society, and stresses the need for extensive changes in values and practices, especially in industrial nations (Naess 1973).

The word "deep" in part referred to the level of questioning of our purposes and values when arguing in environmental conflicts. While the short-term, shallow approach stops before the ultimate level of fundamental change, often promoting technological fixes (e.g. recycling, increased automotive efficiency, export-driven monocultural organic agriculture) based on the same consumption-oriented values and methods of the industrial economy. The long-range deep approach involves redesigning our whole systems based on values and methods that truly preserve the ecological and cultural diversity of natural systems (Drengson 2012). It is further argued that Naess used cross-cultural approach in characterizing grass-roots movements via platform principles that can be supported from a diversity of cultures, worldviews and personal philosophies. Naess made the Apron Diagram (Figure 11) that uses four levels of discourse to analyze social-

political movements, which are: ultimate values in life philosophies, platform principles, policy formulations and specific actions. The concept of deep ecology has been summarized through the following eight points (Devall & Sessions 1985):

1. All living beings have intrinsic value.
2. The diversity and richness of life has intrinsic value.
3. Except to satisfy vital human needs, humankind does not have a right to reduce this diversity and richness.
4. It would be better for human beings if there were fewer of them, and much better for other living creatures.
5. Today the extent and nature of human interference in the various ecosystems is not sustainable, and lack of sustainability is rising.
6. Decisive improvement requires considerable change: social, economic, technological and ideological.
7. An ideological change would essentially entail seeking a better quality of life rather than a raised standard of living.
8. Those who accept aforementioned points are responsible for trying to contribute directly/indirectly to realization of necessary changes.

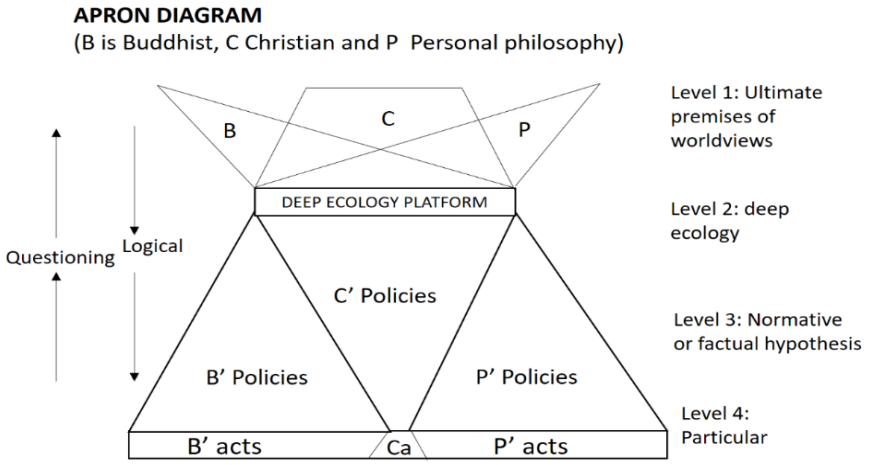

Figure 11: The Apron Diagram is often used to demonstrate Deep Ecology

Deep ecology distinguishes itself from other environmentalism types by making broader and more basic philosophical claims about metaphysics, epistemology, and social justice (Madsen 2016). Further, according to deep

ecology, the self should be understood as deeply connected with and as part of nature, not disassociated from it. Deep ecologists often call that conception of human nature the "ecological self" and it represents humans acting and being in harmony with nature, not opposite to it. According to Naess, when the ecological self is realized, it will recognize and abide by norms of an environmental ethic that will end abuses of nature that typify the traditional self, which is trapped in anthropocentric attitudes. Moreover, the ecological self will practice a "biocentric egalitarianism" in which natural entity is held as being inherently equal to every other entity.

Sustainability (1972)

Edward Goldsmith (1928–2009), Robert Allen (1942–), Herman Daly (1938–), Dennis Pirages (1942–2020), Lester Brown (1934–)

Sustainability has now become quite popular, manifested through concepts like sustainable development, environmental sustainability, economic sustainability used by institutions, governments and businesses. It is derived from the Latin *sustinere* (*tenere*, to hold; *sub*, under). *Sustain* can mean "maintain", "support", "uphold" or "endure" (Onions 1964) and started appearing for the first time in the Oxford English Dictionary during the second half of the 20th century, though the equivalent terms in French (*durabilite´* and *durable*), German (Nachhaltigkeit, literally meaning *lastingness* and *nachhaltig*) and Dutch (*duurzaamheid* and *duurzaam*) have been used for centuries (Van Zon 2002: 20, 21, 22). From the 1960s hair-raising scientific information about the damage caused to the natural environment by human activities was captured in books such as Rachel Carson's *The Silent Spring* (1962), Paul Ehrlich's *The population bomb* (1968) and the Earth Day celebrated for the first time in 1970 (Pisani 2006). This was followed by two major publications *Blueprint for Survival* and *Limits to Growth* (Aluchna 2017), famously known as the Report for the Club of Rome, along with the United Nations Conference on the Human Environment, 1972.

A deep-ecologist and systems-theorist, Goldsmith (1972) alludes condition of a stable society, "one that to all intents and purposes can be sustained indefinitely while giving optimum satisfaction to its members" as minimal ecological disruption, conservation of energy and materials, zero population growth, and sense of individual freedom. Later scientists extended the concept of sustainability into economics and the society,

essentially as a pre-condition for human being's perpetual existence on the earth, that can be promoted by zero population growth and what he terms a "steady state" economy in which consumption is reduced and more equally distributed (Daly 1973). The design for a sustainable society includes taking into account the physical and social limits to economic growth, outlining sustainable preferred futures as positive visions, developing strategies to reach these futures, and implementing these strategies (Pirages 1977). He discusses a concept of sustainable growth, which is an economic growth that can be supported by physical and social environments for the forseeable future, specifically supported by available sources of energy.

Brown (1981) perceives a vivid idea of a sustainable society as: an enduring one, self-reliant and less vulnerable to external forces and identifies its basis in harvest regulation, renewable and efficient energy use, soil and water conservation, and a stationary, dispersed population with less affluent lifestyles. For governments, institutions, corporates, social-groups, sustainability became popular with the Brundtland Report, *Our Common Future* (United Nations 1987). Here, it was outlined as a guiding principle for development, as in *Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of* the future (WCED 1987). It can be thought of in terms of three dimensions, spheres, or pillars, i.e. the environment, the economy and society (Passet 1995), later expanded by some to include a fourth pillar of culture, institutions or governance (United Nations 2014).

What becomes obvious in this formulation is that sustainability has a particular temporality: it is a future-oriented model that is to take effect in the present. It stands as a societal goal that aspires to enable a common future hinging on today's equilibrium between the consumption of resources and their conservation. The term sustainability should be viewed as humanity's target goal of human-ecosystem equilibrium (homeostasis), while sustainable development refers to the holistic approach and temporal processes that lead us to the end point of sustainability (Shaker 2015). Despite the increased popularity of the use of the term "sustainability", the possibility that human societies will achieve environmental sustainability has been, and continues to be, questioned—in light of environmental degradation, climate change, overconsumption, population growth and societies' pursuit of indefinite economic growth in a closed system (Starke 2013, Lorek & Fuchs 2013). In

part because the concept itself has been evolving with related or altered ideations on *transition management* (Kemp & Loorbach 2003), *adaptive governance* (Folke 2007, Heuer 2011), *earth systems governance* (Reid et al. 2010, Biermann et al. 2012), *resilience* (Fiksel 2006, Redman 2014) and *circles of sustainability* (Paul & Liam 2016).

Ecocities (1975)

Richard Register (1943–)

The ecocity concept originated from the ideas and works of Richard Register in Berkeley, California in 1975. He established the group of "Urban Ecology" that aimed towards rebalancing human settlements with the nature, working with the public, the city authorities and private businesses. They were engaged in tree plantations, erecting solar greenhouses, promoting the adoption of public transport and other pro-environment policies in urban management.

In 1987, the group created a journal by the name of Urban Ecologist. An Ecocity is a human settlement modelled on the self-sustaining resilient structure and function of natural ecosystems. It provides healthy abundance to its inhabitants without consuming more (renewable) resources than it produces, without producing more waste than it can assimilate, and without being toxic to itself or neighbouring ecosystems. Its inhabitants' ecological impact reflects planetary supportive lifestyles; its social order reflects fundamental principles of fairness, justice and reasonable equity (Ecocity Builders 2020). The World Bank defines eco-cities as "cities that enhance the well-being of citizens and society through integrated urban planning and management that harness the benefits of ecological systems and protect and nurture these assets for future generations" (Suzuki 2010).

According to Ecocity Builders, an ecocity is simply an ecologically healthy city. And because each city is unique, there is no one-size-fits-all ecocity model or just one way to get there from the current situation. However, certain important criteria that describe an ecocity include (Roseland 1997, Harvey 2011):

- It operates on a self-contained economy, resources needed are found locally
- Has completely carbon-neutral and renewable energy production

- Has a well-planned city layout and public transportation system that makes the priority methods of transportation as follows possible: walking first, then cycling, and then public transportation
- Resource conservation—maximizing efficiency of water and energy resources, constructing a waste management system that can recycle waste and reuse it, creating a zero-waste system
- Restores environmentally damaged urban areas
- Ensures decent and affordable housing for all socio-economic and ethnic groups and improve jobs opportunities for disadvantaged groups, such as women, minorities, and the disabled
- Supports local agriculture and produce
- Promotes voluntary simplicity in lifestyle choices, decreasing material consumption, and increasing awareness of environmental and sustainability issues

The examples of developing eco cities are Adelaide, Stockholm, Freiburg, Curitiba and Auroville. In the last three decades, the Ecocity Builders organized several international conferences on this theme and registered and influenced several cities to become eco-cities. To evaluate the performance of ecocities, they collaborated with the British Columbia Institute of Technology to formulate *Ecocity Framework and Standards Initiative (EFSI).* The EFSI makes an assessment of 18 standards under four key pillars including 4 urban design, 6 bio-geo physical features, 5 socio-cultural features, and 3 ecological imperatives (Ecocity Standards 2020). It has rated about 200 eco-city initiatives at different stages of planning and implementation around the world.

The ecocities movement has also received its share of criticism, essentially highlighting the theory-practice gaps (Saiu 2017, Joss et al 2013). The three most notable being:
(1) When it comes to implementation, ecocity turns out to be a business with over-dependence on funding of projects by techno-centric companies,
(2) The urban complexities are over-simplified to quantifiable aspects (in resource efficiency) and neglecting socio-political aspects, and
(3) The pursuit of living in a perfect city makes facilities (mostly technologically dependent) costly for its inhabitants.

Ecological Systems Theory (1979)

Urie Bronfenbrenner (1917–2005)

Influenced by the psychologists Lev Vygotsky and Kurt Lewin, an American psychologist known as Urie Bronfenbrenner conceived a theory of human development namely *Ecological Systems Theory* (also called development in context or human ecology theory). He revisited Kurt Lewin's classical field theory *human behaviour formula* which states B = f (PE), where behaviour (B) is the result (f) of interaction between person (P) and environment (E). He modified it into D = f (PE), where developing (D) is the result (f) of interaction between person (P) and environment (E). But because development means change, a process, and it takes place in time therefore Dt = f (t-p) (PE) (t-p), where ´t´ is time under which the result of development (D) is observed and ´t-p´ is the period or periods in the course of which the powers that are related to person and environment act together, leading in the course of time to a result that is observed at a certain moment of time. According to Bronfenbrenner, development and socialization is influenced by the different width rounds or circles of the environment with which a person is in active inter-relation (Figure 12). This includes three significant assumptions: (1) a person is an active player, exerting influence on his/her environment, (2) environment is compelling a person to adapt to its conditions and restrictions, and (3) the environment is understood to consist of different size entities that are placed one inside another, of their reciprocal relationships and of micro-, meso-, exo- and macrosystems. The theory clearly identifies five key environmental systems that can possibly affect a child's development, starting from the people and institutions surrounding the individual to nationwide cultural forces, as follows (Bronfenbrenner 1979):

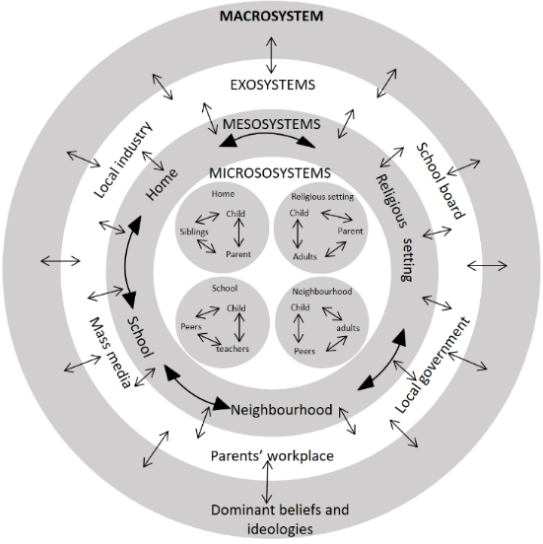

Figure 12: Bronfenbrenner's ecological systems theory

1. **Microsystem:** Refers to institutions that offer immediate, direct and face-to-face interaction in child's development i.e. family, school, religious institutions, neighbourhoods and peers. At this level, relationships have impact in two cardinals, both away from the child and toward the child. For example, a child's parents may affect his beliefs and behaviour; however, the child also affects the behaviour and beliefs of the parent. These bi-directional influences occur among all levels of environment.

2. **Mesosystem:** This layer provides the connection between the structures of the child's microsystem, like the connection between the child's teacher and his parents, between his church and his neighbourhood, etc.

3. **Exosystem:** This layer defines the larger social system in which the child does not function directly, but the structures impact child development by interacting with the microsystem. For e.g. industry, social services, local politics, mass media. Parent workplace schedules is an example, where a child may not be directly involved but feels the positive or negative force involved with the interaction with his own system

4. **Macrosystem:** It involves all aspects and changes with a generation. This layer may be considered the outermost layer in the child's environment. While not being a specific framework, this layer is comprised of cultural values, customs, and laws. For instance, if it is the belief of the culture that parents should be solely responsible for raising their children, that culture is less likely to provide resources to help parents. This, in turn, affects the structures in which the parents function. The parents' ability or inability to carry out that responsibility toward their child within the context of the child's microsystem is likewise affected

5. **Chronosystem:** Bronfenbrenner later accounted for the influence of time, such as specific events and changes in culture over time, by adding the chronosystem to the theory (Berger 2012). The chronosystem is a description of the evolution, development or stream of development of the external systems in time. Elements within this system can be either external, such as the timing of a parent's death, or internal, such as the physiological changes that occur with the aging of a child. As children get older, they may react differently to environmental changes and may be more capable to determine how that change will influence them (Bronfenbrenner 1989). According to Ceci (2006), in order to recognize the importance of biological processes in development, Bronfenbrenner eventually renamed his theory the *bioecological model.*

New Urbanism (Early 1980s)

Andres Duany (1949–), Elizabeth Plater-Zyberk (1950–)

New Urbanism is a planning and development approach which promotes environmentally friendly habits by creating lively and walkable neighbourhoods through a wide range of housing and job opportunities located in vicinity, accessible community spaces and a human-scaled design (Congress for the New Urbanism 2020). The Charter of New Urbanism advocates the restructuring of public policy and development practices to support the following principles: neighbourhoods should be diverse in use and population; communities should be designed for the pedestrian and transit as well as the car; cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions; urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice.

The design for Seaside, Florida by Architects Andres Duany and Elizabeth Plater-Zyberk, in 1980 is considered as the prototype for this movement. Their approach at first was known as developing *traditional neighbourhood units* (acronym TND) which is used in recreating living units, restructuring malls and suburban environments. The main unit is a 40–200 acres neighbourhood with key community facilities planned within 1/4 mile of houses, such that local parks are within a walk of 3 minutes and square or central mutual space within 5 minutes. In addition, the design of each neighbourhood contains various income groups and residential types (Davis et al. 2002). The main principles of new urbanism are as following (Michigan Land Use Institute 2006):

1. **Walkability:** Most needs are within a 10-minute walk of home and work. Street design is friendly to pedestrians, because buildings are close to the street and have porches, windows, and doors. Streets have lots of trees and on-street parking, with parking lots and garages placed behind buildings and houses, often connected to alleys. Streets are narrow, which slows traffic dramatically.
2. **Connectivity:** An interconnected street grid disperses traffic and encourages walking.
3. **Mixed-Use and Diversity:** Neighborhoods, blocks, and buildings offer a mix of shops, offices, apartments, and homes. The neighbourhoods welcome people of all ages, income levels, cultures, and races.

4. **Mixed Housing:** Zoning allows the close proximity of a wide range of housing types, sizes, and prices.
5. **Quality Architecture and Urban Design:** Buildings emphasize beauty, aesthetics, and comfort and establish a sense of place; public spaces function as civic art, establishing an attractive, quality public realm.
6. **Traditional Neighbourhood Structure:** Neighbourhoods have definite centres and edges, with public spaces near the centre. It contains a range of uses and densities within a 10-minute walk.
7. **Increased Density:** Buildings, residences, shops, and services are close together to make walking more convenient, services and resources more efficient, and living areas more enjoyable.
8. **Smart Transportation:** A network of high-quality public transit connects cities, towns, and neighbourhoods, while pedestrian-friendly design encourages more use of bicycles, rollerblades, scooters, and walking as daily transportation.
9. **Sustainability:** The community uses respect for natural systems and eco-friendly technologies like energy efficiency to minimize effects on the environment. The community connects strongly with surrounding farmland, encouraging land preservation and local food consumption.
10. **Quality of Life:** These principles produce a life that is well worth living by providing places that enrich, uplift, and inspire the human spirit. The New Urbanism principles are based on time-tested and qualitative patterns of community living in urban settlements. This approach considers for greater interaction with the nature and amongst people (Steuteville 2004) and has been used extensively in rejuvenating the American & European towns.

    Lately, terms like Walkable Urbanism, Placemaking, Transit-Oriented Development, Liveable Communities and even Smart Growth have also been used to present its basic tenants. In spite of the obvious merits, the movement has also drawn criticism for creating a marketable but fraudulent imagery of a nostalgic past (Marshall 1999), lesser exclusion of cars and user participation in public design (Salingaros & Mena-Quintero 2010) and over-assertion of universal or standard principles of design than local ones (Grant 2005). Essentially, all the criticism is on account of faulty implementation than finding drawbacks in the theoretical construct.

Healthy City Movement (1984)

Trevor Hancock (1948–), Leonard Duhl (1926–2019), Ilona Kickbusch (1948–)

Driven by the growing awareness of the need for *healthy public policy*, the Healthy Cities movement originated in Toronto with the conference *Beyond Health Care* in 1984 initiated by Trevor Hancock and Leonard Duhl. Ilona Kickbusch from the European Regional Office for the World Health Organization (WHO) attended the conference and then convened a group to discuss a European Healthy Cities project (Hancock 1993). A healthy city is one that is continually creating and improving those physical and social environments and expanding community resources which enable people to mutually support each other in performing all the functions of life and developing to their maximum potential (Hancock & Duhl 1988, WHO 1998).

The European Regional Office for the WHO considers that a healthy city is defined by a process, not an outcome. A healthy city is not one that has achieved a particular health status, but is conscious of health and striving to improve it. Thus any city can be a healthy city, regardless of its current health status. The key requirements are: a commitment to health and a process and structure to achieve it. The approach seeks to put health high on the political and social agenda of cities and to build a strong movement for public health at the local level. It strongly emphasizes equity, participatory governance and solidarity, inter-sectoral collaboration and action to address the determinants of health (WHO 2020). From 1988–2018, continuing through five-year phase projects, the WHO European Healthy Cities Network has brought together some 100 flagship cities and approximately 30 national networks that cover some 1400 municipalities.

The Alliance for Healthy Cities (AFHC), a network repository for Healthy Cities reports and data, sharing experiences and raising public awareness has grown to more than 174 cities and 45 associate members as of database 2015 (AFHC 2020). Healthy Cities movement at its core, as Kenzer (1999) points out, is about the connection between urban living conditions and health. The central ideas behind the movement are that cities provide a good setting in which to develop action strategies to promote health and are centres for human action; and that the city has an unmatched potential for producing healthy human beings when attention is paid to the values of those living within the city.

Ecological Modernization (1985)

Joseph Huber (1948–), Martin Janicke (1937–)

Ecological modernization emerged from the ideas of Joseph Huber and Martin Janicke in Germany followed by scholars in the Netherlands and Great Britain in the early 1980s arguing that key functionaries of modern society can be transformed in order to avoid ecological crisis. Huber (1982) argued the need for an "ecological switchover"—a transition of industrial society towards an ecologically rational organization of production, based upon the theory of a changed relationship between the economy and ecology.

The ecological switchover includes (Gibbs & Rx 1998): (1) The restructuring of production and consumption towards ecological goals. This involves the development and diffusion of clean technologies; (2) "Economising ecology" by placing an economic value on nature and introducing structural tax reform; (3) Integrating environmental policy goals into other policy areas, and (4) Ecological modernization is further characterized by Christoff (1996) into two parts: *Weak ecological modernization* (technocratic solutions, corporatist styles of policy making by scientific, economic and political elites restricted to developed nations) and *Strong ecological modernization* that involves broad changes to institutions, economic structures incorporating ecological concerns through open, democratic and participatory decision making, which is concerned about international dimensions of the environment and development.

This concept is associated with introduction of eco-efficient innovations, environmental-friendly or cleaner technologies, sustainable practices to enhance efficiency in the use of materials, resources, energy, transportation, space, and products. Jänicke (2008) describes it as a technology-based approach, incremental or radical, essentially driven by (1) the role of a "smart" government regulation, and (2) increasing business risks in pollution in the context of multi-level environmental management. Ecological modernization overlaps with several other concepts like the shallow ecology movement (Gibbs & Rx 1998), industrial metabolism (Ayres and Simonis 1994), industrial ecology (Ayres et al. 1994), and sustainable development- the possibility of overcoming environmental crises without leaving the path of modernization (Mol and Spaargaren, 1993). The scope of the theory is open to understanding, the extent and the manner it accommodates ecological modernization of societal values, attitudes, lifestyles and behaviour, in addition to the policy and market economy. Nonetheless, there is a

consensus amongst scholars that ecological modernization will have to result in innovative structural change. The theory is criticized on account of its assumption, applicability, and promoting a system for *green washing.* Ecological modernization predicates "sustainable growth", that involves consumption of nature-based and human resources from ecosystems and societies, which are in fact diminishing at a rate exceeding their replenishing rates. In terms of application, Fisher and Freudenburg (2001) noted that the theory is fundamentally relevant to industrialized nations with limited global efficacy. It would lead to further environmental degradation as it does nothing to alter the capitalist impulses of economic production and self-regulation (Foster 2002, York & Rosa 2003). Also there is criticism of the approach, it being industry or supply-driven that does little to address groups that face greater environmental burdens (pollution), exclusion to environmental benefits (like parks), and social injustice (joblessness).

Technocentrism (1988)

Seymour Papert (1928–2016), Martin Janicke (1937–)

Technocentrism is widely understood as a system of values that is based on the use of technology and its ability to regulate the environment. Technocentrism has absolute faith in technology and industry and firmly believes that through these humans can exert control over the nature. Although technocentrism may accept that environmental problems exist, they do not see them as problems to be solved by a reduction in industry (production). Rather, environmental problems are seen as problems to be solved using science and technology. They also believe in scientific research. (LinusWealth 2019). Technocentrism is often pitted against egocentrism, although etymologically associated with it too. While technocentric concept was already into existence, Seymour Papert is believed to have popularised "technocentrism" from Piaget's use of the word egocentrism, and suggesting that technocentrism is the fallacy of referring all questions to the technology (Papert 1988). It soon became a brand for views that position the locus of all concerns in human being's technical and technological capabilities.

While technocentrists find explanations to ill-effects of human technologies in further innovations and technical fixes; the ecocentrists view this approach to be a symbol of hubris. Technocentrism sees the way forward for both developed and developing countries, and the solutions to environmental problems, as embedded in scientific and technological

advancement. For example, Julian Simon, an American professor argued that human beings are the ultimate resource, so the more they are, the better the chances for solving the world's problems, including environmental challenges. The concept became an instant hit with corporates and business community giving way to ecopreneurship models in 1990s and Sustainopreneurship in mid-2000s in business administration. For technocentrists, calls to sacrifice ambitions of development are premature, because they ignore the likelihood that seemingly overwhelming problems will yield to unforeseeable technical innovations.

Environmental Governance (2006)

Maria Carmen Lemos & Arun Agrawal (1962–), Jouni Paavola (1962–)

In the 21st century, the concept of governance in political science (that encapsulates the overall management of human activities by the government, civil society and businesses) started gaining acceptance in the fields of ecological conservation, resource management, policy studies and global environmental politics to describe *how* and *who* makes decisions in an increasingly human-environmental complexity. International Union for the Conservation of Nature (IUCN) considers environmental governance as the means by which society determines and acts on goals and priorities related to the management of natural resources (IUCN 2020). Amongst others, this includes treaties, rules, norms, citizen practices being employed by societies in decision-making processes and the decisions too.

Lemos & Agrawal (2006) were one of the first ones to define environmental governance as the set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes. Paavola (2007) argues it to be understood broadly so as to include all institutional solutions for resolving conflicts over environmental resources. Biermann et al. (2009) define it as the interrelated and increasingly integrated system of formal and informal rules, rule-making systems, and actor-networks at all levels of human society (from local to global) set up to prevent, mitigate and adapt to global and local environmental change, in particular earth system transformation within the normative context of sustainable development

As a process, it links and harmonizes policies, institutions, procedures, tools, and information to allow participants (public and private sector, NGOs, local communities) to manage conflicts, seek points of consensus, make

fundamental decisions, and be accountable for their actions (Haque 2013). There is an undoubtedly close association with governance literature, (promoting multiple actors, plurality of decisions and multi-level action), yet there are some important distinctions (Armitage et al. 2012): (1) A greater emphasis on environmental protection, (2) Openness to using institutions (markets, rights, norms) and incentives (economic, social) in novel ways to address collective action, (3) Insights from non-equilibrium ecology and complex adaptive systems helps to move governance concerns beyond simple notions of accountability, authority, and maximum sustainable yield (Dietz et al. 2003, Armitage et al. 2009).

Broadly, environmental governance can be thought of as a "set of regulatory processes, mechanisms and organizations through which political actors influence environmental actions and outcomes" (Lemos and Agrawal 2006). Brunner et al. (2005) define environmental governance with an emphasis on the role of scientifically derived information about ecosystem function in decision making, while Kay et al. (2001) characterize the concept in a more normative way, as the process of resolving trade-offs and of providing a vision and direction for sustainability. It can be viewed as both a link between the social and the ecological, and a mechanism to influence the trajectory of socio-ecological systems.

Adaptive Governance (1987) & Resilience

Thomas Dietz (1970–), Carl Folke (1955–)

Given the complexities and uncertainties accompanying major and rapid environmental changes, including global warming, biodiversity loss, land use shifts, migration and urbanization; some scholars (Young 2002, Cumming et al. 2006) started arguing that governance systems, particularly those of top-down, state-based orientation, rarely match the relevant scale of ecological complexity. In 2003, the term *adaptive governance* was formally introduced in *Science* (Dietz et al. 2003), and later presented as a strategy for mediating the social conflict that plagues adaptive management of complex ecosystems (Folke et al. 2005). Around the same time, Hatfield-Dodds et al. (2007) consider that the concept is related to institutional theory that focuses on the evolution of formal and informal institutions for the management and use of shared assets, such as common pool natural resources and environmental assets that provide ecosystem services.

Humans are unique within socio-ecological systems (SES) as they are able to create novel approaches to change that can transform the future of the system (Gunderson 2000). It is later clarified that SES are neither human embedded in ecological systems nor ecosystems embedded in human systems (Westley et al. 2002). Adaptive governance is thus central to managing SES effectively towards resilience in the face of social and ecological uncertainty (e.g. Folke et al. 2005). Since resilience of a system is its ability to reorganize in the face of sudden change (Holling 1973), it becomes the crucial capacity of a SES to absorb both natural and human disturbance while still maintaining structure and function (Holling 2001, Folke 2007, Gunderson and Holling 2002).

Walker et al. (2004) familiarized the attributes of "adaptability" and "transformability" in a SES and its governing institutions. The resilience approach of adaptive governance in SES modified how institutions and organizations perceive external changes as a limitation to an opportunity in managing those by enhancing systemic abilities to cope, adapt, and be prepared for future uncertainties (Berkes et al. 2002, Gunderson and Light 2006, Folke 2006). Researchers have further classified adaptive resilience (Nelson et al. 2007, Pahl-Wostl et al. 2007) into *incremental* and *transformative* forms of change.

Adaptive governance provides guidance for understanding connectivity between features of resilience, dynamic change, processes and outcomes (Reserve 2011). It essentially puts governance into a framework that deals with shocks and surprises and moves across scales exemplified through diseases, disasters, and climate change (Boyd and Folke 2012). The Stockholm Resilience Centre (2020) regards adaptive governance as an evolving research framework for analyzing the social, institutional, economic and ecological foundations of multilevel governance modes that are successful in building resilience for the vast challenges posed by global change, and coupled complex adaptive SES.

The Co-benefits Approach (2005 onwards)

Kristin Aunan, J.A.P. de Oliveira, S.N.M. Menikpura

Climate change is caused by complex anthropogenic activities and requires multiple strategies for mitigation and adaptation. Deciding upon mitigation or adaptation alternatives to tackle climate change impacts has always been a tricky policy decision for societies and nations. After several scientific and policy discussions on adaptation and mitigation options available in addressing climate change, it is now widely being regarded that no single option is complete by itself (Sethi & de Oliveira 2018). The effective response to the climate challenge depends on a range of policies and cooperation in all activity sectors which could be enhanced through integrated approach like climate co-benefits (for definition/description of the concept, see Box 4).

The Paris Agreement recognizes the social, economic and environmental value of voluntary mitigation actions and their co-benefits for adaptation, health and sustainable development (UNFCCC 2015). It emphasizes to identify actions that can significantly enhance the implementation of adaptation actions, including actions that could enhance economic diversification and have mitigation co-benefits and promote cooperative action on adaptation.

Box 4: Descriptions of Co-benefits

The United States Environmental Protection Agency (USEPA) provided one of the most basic meaning of co-benefits as all of those positive outcomes associated with multiple, simultaneous emissions reductions (USEPA 2005). Yet, the understanding of Co-benefits is still developing and there is no standard definition of the concept. But an overview of some important descriptions elucidates normative interpretations:

Institute for Global Environmental Strategies (IGES) defines a co-benefits approach as a win-win strategy aimed at capturing both development and climate benefits in a policy or measure (IGES 2010).

Intergovernmental Panel on Climate Change (IPCC) refers co-benefits as, a government policy or a measure intended to achieve one objective often affects other objectives, either positively or negatively. For example, mitigation policies can influence local air quality. When the effects are positive they are called “co-benefits”, also referred to as “ancillary benefits”.

Further, negative effects are referred to as “adverse side effects”. Some measures are labelled “no or low regret” when their co-benefits are sufficient to substantiate their implementation, even in the absence of immediate direct benefits. Co-benefits and adverse side effects can be measured in monetary or non-monetary units (IPCC 2014a).

There are significant co-benefits, synergies and trade-offs opportunities between different mitigation and adaptation actions spanning over diverse sectors and operational scales, like: (i) improved energy efficiency and cleaner energy sources, leading to reduced emissions of health-damaging, climate-altering air pollutants; (ii) reduced energy and water consumption in urban areas through greening cities and recycling water; (iii) sustainable agriculture and forestry; and (iv) protection of ecosystems for carbon storage and other ecosystem services (IPCC 2014b). The effect of co-benefits and adverse side effects from climate policies on overall social welfare has not yet been quantitatively examined, with the exception of a few recent multi-objective studies.

It has been argued that co-benefits are contingent upon local circumstances (Puppim de Oliveira 2013). The most comprehensive and popular of these is the *urban climate co-benefits* approach that refers to the implementation of initiatives (policies, projects, etc.) that simultaneously contribute to reducing the contribution to man-made global climate change while solving local environmental problems in cities, and in turn potentially having other positive developmental impacts, such as improvements in citizen health, energy security, income generation, etc. (UNU-IAS 2013). They key is that though many actions meant to combat climate change, inadvertently have other local benefits, but the co-benefits approach seeks to purposefully multiply and mainstream climate co-benefits into the development process.

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Chapter 3
Social Theories & Principles

Ancient Sociological Theories (6th BCE onwards)

Confucius (551–479 BCE), Bhrigu (2nd–3rd BCE), Herodotus (484–425 BCE)

Although several sociological theories appear contemporary, the idea of studying societies and their customs, inter-relationships, etc. has been in practice from the ancient times. For instance, Confucius in 6th BCE China emphasized personal and governmental morality, correctness of social relationships, justice, kindness, and sincerity (Mark 2020). In ancient India, the concept of *dharma* articulates duties, rights, laws, conduct, virtues and *right way of living* (The Columbia Encyclopedia 2013), most of which appeals universally. Manusmriti, an ancient text written by Saint Bhrigu from the 2nd–3rd BCE (translated into English in 1794) is a commentary on virtues, duties, conduct, among others. On the basis of four key occupational specialization, it outlines a society having administrators, clerics, traders and employees. Besides documenting prevalent social norms, it presents descriptive views on personal choices, behaviours and morals, rights of women, statecraft and rules of war.

In ancient Greece too, social theories were integral to political thought and philosophy. In fact, the modern sociological term "norm" (i.e. a social rule that regulates human behaviour) comes from the Greek "nomos". Histories by Herodotus (484–425 BCE) was a proto-anthropological work that described the great variations in the *nomos* of different ancient societies around the Mediterranean, indicating that human social life was not a product of nature but human creation (Vilardo & Wepprecht 2016). Further, Socrates (469–399 BCE), Plato (428–347 BCE), and Aristotle (384–322 BCE) concerns with the ideal form of human community (the *polis* or city-state) can be derived from the ethical dilemmas of this difference between human nature and human norms. Meanwhile, Thrasher (2013) and Friend (2020) predate the 17th Century idea of the social contract to Plato and Epicurus.

During the medieval ages, Ibn Khaldun (1332–1406) of Tunisia wrote many interesting topics, setting a foundation for both modern sociology and economics, including a theory of social conflict, a comparison of nomadic and sedentary life, a description of political economy, and a study connecting a

tribe's social cohesion to its capacity for power (Hannoum 2003). During the same times, a Chinese historian, Ma Tuan-Lin recognized social dynamics as an underlying component of historical development in his seminal *General Study of Literary Remains*. The study charted the historical development of Chinese state administration from antiquity in a manner very similar to contemporary institutional analyses (Vilardo and Wepprecht 2016).

Social Contract Theory (1651)

Thomas Hobbes (1588–1679), John Locke (1632–1704), Jean Rousseau (1712–1778)

During the modernization period, the idea of *Social Contract* is revived by Thomas Hobbes upon experiencing the English Civil War (1642–1648). The clashes between the *monarchists*, including the King, who wielded the traditional authority derived from the so called *Divine Right of Kings,* captured in the book Patriarchia in 1680 (Filmer 1949) against the *parliamentarians*, motivated Hobbes to articulate how socio-political arrangements be organized.

The concept was further developed by John Locke, Hugo Grotius, Jean-Jacques Rousseau, Samuel Pufendorf and Immanuel Kant after whom it fell into disregard until its resuscitation by John Rawl in the 20th century. His book, Leviathan in 1651 (Hobbes 1980), a name derived from the biblical character is a classic western work on statecraft. Here he expounds how lives of individuals in the *State of Nature* (natural conditions) were "solitary, poor, nasty, brutish and short"; a state in which self-interest and the absence of rights and contracts prevented the "social", or the society. Life was *anarchic* i.e. without leadership people killing one another (Editors 2019).

In the absence of political order and law, everyone would have unlimited natural freedoms, including the "right to all things" and thus the freedom to plunder, rape and murder; there would be an endless "war of all against all". In order to avoid this fate, (1) there must be guarantees that people will not harm one another, and (2) people must be able to rely on one another to keep their agreements. The social contract gives such an *occurrence* i.e. opportunity during which individuals came together and cede some of their individual rights to a *Sovereign* so that others would cede theirs, e.g. person A gives up his/her right to harm person B if person B does the same. This resulted in giving legitimacy to the state, as a sovereign authority over the individual that would create laws to regulate social interactions.

In 1690, John Locke furthered the theory though slightly differing from Hobbes in his book *Two Treatises of Government (*Locke 1967) arguing that the rights of life and property were generally recognized under natural law. He thus pre-conditioned that the state under the *social contract theory* (SCT) was obligated to protect not only the rights of the person but also of private property. Meanwhile in 1762, Rousseau in *Du Contrat Social (The Social Contract,)* held that people agreed to surrender individual freedom to the government for mutual protection as they acquired a sense of moral and civic obligation. This obligation must be retained by governments by resting on the consent of the governed, the *volonté générale* or the "general will" (Editors 2019), which requires proper and time to time representation, thus needing democracy.

Examples of SCT are seen in several local contexts- of both urban and rural kind. For example, in villages and small towns, people take care not to erect buildings which stop their neighbour's daylight & ventilation out of an unwritten social contract, expecting similar reciprocation from them, though they are free to do so. In cities, suppose there in an abundance of polluting cars. An individual can install a device to control the pollution at some additional expense. The air will be clean if others install it even if an individual doesn't (as that contribution is negligible) and thus leads to self-interest of saving money. But if all think the same and do not setup devices, the air will be dirty even though an individual chose to install the device. This problem could overcome only if the social contract is executed by the state through common rule of law, to which all individuals abide.

Hobbes, Locke, and Rousseau all largely stressed on voluntarist conception of political justice and obligation—whatever that might be. Only in 1797 (Kant 1999), it becomes clear that consent is not fundamental to a social contract view: we have a duty to agree to act according to the idea of the "original contract". The revival of SCT in *A Theory of Justice* (Rawl 1971) did not base obligations on consent, though the apparatus of an "original agreement" persisted as a way to help solve the problem of justification (D'Agostino et al. 2019). In that sense, SCT unlike utilitarianism (or consequentialism) does not assume or passes judgment that there is one right conception of the "good". People agree to a social contract as it is "rational" to pursue the good as they see it, whatever that happens to be.

Theory of Human Progress (1830–1842)

Auguste Comte (1798–1857)

While Plato and Aristotle held a cyclical view of human affairs in which large-scale natural events play a significant role (Meek Lange 2019), Auguste Comte, a French thinker in the 19th century (not just coined the word "sociology" but) showed that there is a close association between intellectual evolution and social progress. His sociological law of three stages in mental and social development demonstrated that just like the co-ordination of feeling, thought and action in individuals, in a society too, each branch of our knowledge passes successively through different theoretical conditions (Priya 2020). During 1830–1842, Comte professed three stages of social progress (Table 1) as *theological*, *metaphysical* and *positivism* (1896). The theological stage (includes fetishism, polytheism, monotheism) has scientific explanations governed by the assumption that natural events are caused by divinities. In turn, humans attempt to affect natural outcomes by appealing directly to the gods or God to take action. The metaphysical stage follows, in which phenomena are explained by referring to the abstract essences that entities are supposed to possess. The third phase, the positive phase, explains phenomena by formulating scientific laws and then subsuming individual phenomena under them.

Table 1: The three intellectual stages (theological, metaphysical and positivism) of social progress

Intellectual phase	Material phase	Type of social unit	Type of order	Prevailing sentiment
Theological phase	Military	The Family	Domestic order	Attachment & Affection
Metaphysical Phase	Legalistic	The State	Collective Order	Veneration (Awe or Respect)
Positive Phase	Industrial	Race (Humanity)	Universal Order	Benevolence

The theological stage dominated by priests and ruled by the military men basically corresponds to the ancient times. The metaphysical stage—which corresponds very roughly to the Middle Ages and the Renaissance—was under the sway of churchmen and lawyers. The positive stage, just dawning, will be governed by industrial administrators and scientific moral guides. Similarly, in the first stage the family is the prototypical social unit, in the second the state rises into societal prominence, and in the third the whole human race becomes the operative social unit (Coser 1977). Comte's law of three stages was one of the first theories of social evolutionism. The other universal law he called the "encyclopaedic law". By combining these laws, he

developed a systematic and hierarchical classification of all sciences, introducing *physique sociale*, subsequently renamed sociology. In the later years, another of his contribution was developing the "religion of humanity" for positivist societies that professed on secular ethics. From Comte onward sociologists have generally agreed that the only justification for a *Science of Society* is its contributions to a workable theory of progress (Todd 1919), as evident in development of several conceptions and indicators to this day like the gross domestic product, human development index, etc.

Marxist Theory (1848)

Karl Marx (1818–1883), Friedrich Engels (1820–1895)

The Marxist theory or Marxism was first publicly disseminated by two German thinkers- Karl Marx and Friedrich Engels in their pamphlet, *The Communist Manifesto* (Marx & Engels 1848). Unlike earlier utopian philosophers and economists who made attempts to analyse the laws of society in general, Marx looks for the causes of developments and changes in human societies in the way in which humans collectively make the means to life, thus giving an emphasis, through economic analysis, to everything that co-exists with the economic base of society (e.g. social classes, political structures, ideologies). He argues that in the social production that men carry on, they enter into definite relations that are indispensable and independent of their will, relations of production which correspond to a definite stage of development of their material forces of production. The sum total of these relations of production constitutes the economic structure of society, the real foundation, on which rises a legal and political superstructure, and to which correspond definite forms of social consciousness.

The mode of production in material life determines the general character of the social, political, and intellectual processes of life. It is not the consciousness of men which determines their existence; it is on the contrary their social existence which determines their consciousness *(*Marx 1859). McLellan and Chambre (2020) hold that this hypothesis was raised to the level of historical law, and subsequently called historical materialism that Marx applied it to capitalist society, both in *Manifest der kommunistischen Partei* (1848; *The Communist Manifesto*) and *Das Kapital* (vol. 1, 1867; *Capital*) and in other writings. What uniquely characterizes the thought of Marx is that, instead of making abstract affirmations about a whole group of problems such as human nature, knowledge, and matter, he examines each

problem in its dynamic relation to the others and, above all, tries to relate them to historical, social, political, and economic realities. Brizee et al. (2010) infer that the Marxist school follows a process of thinking called the material dialectic. This belief system maintains that what drives historical change are the material realities of the economic base of society, rather than the ideological superstructure of politics, law, philosophy, religion, and art that is built upon that economic base.

Social Conflict Theory (1859)

Karl Marx (1818–1883)

One of the most influential criticisms of capitalism, the industrial age and societies of the modern times in Europe was the Social Conflict Theory in his book, *Das Kapital* (Marx 1867), with the following key features:

- Society is in a state of perpetual conflict for competing limited resources.
- The social order is maintained by domination and power, rather than consensus and conformity.
- Those with wealth and power (ruling class) try to hold on to it by any means possible, chiefly by suppressing the poor and powerless.
- The subject class is made up of the majority of the population whereas, the ruling class forms a minority.
- The relationship between the major social classes is one of mutual dependence and conflict (asymmetrical reciprocity i.e. exploiter and exploited, oppressor and oppressed).
- With further development of this dichotomous model under the capitalist system, the middle class will disappear.

The continuing conflict between the classes (Figure 13) will lead to upheaval and revolution by oppressed peoples and form the groundwork for a new order of society and economics where capitalism is abolished.

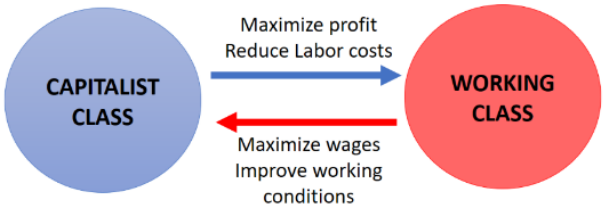

Figure 13: Relationship between the capitalist class and the working class under the Marxist theory

Marx believed the revolution will be led by the working class or *proletariats* i.e. sub-ordinate class (others think peasants will lead the uprising) under the guidance of intellectuals. Once the bourgeoisie or the elite are overthrown, the intellectuals will compose an equal society where everyone owns everything (socialism), not to be confused with Soviet or Maoist Communism (Brizee et al. 2010). The normative dimension of M*arxism* has thus primarily taken the form of the critique of capitalism as a social order characterized by strong alienation, exploitation, fetishism, mystification, degradation, immiseration, market anarchy and so on. The transcendence of capitalism by socialism and, eventually, communism, was then posited as the simple negation of these features, an implicit and undefended theoretical utopia which simply eliminated all the moral deficits of capitalism: a society without alienation, exploitation, fetishism, and the rest (Burawoy & Wright 2001).

A staunch antiutopian, Marx claimed that his criticism of capitalism was based on the latest developments in science. He called his theory "scientific socialism" to clearly distinguish his approach from that of other socialists (Henri de Saint-Simon and Charles Fourier, for instance), who seemed more content to dream about some future ideal society without comprehending how existing society really worked. Marx's scientific socialism combined his economics and philosophy—including his theory of value and the concept of alienation—to demonstrate that throughout the course of human history, a profound struggle has developed between the "haves" and the "have-nots". Specifically, Marx claimed that capitalism has ruptured into a war between the capitalist class that owns the means of production and the working class, which is at the mercy of the capitalists. Marx claimed that he had discovered the laws of history, laws that expose the contradictions of capitalism and the necessity of the class struggle (Prychitko 2019).

There are several limitations and criticisms of Marx's theory. For instance, societies are not simply reflections of economic systems. Those who possess power in capitalist society are not always those with the highest income or the owners of the most property. Secondly, there are interest groups in societies that are unrelated to social classes. Thirdly, conflict in a large modern society is rarely bipolarized, and further social conflict does not always lead to structural social change but negotiation. For e.g. the relationship between owner and a tenant may seem to be of struggling against each other in extracting the maximum for themselves, the relationship is balanced by rent payment against a place to live.

Cultural Determinism (1870s)

A School of thought

Cultural determinism is defined as a reaction against the biological determinism that was influential in nineteenth- and early twentieth-century Western anthropology (Dutton 2021). Rather than being propounded as a specific theory, it is a stance that common patterns of behaviour, attitudes, and values which persist for generations are the result of cultural factors rather than biological or other factors (Oxford 2021). Similarly, the American Psychological Association defines it as the theory or premise that individual and group characteristics and behavior patterns are produced largely by a given society's economic, social, political, and religious organization (APA 2020).

In Ancient Greece, there was a popular perspective that only those who spoke their language could understand their behaviours, values, and social systems. The Greeks felt that their culture was what defined them as a people, and it's something you had to learn by being a part of their society (Study 2016). From 1870s onwards, the idea evolved from economic determinism (Karl Marx), to ecological determinism (Ellsworth Huntington, Ellen Semple, Friedrich Ratzel, Paul Vidal de La Blache, Jean Brunhes, and others), to social psychology and eventually cultural determinism in the 1930s (Form et al. 2020). In this regard, the concept is diagrammatically against both environmental determinism and technological determinism.

The concept of cultural determinism supports the idea that our emotional and behavioural patterns are formed and moulded by the culture we are raised in. It's also believed that this theory can be applied to economic and political systems, as well (Study 2016). Cultural determinists reason our existence- dress, food, communication, etc. on the basis of our social interactions. Some try to further link it with role of women in society and how different cultures organize or form governments. There are several criticisms to this approach, most often highlighting its circular reasoning (for instance slavery is attributed to a culture of slavery), the limited role of how *free will* and the use of technology influences individual or community decisions.

Gemeinschaft und Gesellschaft (1887)
Ferdinand Tonnies (1855–1936)

A German sociologist and economist, who in his book, "Gemeinschaft und Gesellschaft" i.e. "Community and Society" (Tonnies 1887) described two basic yet contrasting organizational principles of human association.

Gemeinschaft (community): characterized by a countryside, people in rural village have an essential unity of purpose, work together for the common good, united by ties of family (kinship) and neighbourhood. The land is worked communally by inhabitants, social life is characterized by intimate, private and living together. The members are bound by common language, traditions, common goods-evils, common friends-enemies, sense of we-ness or our-ness (Gebhardt 1999, York 2007). These are of three types: Kinship, Friendship, and Neighbourhood or Locality.

- Kinship Gemeinschaft is based on Family; the strongest relationship being between mother and child, then husband and wife, and then siblings. Gemeinschaft also exists between father and child, but this relationship is less instinctual than that of mother and child. However, the father-child relationship is the original manifestation of authority within Gemeinschaft.
- There is also Friendship, or Gemeinschaft of the mind, which requires a common mental community (e.g. religion).
- Kinship develops and differentiates into the Gemeinschaft of Locality, which is based on a common habitat

Gesellschaft (association): characterized by a large city, where life is a mechanical aggregate characterized by disunity, rampant individualism and selfishness. The meaning of existence shifts from group to individual, rational, calculating, each person understood in terms of a particular role and service provided; deals with the artificial construction of an aggregate of human beings which superficially resembles the Gemeinschaft in so far as the individuals peacefully live together. Where as in Gemeinschaft people are united in spite of all separating factors, in Gesellschaft people are separated in spite of all uniting factors (van der Veen 2011). Nevertheless, this situation gives opportunity for Kürwille (free will) and more globalized thought. In addition, while Tonnies is inspired by works of Marx's social conflict theory, Inglis (2009) regards that it breaks-away in explaining its evolution, political economy and characteristics of capitalism

Sociological Theory (1893)
David Emile Durkheim (1858–1917)

A French sociologist, who established the first modern department of sociology, Durkheim is famous for his ideas on how societies could maintain their integrity and coherence during modernity and urbanity, when new social institutions were coming into existence, as against the traditional social and religious ties. Through two major treatises in French language, De la division de travail social *or The Division of Labour in Society* (1893) and Les règles de la méthode sociologique *or The Rules of Sociological Method* (1895), Durkheim emphasizes for scientific analysis of societies as "social facts", studying "solidarity" or the bonds between all individuals and lastly the practical implications of scientific knowledge. According to him, social facts are external/independent to the individuals that exert "coercive power" through social structures (UK Essays 2018). He is credited in developing a model of contrasting social order types:

Mechanical solidarity: It refers to social bonds constructed on likeness and largely dependent upon common belief, custom, ritual, routines, and symbol. In this type of association, people are identical in major ways and thus united almost automatically to become self-sufficient. The social cohesion is based upon the likeness and similarities among individuals in a society. This kind of relationship is common among prehistoric and pre-agricultural societies, and lessens in predominance as modernity increases (Durkheim 1893). Here, the term "mechanical" connotes automatic.

Organic solidarity: It refers to a social order based on social differences, complex division of labour where many different people specialize in several different occupations. There is greater freedom and choice for city inhabitants despite acknowledged impersonality, alienation, disagreement and conflict. This form of organisation undermined traditional social integration but created a new form of social cohesion based on mutual interdependence that is liberating. The social cohesion based upon the dependence that individuals in more advanced society have on each other. It is common among industrial societies as the division of labour increases. Though individuals perform different tasks and often have different values and interests, the order and very survival of society depends on their reliance on each other to perform their specific task (Durkeim 1895). The term "organic" refers to evolving or that has is under evolution.

Looking Glass Self (1902)
Charles Horton Cooley (1864–1929)

The American sociologist, Charles Horton Cooley worked on several social theories, most popularly the social-psychological concept of "looking-glass self" introduced in his work, *Human Nature and the Social Order*. It states that a person's self grows out of society's interpersonal interactions and the perceptions of others (Cooley 1902). The term refers to people shaping their self-concepts based on their understanding of how others perceive them. Surhone et al. (2010) explains how Cooley clarified that society is an interweaving and inter-working of mental selves.

McIntyre (2006) reasons that in the looking-glass self, a person views oneself through others' perceptions in society and in turn gains identity. Identity, or self, is the result of the concept in which we learn to see ourselves as others do (Yeung & Martin 2003). The looking-glass evolves from childhood and matures further on, though some sociologists argue that it wanes over time. In hypothesizing the framework for the looking glass self, Cooley said, "the mind is mental" because "the human mind is social". Beginning as children, humans begin to define themselves within the context of their socializations. The child learns that the symbol of his/her crying will elicit a response from his/her parents, not only when they are in need of necessities such as food, but also as a symbol to receive their attention. Thus, a growing solidarity between mother and child parallels the child's increasing competence in using significant symbols. This simultaneous development is itself a necessary prerequisite for the child's ability to adopt the perspectives of other participants in social relationships and, thus, for the child's capacity to develop a social self (Cooley 1998). Accordingly, the three simple steps of this theory are:

- You imagine how you appear to the other person.
- You use reactions of others to imagine/interpret how others visualize you.
- You develop sense of pride, happiness, guilt, shame in self-conceptualizing.

Concurrent with Weber, Cooley developed the idea that sociology must study the importance of events to humans than just human behaviour. He is credited with reasoning the dual nature of the mind and body with his theory. He was later criticized by George Herbert Mead for his overly mental constitution of the self (Coser 1971). This same theory however influenced Mead's own theory of the self and eventually *symbolic interactionism* which became a dominant sociological thought in the late 20th century.

The Metropolis and Mental Life (1903)
Georg Simmel (1858–1918)

Simmel, a German sociologist known for following a neo-Kantian approach in asking *what is society*? In 1903, his essay expounds social psychology and urbanism i.e. life within the city than urbanization. He explains that a unique trait of modern city is intensification of nervous stimuli with which city dweller must cope, from rural setting where rhythm of life and sensory imagery is slow, habitual and even, to city with constant bombardments of sights, sounds and smells. The individual learns to discriminate, become rational and calculating, developing a distinct *philosophy of money* and a *blasé attitude*. Secondly, urbanites are highly attuned to time, division of labour and use of money. There is an acknowledged freedom, transcendence of pettiness of daily routine, new heights of personal and spiritual development to maintain sense of individuality and not feel like a cog, but sense of alienation can override (Simmel 1903).

Philosophy of Money: When monetary transactions replace earlier forms of barter, significant changes occur in the form of interaction between social actors because money is impersonal, objects of barter are not. It is subject to precise division, manipulation and permits measurement of equivalents and rationalization in modern societies. It replaces personal ties by impersonal relations. Thus, abstract calculation invades areas of social life, e.g. kinship relations or realm of aesthetic or qualitative appreciation. Money in modern world is standard of value and means of exchange that fosters modern spirit of rationalism, calculability and impersonality, increasing personal freedom and social differentiation. It is the major mechanism for shift from *gemeinschaft* to *gesellschaft* (York 2007).

The blasé (bladder) attitude: The incapacity to react to new sensations due to saturation. It is reinforced as money becomes a common denominator of all values. New forms of psychological protection (reserve, indifference, detachment/apathy) define metropolitan lifestyle leading to responses from head over heart, the attitude—don't care and don't get involved. While the positive aspect is enhancement of individual freedoms, a paradox is that objectivization leads to greater individualism and subjectivism. In addition, urban life exemplifies "functional extension beyond physical boundaries"—a person's life does not end with the limits of his/her body and the area of immediate activity (van der Veen 2011).

Town & Country Planning Theory

Patrick Geddes (1854–1932)

Sir Patrick Geddes, a Scottish biologist, geographer who introduced several of the prevailing social and environmental concepts into architecture to establish the discipline of modern town planning. He was influenced by social theorists such as the English biologist and anthropologist Herbert Spencer (1820–1903) and French theorist Frederic Le Play (1806–1882), particularly applying the former's theory of biological evolution to explain the evolution of society. His key town planning prophecies, include *inter alia* concepts of "Place, Work and Folk", the "Valley Section", the use of Diagnostic Survey, Conservative Surgery, Outlook Tower and Public Participation in planning, the Section Principle, classification of settlements, New Humanism and emphasis on country/regional planning.

The Geddesian Triad—Place, Work and Folk: As an outcome of fieldwork in India (1915), Geddes suggested a strong relationship between triads of an urban society (Table 2): Place (residences), Work and Folk crucial for town and folk planning. In fact, these broadly represent the three disciplines of Geography, Economics, and Anthropology-Sociology respectively. Geddes professed *diagnostic survey* as a method of conducting socio-economic surveys to identify key issues and improve the situation by turning its difficulties into opportunities. He argues that town planning should not coerce people into new lands on city fringe against their will and association; instead find the right place for each kind of people where they will flourish, thus bringing the idea of locational advantage and optimum land suitability in town planning. He was against "Haussmannization" of urban fabric in the name of sanitisation, as in Paris and during his stint as town planner in India proposed an alternative strategy of *Conservative Surgery* that favours methodical renewal of blighted areas over formal grid-iron redevelopment plan and removal of people to new places (Geddes 1947). He showed how it is a painstaking exercise but bears encouraging results in limited funds.

Table 2: The Geddesian Triad of place, work and folk

PLACE (Geography)	PLACE-WORK	PLACE-FOLK
WORK-PLACE	WORK (Economics)	WORK-FOLK
FOLK- PLACE	FOLK-WORK	FOLK (Anthropology)

The "Outlook Tower": In order to promote "observational technique" to discover relationships among place, work and folk, in 1892, Geddes opened a "sociological laboratory" or the Outlook Tower to document and visualize the regional landscape (Figure 14). It was a tall old building on the ridge of old Edinburgh, acting as an open-air gallery allowing visitors to outlook the city and its countryside. The storeys beneath showcased sciences: Geography, Astronomy, Geology, Meteorology, Botany, Zoology, Anthropology, History, Economics and maps exhibiting the city, and general evolution of human civilization. Geddes proposed outlook towers in every city having both observatory and laboratory, to instil public participation, inter-disciplinary research towards holistic town and country planning.

Figure 14: The Outlook Tower in Edinburgh. Source: Kim Traynor (https://commons.wikimedia.org/wiki/File:Outlook_Tower,_Castlehill,_Edinburgh.JPG), "Outlook Tower, Castlehill, Edinburgh", https://creativecommons.org/licenses/by-sa/3.0/

The "Valley Section" principle: While planning the Zoological Gardens in Edinburgh (1909), Geddes conceptualized the "Valley Section" principle showing complex interactions amongst biogeography, geomorphology, botany and human occupations like hunting, mining, or fishing as one moves from coasts to the mountains (Figure 15). These occupations are supported by physical geographies that determine human settlement pattern. Geddes used this model to demonstrate the complex and interrelated relationships between humans and their environment, and to encourage regional planning approach responsive to these conditions (Geddes 1918).

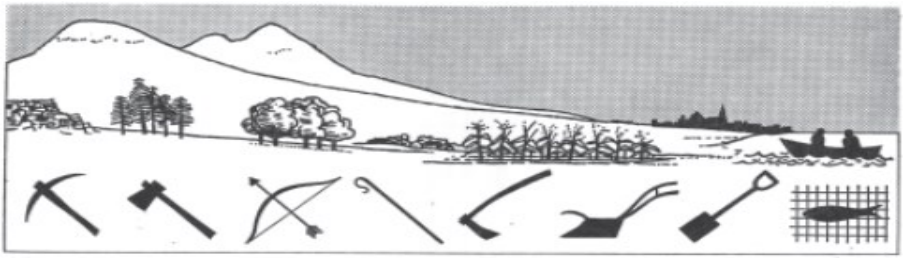

Figure 15: The Valley Section Principle. Source: Patrick Geddes (https://commons.wikimedia.org/wiki/File:Valley_Section,_1909.png), "Valley Section, 1909", marked as public domain, more details on Wikimedia Commons: https://commons.wikimedia.org/wiki/Template:PD-US

"Ideal Type" and "The City" (1920–21)

Max Weber (1864–1920)

The term "ideal" refers to the need of abstract and hypothetical constructs in pursuing social science. It is formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct (Shils & Finch 1997). It helps understand the main characteristics or essence of a phenomenon, even though it may not fully represent all the cases. It acts like a useful technique in comparative sociology to analyse phenomena, handy over generalized or specific examples.

Weber, a German economist and sociologist stresses on "interpretation" over mere description of facts. But interpretation poses a problem for the investigator who has to attempt to classify behaviour as belonging to some prior "ideal type". For this, Weber (1920/1992) describes four categories of "ideal types" of behaviour: *zweckrational* (goal rationality), *wertrational* (value rationality), *affektual* (emotion rationality) and *traditional* (custom, unconscious habit).

Unlike earlier theorists focusing on European cities only, Weber conducted comparative surveys of various cities throughout the globe. He studied ecological-demographic characteristics of cities considered to be relatively dense and closed settlements. Weber submitted that cities are intertwined with larger forces, e.g. political and economic processes, rather than itself being a cause of distinct urban living. Thus diverse historical and cultural settings will lead to distinct cities, akin to Marx & Engels who articulated how urban living resulted from diverse economic structure. As an ideal type, he characterized urban community, as that requires trade/commercial activities, e.g. markets; law enforcement, some political autonomy; forms of social participation and professional associations for greater engagement.

The Ideal type is criticized for being too focused on extreme phenomena and missing the linkages between them. It is argued with "normal type" theory developed by sociologist Ferdinand Tönnies, who clearly distinguished between the *realm of conceptualization* (of sociological terms, including "normal types") that must be treated axiomatically in a deductive way (pure sociology) and the *realm of reality* (of social action) to be treated empirically, in an inductive way (applied sociology).

Weber's book, "The City" released in 1921 after his death expounds on both the evolution and typological aspects of settlements. It is argued (Ahmed & Uddin 2004) that his theory of city owes much to earlier work of Tönnies (1887) and Simmel (1903). He takes a structural perspective on city, studying city from all aspects of social structure, economic, political, religious and legal institutions. Thus cities are treated in terms of their relations to other cities, to other parts of their society, as integral parts of the social and political order. Thus Weber's theory of city is close to systematic theory of urbanism (Mumford 1961, Wirth 1938). He details various elements of the City including diversification of livelihoods, trade and commerce, versatility, densely inhabited spaces, regular markets, judicial system, taxation, and associations of people (traders, commercial settlers, residents) which served a variety of roles and functions over time (Weber 1958). He accepted the notion of a city as a centre of trade and commerce unlike a feudal *garrison* or other rural configurations, the basic premise that the population is not primarily responsible for its own food production.

At the same time, Weber states that the "city" neither in the economic structure nor in the garrison form can be automatically considered a "community". The concept of an urban community "appears as a general phenomenon only in the Occident". He continues by proposing: "To constitute a full urban community a settlement must display a relative predominance of trade-commercial relations with the settlement as a whole displaying the following features: 1. A fortification; 2. A market; 3. A court of its own and at least partially autonomous law; 4. A related form of association and 5. At least partial autonomy and autocephaly, thus also an administration by authorities in the election of whom the burghers participated" (Weber 1958). The "urban community" is evident through multiple interactions: *social actions* (meaningful human interaction); *social relations* (arrangements of the elements of social actions); *social institutions* (the abstract notion of social relations as a network of social actions).

Weber's theory of city is the theory of the origin of capitalism. He relates city, culture, authority, religion and rationalization as symbiotic, and are geared to the development of capitalism in the west (Ahmed & Uddin 2004). Simultaneously, the theory is multi-faceted posing challenges of consistency and present-day applicability in both the Western and the Eastern contexts.

Social Disorganization Theory (1920 onwards)

Florian Znaniecki (1882–1958), William Isaac Thomas (1863–1947)

A theory developed by the Chicago School that links crime rates and social disorganization to the ecological or situational factors, even more than individual characteristics like age, gender or race. Thus, youth from such disadvantaged localities participate in a subculture that accepts dropping out, unemployment, delinquency and street crime. During 1918–20, the book *The Polish Peasant in Europe and America* introduced the thought that a person's thinking processes and attitudes are constructed by the interaction between his situation and his behaviour (Thomas & Znaniecki 1919). Attitudes are not innate; rather, they stem from a process of *acculturation*, a process in which an individual adopts, acquires and adjusts to the prevalent culture or a new cultural environment. This is closely related to the *Thomas theorem*, viz., "If men define situations as real, they are real in their consequences" (Thomas & Thomas 1928) suggesting that actions are affected by subjective perceptions of situations. The theorem considers "four wishes" i.e. the desire for new "experiences", "recognition", "domination", and "security". Combined with the cultural values of a pre-existing situation, these give rise to certain attitudes which are subjectively defined meanings and shared experience, strongly emphasized and embodied in specific institutions. Thus new attitudes arise from relationships and interaction between the objective situation of a person and outlooks formed through socio-cultural experiences with outside community.

The social disorganization theory gained rapid prominence in America, as the Burgess' concentric zone model showing segregation of economic activities concentrated around the city centre (Park et al. 1925); crimes and conflicts in mainstream societies (Sutherland 1939); personal disorganized behaviour like suicides (Cavan 1928); spatial versus social causation in event of imperfect policing in cities (Shaw and McKay 1942/1969); social pathologies and problems like crime, suicide, mental illness, and mob violence (Faris 1955); isolation, race and urban inequality in explaining disproportionate representation of Afro-Americans as victims and offenders in crime known as "racial invariance" (Sampson et al. 1995); social disorganisation due to continual flux in local networks and social controls—*personal*, *parochial* and *public-social* (Bursik and Grasmick 1993), and positivity of immigration in social control (Lee and Martinez Jr 2002).

Human & Urban Ecology (1922)
Robert Ezra Park (1864–1944)

Park, an American urban sociologist is considered to be one of the most influential figures during his times who at the University of Chicago evolved empirical research methods, especially *participant observation* to study societies. He coined the term "Human Ecology" as a concept that applies biological processes to explain sociological phenomenon particularly stressing that the natural environment is an influential force in determining city characteristics. A lot of his urban research along with Ernest W. Burgess led to proposal of "Urban Ecology" theory in their book *Introduction to the Science of Sociology*, where city is considered not as chaos & disorder but as a social organism with different parts linked by internal processes as in natural ecology (Burgess & Park 1921).

Park focused on the physical organization of the city and human's adjustment to the environmental features of urban life. His key theoretical premise is that: (1) the natural laws can be adapted to society, commonly known as Social Darwinism, (2) *Web of life* shows an interdependence of species/organisms in sharing the same environment to maintain an overall equilibrium. He applied the concepts of *Symbiosis (*processes characterizing mutual interdependence between any two or more species) and *Community* (plant or animal units involved in struggle and competition in their habitat, organized, territorial and interrelated in most complex manner) to demonstrate that urban communities are organized at two levels (York 2007):

- Biotic or symbiotic (substructure): driven by competition, structure of city resulting from inhabitants' competition for scarce resources, the idea being that cities were similar to symbiotic environments
- Cultural (superstructure): driven by communication and consensus, way of life in the city (as an adaptive response to organization for biotic resources); at the cultural level city is held together by cooperation between actors.

While the symbiotic society is based on competition, the cultural society based on communication and consensus. The city is a super-organism containing "natural" areas taking many forms (van der Veen 2011): ethnic enclaves; activity related areas (business, shopping, manufacturing, residential districts, etc.); income groupings (middle class neighbourhoods, ghettos, etc.); physically separated areas (rivers, airports, railroads, etc.).

Park conceptualized human community to be a complex resultant of four factors that maintain biotic and social equilibrium: *population*; *material culture* i.e. technological developments; *non-material culture* i.e. customs and beliefs; and *natural resources* of the habitat. He also used the ecological concepts of *competition*, *domination*, *invasion* and *succession* to explain social interactions in a city. Akin to the ecological pyramid, Park devised the societal pyramid (Figure 16): a social order where human communities exhibited an ecological or symbiotic order similar to that of nonhuman communities. Further, they participated in a social/moral order that had no counterpart on the non-human level and argued that study of the ecological order is crucial to better understand man's moral order (York 2007).

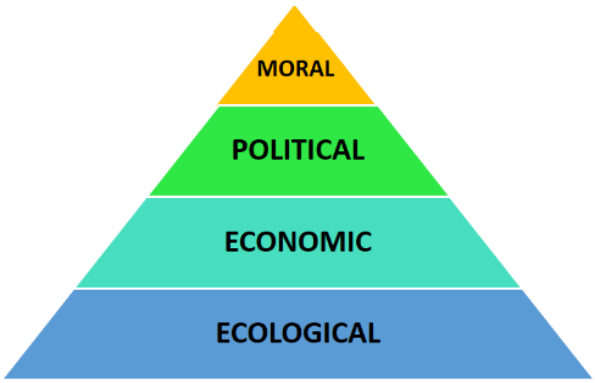

Figure 16: Akin to the ecological pyramid, Park devised the societal pyramid that shows how human communities form ecological, economic, political and moral order

At the same time there are several recognizable differences between natural and human ecology. For example, humans are not as immediately dependent on the physical environment, but largely through a world-wide division of labour and systems of commodity and service exchange. Then, humans by means of inventions and technical devices have a great capacity to alter their physical environment. They have erected upon the basis of the biotic community an institutional structure rooted in custom and tradition (van der Veen 2011). Thus, there are several limitations of early urban ecology theory, including focus only on economic competition for land, oversimplification and overgeneralization of concepts to the extent that civilizational and context specific factors like the government regulations, cultural preferences, aspirational sentiments are not taken into account.

Concentric Zone Theory (1925)

Ernest Burgess (1886–1966) and Robert Park (1864–1944)

A microeconomic and social theory by Burgess and Park for Chicago; a first to explain distribution of social groups in urban areas. Also known as the Burgess Model or Bull's Eye Model (Figure 17), it depicts urban land usage in concentric circles, where the Central Business District (or CBD) is in the fulcrum around which the city expands in a series of rings, namely the transition zone of mixed activities like factories, dilapidating commercial and residential buildings; a zone of working class or low cost homes (inner suburbs), a zone of better quality residences (outer suburbs) owned by middle class followed by a commuter zone or suburbs (Park et al. 1925). The model is more detailed than the traditional downtown and uptown divide under which downtown is the CBD, uptown the affluent residential outer ring, and midtown lies in between. The Burgess Model demonstrates how population density decrease outwards from the city-core, correlation between economic status, social structures with distance from the CBD and links to the Ricardian theory of rent by the virtue of land prices. In addition, the model highlighted zones of *social disorganization* harbouring disease, deterioration, demoralization; poverty with greater incidence of crime, high rate of residents moving in and out coupled with lesser sense of community. There were several limitations in the model too, including its inability to explain more modern cities (mainly outside the US), its assumption of an unchanging and flat landscape discounting geographic features that inhibit growth, and overlooking of decentralized business areas in certain cities.

Zone 1, Central Business District: A non-residential *downtown* for business and commerce, commuted to by residents of other zones

Zone 2, Transition: The "least desirable place to live in the city", with dilapidated housing, infrastructure, large percentage rent, highest crime rate, high rate of people migrating in and out

Zone 3, Working Class: Modest older homes; stable, working class families who could afford to move out of Zone 2 as second generation migrants

Zone 4, Middle Class: Newer, more spacious homes owned by well-educated class that are less likely to be rented

Zone 5, Commuter Zone: Mostly upper class who can afford to commute into city for work or entertainment

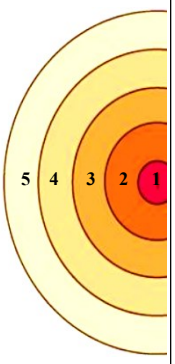

Figure 17: The Burgess Model or the Concentric Zone Model demonstrates how the communities settle evolve around the urban centre

Theory of Generations (1927/28)
Karl Mannheim (1893–1947)

Mannheim is regarded a classical sociologist who's work spanned across Hungary, Germany and England during the first half of the 20th century. His essay, *The Problem of Generations* in 1927/28 (translated into English in 1952) attempts to systematically explain the social phenomenon related to a generation, claiming it to be a cohort of a population who have experienced similar events in their youth, during a distinct period of time. The key features of this theory are (Mannheim 1952):

- A generation (essentially a cohort) is distinct from the kinship (family, blood-related generations) as a group of individuals of similar ages whose members have experienced a noteworthy historical event within a set period of time.
- The experience of a major event by a generation has an impact on their thoughts and feelings. This is because their understanding of new experiences is shaped by their previous experiences.
- The older generations form the social context which a new generation makes *fresh contact* with. As such, each new generation provides opportunities for social and cultural continuity and change.

According to Mannheim (Willis 1977), social consciousness and perspective of youth reaching maturity in a particular time and place (termed as *generational location*) is significantly influenced by the major historical events of that era (becoming a *generation in actuality*). It is argued that this major historical event has to occur, and has to involve the individuals in their young age (thus shaping their lives, as later experiences will tend to receive meaning from those early experiences); a mere chronological contemporaneity is not enough to produce a common generational consciousness (Pilcher 1994). It was further stressed that not every generation will develop an original and distinctive consciousness. Whether a generation succeeds in developing a distinctive consciousness is significantly dependent on the pace of social change (*tempo of change*). Bristow (2015) elaborates how the theory has been used to explain several historic political and cultural events across the world like involvement and behaviour of certain groups during oppressive regimes, economic downturns, post-war baby boom period, civil engagements, feminist and environment movements, etc.

Thomas Theorem (1928)

William Isaac Thomas (1863–1947) and Dorothy Swaine Thomas (1899–1977)

The famous theorem is sociological proposition from the book, *The child in America: Behaviour problems and* programs (Thomas & Thomas 1928) stating that, "If men define situations as real, they are real in their consequences". It belongs to the *Social Construction of Reality* school of thought, that considers that the way we present ourselves to other people is shaped partly by our interactions with others, as well as by our life experiences. The theorem essentially means that while the fact of the situation may be the same, the interpretation of a situation that causes action on it by different people is not objective, suggesting that actions are affected by subjective perceptions of what someone believes is happening during a situation. Later, Thomas clarified that any definition of a situation will influence the present. Such a definition also gradually (influences) a whole life-policy and the personality of the individual himself (Thomas 1923). He stressed societal problems involving relationships, household, or schooling as vital to the situation when understanding a social world, where subjective imprints can be projected on to life and become real to projectors.

The theorem considers "four wishes" i.e. the "desire for new experiences", "desire for recognition", "desire for domination", and "desire for security". Combined with the cultural values of a pre-existing situation, these give rise to certain attitudes which are subjectively defined meanings and shared experience, strongly emphasized and embodied in specific institutions. Thus new attitudes arise from relationships and interaction between the objective situation of a person and outlooks formed through socio-cultural experiences with outside community leading to acculturation.

The theorem has been successfully used to explain several sociological and market behaviour phenomenon, for instance why people buy expensive pet foods, what led to the sudden shortage of toilet paper during the oil crises in 1970's and certain commodities from markets at the onset of COVID-19 pandemic in 2020. In addition, it has helped in providing an alternative view to general theories in sociology, for instance Ethnomethodology developed by sociologist Harold Garfinkel in 1954 is a theory that provides methods to understand how people make sense of everyday situations (Garfinkel 1974). It studies what are the background assumptions, how people arrive at them, and how these influence their perceptions of reality.

Mead's Theory of the Self (1934)
George Herbert Mead (1863–1931)

An American philosopher, Mead was regarded a pragmatist at the University of Chicago. Pragmatism is a wide-ranging philosophical position from which several aspects of Mead's influences can be identified into four main tenets (McDermid 2006):

1. True reality does not exist “out there” in the real world, it “is actively created as we act in and toward the world”.
2. People remember and base their knowledge of the world on what has been useful to them and are likely to alter what no longer “works”.
3. People define the social and physical “objects" they encounter in the world according to their use for them.
4. If we want to understand actors, we must base that understanding on what people actually do.

Mead argued that social interactions emerge from the perspective of the self. This created the idea of symbolic interactionism, with three main features (1) The focus on the interaction between the actor and the world, (2) A view of both the actor and the world as dynamic processes and not static structures, and (3) The actor's ability to interpret the social world. Based on these ideas he introduced the concept of *social behaviourism—a* concern of the stimuli of gestures and social objects with rich meanings, rather than bare physical objects which psychological behaviourists considered stimuli. According to Mead, three activities develop the Self: language, play, and games (Hurst 2014):

Language develops self by allowing individuals to respond to each other through symbols, gestures, words, and sounds. Language conveys others' attitudes and opinions toward a subject or the person. Emotions, such as anger, happiness, and confusion, are conveyed through language.

Play develops self by allowing individuals to take on different roles, pretend, and express expectation of others. Play develops one's self-consciousness through role-playing. During role-play, a person is able to internalize the perspective of others and develop an understanding of how others feel about themselves and others in a variety of social situations.

Games develop self by allowing individuals to understand and adhere to the rules of the activity. Self is developed by understanding that there are rules

in which one must abide by in order to win the game or be successful at an activity.

According to Mead's theory, the self has two sides or phases: “me” and “I” (Figure 18). The “me” is considered the socialized aspect of the individual. The “me” represents learned behaviors, attitudes, and expectations of others and of society. This is sometimes referred to as the generalized other. The “me” is considered a phase of the self that is in the past. The “me” has been developed by the knowledge of society and social interactions that the individual has gained. The “I”, therefore, can be considered the present and future phase of the self. The “I” represents the individual's identity based on response to the “me”. The “I” says, “Okay. Society says I should behave and socially interact one way, and I think I should act the same (or perhaps different)”, and that notion becomes self. The “me” and the “I” have a didactic relationship, like a system of checks and balances. The “me” exercises societal control over one's self. The “me” is what prevents someone from breaking the rules or boundaries of societal expectations. The “I” allows the individual to still express creativity and individualism and understand when to possibly bend and stretch the rules that govern social interactions. The “I” and the “me” make up the self.

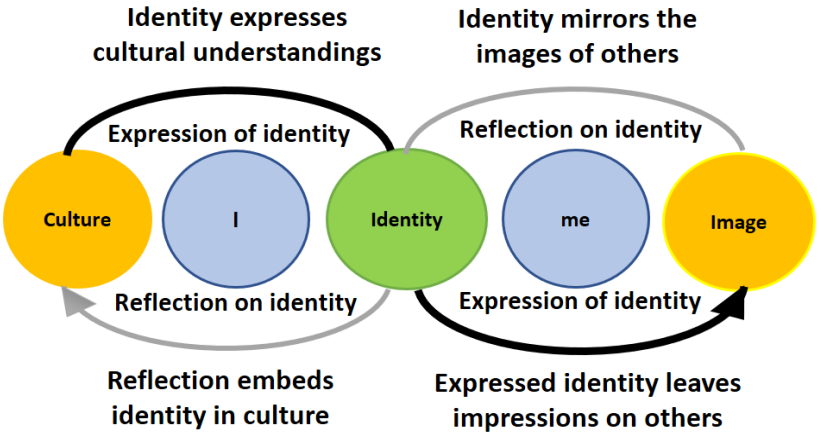

Figure 18: The construct of “I” & “Me” is mutually contributing, helping to form an individual’s identity between the culture and its self-image

Sociology of Knowledge (1936)

Karl Mannheim (1893–1947), Max Ferdinand Scheler (1874–1928)

Under the influence of Marxist thoughts that people's ideologies, including their socio-political opinions, are rooted in their class interests, and more broadly in the socio-economic circumstances in which they live (being is not determined by consciousness, but consciousness by being) and the doctrine of *Phenomenology* (the study of the structures of experience of the self), Scheler and Mannheim from 1929 onwards started popularizing the treatise on *sociology of knowledge*, extending and translating it as a book, *Ideology and Utopia* (Mannheim 1936). Dreading that his ideas could be misinterpreted that all knowledge is a product of socio-political forces and be disregarded for relativism or being anti-objective, Mannheim pursued this problem from the point of view of *relationism*. Thus, certain things are true only in certain times and places (a view influenced by *pragmatism*) however, this does not make them less true. This is often witnessed on how public opinion and participation is mobilized during movements, mostly on the basis of partially known facts or widely spread belief running in the society (Figure 19).

In order to avoid this, he stressed on studying the relationship between human thought and the social context within which it arises, and of the effects prevailing ideas have on societies i.e. *Sociology of Knowledge*. However, it could only be realized by a stratum of free-floating intellectuals (who he claimed were only loosely anchored to the class structure of society) could most perfectly realize this form of truth by creating a *dynamic synthesis* of the ideologies of other groups. With functionalism being ubiquitous through mid-20th century, the *sociology of knowledge* remained peripheral to the mainstream sociology. It was reinvigorated in *The Social Construction of Reality* (Berger & Luckmann 1966) and is now crucial to qualitative methods in societal studies.

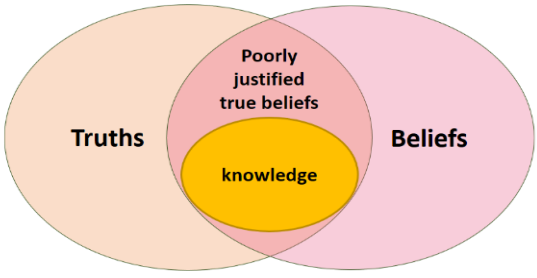

Figure 19: The knowledge in a society is often created by partially known facts or widely spread beliefs that generally forms the dominant public opinion

Critical Theory (1937)

Max Horkheimer (1895–1973), Herbert Marcuse (1898–1979), Theodor W. Adorno (1903–1969)

Critical theory is a social theory that evolved in the 1930s by a group of social scientists at the famous Frankfurt School. Drawing from ideas of Karl Marx and Sigmund Freud, it orients toward critiquing and changing society as a whole unlike traditional theory oriented towards understanding or explaining the society. The critical theorists condemned the traditional school for generating works that fail to question power, domination, and the status quo; and regarded a theory to be critical only if it liberates human beings from the circumstances that enslave them (Horkheimer 1982).

The key features of critical theory are that: (a) it must be explanatory, practical, and normative, (b) it should be used to examine the entirety of society with historical specificity i.e. how a certain social phenomenon is constructed at a specific point in time; and (c) it improves understanding of the society by holistic study of all fields like history, economics, politics, geography, sociology, psychology, etc. (d) it provides both clear norms for criticism and achievable practical goals for social transformation (Horkheimer 1993).

While modernist critical concerns itself with forms of authority and injustice that accompanied the evolution of industrial and corporate capitalism as a political-economic system. Postmodern critical theory politicizes social problems by situating them in historical and cultural contexts, to implicate themselves in the process of collecting and analyzing data, and to relativize their findings (Lindlof & Taylor 2002). Critical theory has been used in supporting critical race theory, feminist studies, cultural theory, post-colonial criticism, aboriginal and disability studies, gender and queer studies, media studies, etc.

Structural Functionalism (1937)
Talcott Parsons (1902–1979)

Structural functionalism (also called functionalism) has been a dominant sociological approach that holds that social systems are composed of interconnected parts (institutions, relationships, roles, and norms) where each contributes to meeting the needs of the whole (Lucas 2007). The theory emphasizes formal ordering of societal parts and their functional interrelations contributing to maintaining the entire system. This assumption attributed to social systems an internal integration of parts similar to that found in organisms (Vincent 2001). Although the theory subsumes multiple perspectives, it best understands society as a complex system with various interdependent parts that work together to increase solidarity and stability (Lucas 2007), while social change is regarded as an adaptive response to some tension within the social system (EEB 2020b).

The theory encapsulates several important concepts like *social structure, social functions, manifest functions,* and *latent functions*. Social structures, are relatively stable patterns of social behavior that give shape to our lives—for example, in families, the community, and through religious organizations. And certain rituals, such as a handshake or complex religious ceremonies, give structure to our everyday lives. Each social structure has social functions, or consequences for the operation of society as a whole (Study 2020). For instance, functionalists identify a number of functions families typically perform: reproduction; socialization; care, protection, and emotional support; assignment of status; and regulation of sexual behaviour through the norm of legitimacy. Similarly, education has several important functions in a society, such as socialization, learning, and social placement (LibreTexts 2020).

Structural functionalism has been contributed by several thinkers. Auguste Comte (often regarded as the one who coined the term sociology) emphasized the basic need to keep society unified as several traditions were diminishing. Durkheim introduced mechanical solidarity (social bonds based on specialization and interdependence in modern societies) and emphasized that the determination of function is necessary for the complete explanation of a social phenomenon. Herbert Spencer is considered to be one of the first to apply the theory of natural selection to a society. Using the analogy of a human body (how diverse structural parts of the organism functioning independently coordinate for the individual to survive), he

argues that social structures work together to preserve society. He recognized three functional needs or prerequisites that produce selection pressures: they are *regulatory*, *operative* (production) and *distributive*.

Heavily influenced by Durkheim and Max Weber and application of systems theory in the US, Parsons held that the social system is made up of the actions of individuals. He later developed the idea of individual roles into collectivities of roles that complement each other in fulfilling functions for society (Parsons 1977). Some roles are bound up in institutions and social structures (economic, educational, legal and even gender-based), and functional in smoothly operating a society, essentially contributing to *socialization* and *social control*.

Socialization is an important mechanism for transferring the accepted norms and values of society to the individuals within the system. In order to consider social change, he alludes that individuals in interaction with changing situations adapt through a process of *role bargaining*. Once the roles are established, they create norms that guide further action and are thus institutionalized, creating stability across social interactions. Where the adaptation process cannot adjust, due to sharp shocks or immediate radical change, structural dissolution occurs and either new structures (or therefore a new system) are formed, or society dies. This model of social change has been described as a *moving equilibrium*, and emphasizes a desire for social order (LibreTexts 2020).

Robert K. Merton made important improvements by detailing *manifest and latent functions* and introducing the concept of *deviance*. Manifest functions referred to the recognized and intended consequences of any social pattern. Latent functions referred to unrecognized and *unintended consequences* of any social pattern. He argued that another type of social function is *social dysfunction* which is any undesirable consequences that disrupts the operation of society (Macionis & Gerber 2011). For instance, a social dysfunction of schooling is not getting sufficient grades to get work later.

The theory gained considerable interest till the 1950s, followed by a major and constant countenance from conflict-oriented approaches like post-modernism, feminism, structuralism etc. A major reason for its criticism has been that functionalism focuses too much on consensus, offering limited explanations for social change, conflict and structural contradictions including race, gender, class, etc. that later theories tend to address.

Social Theory of Urban Space (1938)
Louis Wirth (1897–1952)

An American sociologist of German descent, Wirth was interested to understand the urban lifestyle, group behaviour and media than just social structures, with a prime concern towards applying sociology to solve real world problems. He draws from the Weber's "Ideal Type" to distinguish urban and the rural living and behaviours as two opposite ends of a continuum in a famous essay, *Urbanism as a Way of Life* (Wirth 1938).

The theory argues how urbanism is harmful to culture, and describes the city as a "Substitution of secondary for primary contacts….marriage tends to be postponed, and the proportion of single people is growing, leading to isolation and less interaction", at the same time he deliberates on the positive effects of city life that defines the history of civilization (Wirth 1940) in terms of freedom and toleration, the home of progress, of invention, of science, of rationality (Wirth 1956). He systematically explains the social implications of population size, density and heterogeneity characteristics in the urban context (York 2007):

Population size: creates great diversity as large numbers of people coming together along with migration increases potential differentiation; creates need for formal control structures, e.g. legal systems; supports proliferation of further complex division of labour specialization; organizes human relationships on interest-specific basis, i.e. "social segmentalization", where secondary relationships are primary, in essence urban ties are relationships of utility; creates possibility of disorganization and disintegration.

Population density: intensifies effects of large population size on social life; manifests quality of separateness, e.g. economic forces and social processes produce readily identifiable distinct neighbourhood, "ecological specialization"; fosters a loss of sensitivity to more personal aspects of others, instead tendency to stereotype and categorize; results in greater tolerance of difference but at same time physical closeness increases social distance; may increase antisocial behaviour.

Population heterogeneity: with social interaction among many personality types results in breakdown of the rigidity of caste lines and complicates class structure, thus increased social mobility; this tends to greater physical mobility; further leading to depersonalization with concentration of diverse people.

Theory of Deviance / Anomie Theory (1938)
Robert King Merton (1910–2003)

An American sociologist, Merton is regarded as a founding father of modern sociology, particularly working on social strain leading to deviant or criminal behaviour, who developed concepts, like *unintended consequences*, the *reference group*, and *role strain*, and mostly significantly- *role model* and *self-fulfilling prophecy* (Merton 1936). In sociology, deviance describes an action or behaviour that violates social norms, including a formally enacted rule (e.g. crime), as well as informal violations of social norms (e.g. rejecting folkways and mores). It is under the purview of criminologists, psychiatrists, psychologists and sociologists to study how these norms are created, how they change over time, and how they are enforced.

While norms are rules and expectations by which members of society are conventionally guided. Deviance is an absence of conformity to these norms. Social norms differ from culture to culture. For example, a deviant act can be committed in one society that breaks a social norm there, but may be normal for another society (Hyattractions 2015). Merton refines Durkheim's remarks by describing the missing social rules that lead to Anomie and linking them to the aspect of the value-medium discrepancy. Wickert (2019) argues that Merton's Anomic conditions are no longer seen in the gap between needs and satisfaction, but in the discrepancy between goals and means (Figure 20). According to Merton's Anomie theory is that most people strive to achieve culturally recognized goals like becoming rich or famous. A state of anomie develops when access to these goals is blocked to entire groups of people or individuals. The result is a deviant behaviour characterized by conformity, ritualism, innovation, retreatism and/or rebellion (discussed below). The crime results predominantly from innovation (Merton 1936).

Conformists accept society's goals and the socially acceptable means of achieving them (e.g.: monetary success is gained through hard work). Merton claims that conformists are mostly middle-class people in middle class jobs who have been able to access the opportunities in society such as a better education to achieve monetary success through hard work.

Ritualism refers to the inability to reach a cultural goal thus embracing the rules to the point where the people in question lose sight of their larger goals in order to feel respectable. Ritualists reject society's goals, but accept society's institutionalized means. Ritualists are most commonly found in

dead-end, repetitive jobs, where they are unable to achieve society's goals but still adhere to society's means of achievement and social norms.

Innovation is a response due to the strain generated by our culture's emphasis on wealth and the lack of opportunities to get rich, which causes people to be "innovators" by engaging in stealing and selling drugs. Innovators accept society's goals, but reject socially acceptable means of achieving them. (e.g.: monetary success is gained through crime). Merton claims that innovators are mostly those who have been socialized with similar world views to conformists, but who have been denied the opportunities they need to be able to legitimately achieve society's goals.

Retreatism is the rejection of both cultural goals and means, letting the person in question "drop out". Retreatists reject the society's goals and the legitimate means to achieve those. Merton sees them as true deviants, as they commit acts that do not always go along with society's values.

Rebellion is similar but beyond retreatism. People in question reject both the cultural goals and means, but they go a step further to a "counterculture" that supports other social orders (rule breaking). Rebels reject existing goals to not just forming new goals but also devising novel ways that other rebels would find acceptable.

This theory is regarded as a middle range theory, focusing on the function/ dysfunctional means with regard to the deviance in the society.

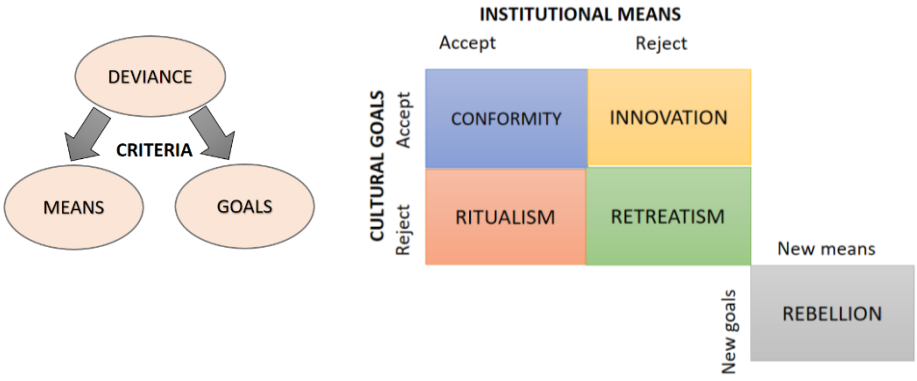

Figure 20: The deviance behaviour in a society can be understood by the means & goals criteria to justify it. The resulting permutations of this is characterized by conformity, ritualism, innovation, retreatism and/or rebellion

Ekistics (1942)

Constantinos Apostolos Doxiadis (1913–1975)

With the emergence of increasingly large and complex settlements, tending to regional conurbations and even to a worldwide city, the term Ekistics was coined by Doxiadis in 1942, for the science of human settlements (Doxiadis 1968) including regional, city, community planning and dwelling design. It is derived from *oikistēs*, an ancient Greek noun meaning the person who installs settlers in place, and its practitioners generally regard it as a more scientific field than urban planning, that has considerable overlap with some of the less restrained fields of architectural theory. While serving for Greece and the Allied forces during the World War II, Doxiadis observed destruction of medieval cities and started believing that human settlements should be a subject of systematic investigation. Relying on evolutionary models as used by famous biologists-philosophers of those times (Huxley, Dobzhansky, Gabor, Dubos, Simpson, Waddington), he formulated the "Ekistic behavior" of Anthropos (the five elements) to explain the hierarchical structure of communities/settlements, up to higher orders like the *megapolis* and *ecumenopolis* (Doxiadis 1976). His theory essentially regards human settlements as living organisms capable of evolution, an evolution that might be guided by Man using *Ekistic knowledge*. It has been used to propose modern plans for Athens, Rio de Janeiro, Riyadh and notably Islamabad. The main principles of Ekistics are (Doxiadis 1972):

- Maximization of man's potential contacts with elements of nature, other people & works of man. Minimization of effort for achievement of man's actual & potential contacts. The optimization of man's potential space, without compromising with contacts; and the quality of man's relationship with environment.
- Man organizes his settlements to achieve an optimum synthesis of key disciplines—technical, political and administration, sociology, economics and cultural ones for five Ekistics elements or units; Nature, Anthropos, Shell, Society, and Network (Figure 21).

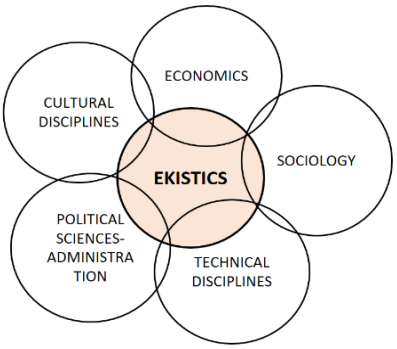

Figure 21: Ekistics is a combination of diverse disciplines in shaping human settlements

Maslow's Hierarchy of Needs (1943)
Abraham Maslow (1908–1970)

Maslow believed that people possess a set of motivation systems unrelated to rewards or unconscious desires. He posited that human needs are arranged in a hierarchy, where some take precedence over others. The five stage model (Maslow 1943) addresses basic, psychological and self-actualization needs of a human being (Figure 22). The first four levels are often referred to as deficiency needs (*D-needs*) and the top level is known as growth or being needs (*B-needs*). One must satisfy lower level deficit needs before progressing on to meet higher level growth needs. When a deficit need has been satisfied it will go away. Our activities become habitually directed towards meeting the next set of needs that we have yet to satisfy, till reaching the highest level called self-actualization. Every person is capable and has the desire to move up the hierarchy toward a level of self-actualization. Unfortunately, progress is often disrupted by failure to meet lower level needs by experiences like divorce or job-loss, thereby hampering unidirectional movement. Self-actualization could be measured through peak experiences, feelings of euphoria, joy, and wonder when a person experiences the world totally for what it is (Maslow 1962). In 1970, Maslow expanded hierarchy of needs to include cognitive and aesthetic needs and transcendence needs (Maslow 1970a, 1970b). In addition, his later writings reason that the order in the hierarchy is not nearly as rigid as implied in earlier description (Maslow 1987). These could be flexible based on external situations or some individual differences. For e.g., for certain individuals, their self-esteem needs are even more important than the need for love.

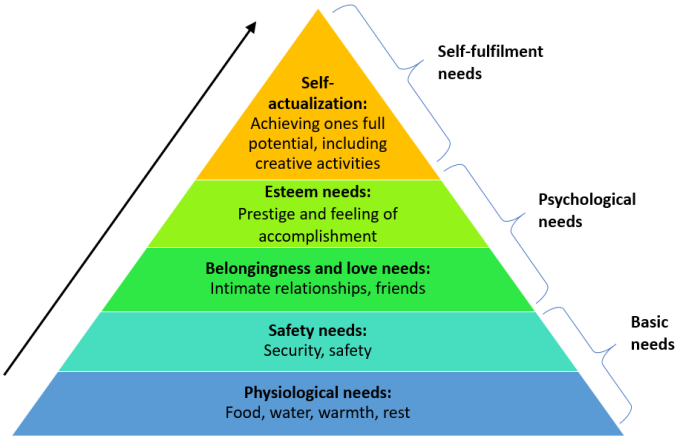

Figure 22: Maslow's Hierarchy of Needs. Source: Saul Mcleod, (https://www.simplypsychology.org/maslow.html), "Maslow's Hierarchy of Needs", https://creativecommons.org/licenses/by/4.0/

Also, several famous creative authors and artists e.g. Van Gough, Rembrandt living in abject poverty entire life reached higher level of self-actualization. In fact, most behaviour is multi-motivated by several needs simultaneously than by only one of them. In 1959, a psychologist Carl Rogers extended this theory, arguing that for persons to "grow", they need an environment that provides genuineness (openness and self-disclosure), acceptance (being seen with unconditional positive regard), and empathy (being listened to and understood) (McLeod 2014). Similarly, an American psychologist, Clayton Alderfer developed the model by categorizing hierarchies into ERG (Existence, Relatedness and Growth) (Alderfer 1969). Maslow's model is limited by scope and methodology, characterizing self-actualized individuals in the Western cultures using qualitative method of biographical analysis, else difficult to test empirically. The review of other cultures shows how despite difficulties in attaining basic physiological needs of food and shelter, people fulfil higher order needs of love and belongingness.

McLeod (2020) reports how Tay and Diener (2011) have tested the model from 2005 to 2010, analyzing data of 60,865 participants across 123 countries representing every major region of the world. The respondents answered questions about six needs that closely resemble those in Maslow's model: basic needs (food, shelter); safety; social needs (love, support); respect; mastery; and autonomy. They also rated their well-being across three discrete measures: life evaluation (a person's view of his or her life as a whole), positive feelings (day-to-day instances of joy or pleasure), and negative feelings (everyday experiences of sorrow, anger, or stress). The results support the view that universal human needs appear to exist regardless of cultural differences. However, their ordering within the hierarchy was incorrect. As such, Maslow's Hierarchy of Needs model can be most appropriately represented through a dynamic model (Figure 23).

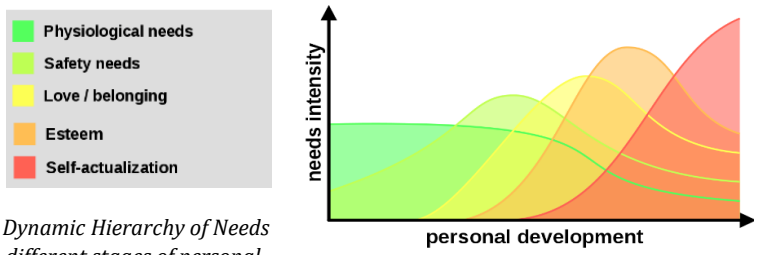

Figure 23: The Dynamic Hierarchy of Needs with respect to different stages of personal development over time. Source: Philipp Guttmann (https://commons.wikimedia.org/wiki/File:Dynamic_hierarchy_of_needs_-_Maslow.svg), "Dynamic hierarchy of needs - Maslow", https://creativecommons.org/licenses/by-sa/4.0/

Middle Range Theory (1949)
Robert King Merton (1910–2003)

The Middle range theory is an approach to sociological theorizing aimed at integrating theory and empirical research. It starts with an empirical phenomenon (as opposed to a broad abstract entity like the social system) and abstracts from it to create general statements that can be verified by data (Merton & Merton 1949/1968). Thus, instead of being concerned about mega speculations that there is a social system where there is exchange, negotiation, convergence, consequently control and integration sociology must look into the actual problems and issues related to empirical situations (Figure 24). Merton borrows substantive ideas from sociology of Weber as the basic problem with ideal type construct is that it asserts that totality of reality cannot be studied by sociology therefore sociology must have to study the essence of reality, a situation where facts speak for themselves. Thus, Middle Range Theory mandates limited set of assumptions and hypotheses which can be tested, limited range of data to research and interpret, filling the Sociological "blanks".

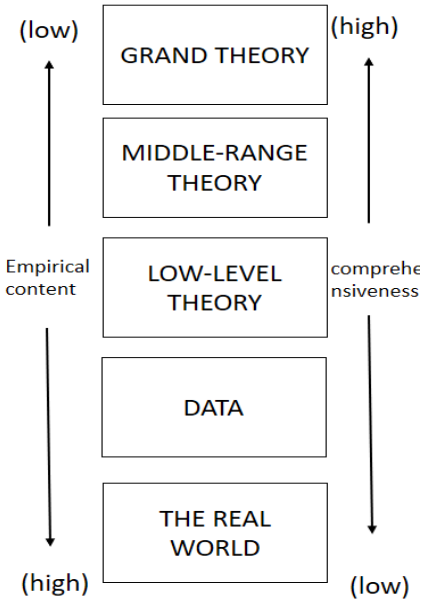

Figure 24: Instead of creating grand speculations on social systems, the middle range theory is keen to study actual problems that can be substantiated with empirical data

Socialization (1950s)

Erik H. Erikson's (1902–1994), Lawrence Kohlberg (1927–1987)

Socialization is the process whereby an individual learns to adjust to a group (or society) and behave in a manner approved by it. According to most social scientists, socialization essentially represents the whole process of learning throughout the life course and is a central influence on the behaviour, beliefs, and actions of adults as well as of children (EEB 2020a). It is beyond the temporary "socializing" in daily life and rather considered to be a complex, adaptive and lifelong individual process of learning, internalizing and disseminating values, norms or customs, ideologies, skills, etc. in a given society through multiple interactions, situations and roles undertaken. In fact, many agents play a role in the socialization process including families, peers, neighbourhoods, the mass media, schools, and religious institutions. It is assumed that these various agents function together rather than independently (Benson & Haith 2010). Socialization has broadly been classified as Primary, Secondary, Anticipatory and Resocialization (Wikipremed 2021):

Primary socialization occurs during childhood when a child learns the attitudes, values and actions appropriate to individuals as members of a particular culture.

Secondary socialization refers to the process of learning what is the appropriate behaviour as a member of a smaller group within the larger society. These days, several new classifications like *group socialization*, *organizational socialization* and *forced socialization*, as in boarding schools, asylums, defence forces are used to describe Secondary socialization).

Anticipatory socialization refers to the processes of socialization in which an individual rehearses for future positions, occupations, and social relationships.

Resocialization refers to the process of discarding former behaviour patterns and reflexes, accepting new ones as part of a transition in one's life.

The Socialization thought has been cultivated by the behaviourism school of social thought, essentially Mead's idea of the "self" promoting self-awareness and self-image, followed by Cooley who popularised the term "looking-glass self", i.e. the self-image on how we deliberate others see us. One of the most notable contribution has been from Erik H. Erikson who in his book, *Childhood and Society* presented *Stages of Psychosocial*

Development demonstrated eight stages of socialization (Erikson 1950)*: infancy* (trust or mistrust), *toddlerhood* (autonomy or doubt), *preschool* (initiative or guilt), *pre-adolescence* (industriousness or inferiority), *adolescence* (gaining identity or confusion), *young adulthood* (intimacy or isolation), *middle adulthood* (trying to make a difference or self-absorption), *old age* facing the challenge of integrity and despair (Macionis & John 2010).

Another contribution is from Lawrence Kohlberg's dissertation on *Stages of Moral Development* (1958), according to which individuals articulate right and wrong in three broad stages: *Pre-conventional stage* (typically about children experience situations in terms of pain and pleasure), the *Conventional stage* (adolescents/adults described as unconditional adherence to social construct of right/wrong) and *Post-conventional stage* (rarely attained if one overcomes social norms in reasoning moral decisions).

There are strong parallels observed between the socialization thought and *Ecological Systems Theory*. In addition, the thought is further evolving to describe political or oppression socialization, racial socialization, gender socialization, language socialization, natural socialization, positive socialization, negative socialization, institutional socialization and even oversocialization among others.

Social Exchange Theory (1958)

John Thibaut (1917–1986), Harold Kelley (1921–2003), George Caspar Homans (1910–1989), Peter Blau (1918–2002), Marc Emerson (1925–1982), Lévi-Strauss (1908–2009)

George Homans' well-known essay "Social Behaviour as Exchange" (1958) explains that social behaviour is the result of an exchange process- of activity, tangible or intangible, and more or less rewarding or costing between at least two persons (Homans 1961). In parallel, Thibaut and Kelley theorized on dyadic relationships principally in small groups. They applied Game Theory like reward-cost matrices derive clues for individuals' interdependence (correspondence in contrast to non-correspondence) of outcomes. Meanwhile, Homans posits that people weigh alternatives in their social interactions maximizing benefits and minimizing costs, under five key propositions (Cook & Rice 2006):

1. Success Proposition states that behaviour that creates positive outcomes is likely to be repeated.

2. Stimulus Proposition believes that if an individual's behaviour is rewarded in the past, the individual will continue the previous behaviour.
3. Value proposition believes that if the result of an action is considered valuable to the individual, it is more likely for that action to occur.
4. Deprivation-satiation proposition- if an individual has received the same reward several times, the value of that reward will diminish.
5. The fifth proposition is when emotions occur due to different reward situations. Those who receive more than they expect or do not receive anticipated punishment will be happy and will behave approvingly.

Positive relationships are those in which the benefits outweigh the costs while negative relationships occur when the costs are greater than the benefits (Cherry 2020). The risk-benefit evaluation largely rests on two types of comparisons: Comparison Level (CL) and Comparison Level for Alternative (CLalt). In a particular relationship, an individual's CL can be considered the standard by which an outcome seems to satisfy that individual Meanwhile in CLalt, an individual will consider other alternative payoffs or rewards outside of the current relationship or exchange too (Griffin 2006). Both can be based on previous experiences. Over the years, several experts have contributed to the development and application of the Social Exchange Theory. Based on economics, Frazer's theory about social exchange emphasizes the importance of power and status differentiations within social exchange; like Bronisław Malinowski (1922) draws a very sharp differentiation between economic and social exchange while researching on Kula. Marcel Mauss (1925) identifies the role played by morality and religion in the social exchange, particularly ceremonial gifts.

Bohannan's theory focuses on economic problems related to multi-centrism, and modes of exchange, proposing three vital principles: reciprocity, redistribution and marketing. Blau (1964) and Emerson (1972) made power the central focus of analysis. Lawler's Affect theory of social exchange examines the structural conditions of exchange that produce emotions and identifies how individuals attribute these feelings to different social units: exchange partners, groups, or networks (Lawler 2001). Social exchange theory relevance lies in that individuals and groups are aware of each other's concerns and needs thus enhancing effective communication, exchange and negotiation. The theory also applies to Social Media explaining how people form networks, express their opinions, and pass information as well as help understand media-marketing opportunities.

The Study of City (1961)
Lewis Mumford (1895–1990)

The American historian, Mumford re-invigorated the world view about urban environment and societies through his award winning book titled, "The City in History: Its Origins, Its Transformations, and Its Prospects" (Mumford 1961). As against the prevailing technocentric worldview, he puts forth the concept of an "organic city", where culture is not usurped by technological innovation but rather thrives with it. Mumford studies the evolution of cities during the ancient, medieval and modern era largely in order to facilitate religion, security and trade. Supported by magnificent illustrations his book argues that structure of modern cities is partially responsible for many social problems seen there. He reasons that if medieval city is taken as the basis for "ideal city"; the modern city is too close to the Roman city (the sprawling megalopolis) which ended in collapse. Thus, if the modern city carries on in the same vein, then it will meet the same fate as the Roman city. He further suggests that urban planning should emphasize an organic relationship between people and their living spaces.

Mumford's distinct style of relying on personal experience and observation, treating the city as a protagonist to narrate its growth and character change in a prose filled with metaphors and similes is exemplary and encaptivating. The book is a seminal appraisal of cities, their evolution and where these are heading towards, as evident by the final chapter "Retrospect and Prospect". He concludes that at the time of his writing in the 1960s the situation was simply out of control. The urban expansion was accelerating. Cities no longer generated a sense of community and man's cultural development was being suffocated. More than 50 years later, Mumford's description of our urban society still seems to hold. The problems which were once most visible in North America and Western Europe have simply become global. Unfortunately, Mumford does not offer much of a solution (systems), arguing only for national level urban planning that favours smaller optimally sized cities over one massive conurbation (Pies 2014). Over the years, the book has garnered several counter opinions too. For instance, unlike Mumford's blind optimism about urbanism, cities continue to harbour many human pathologies like pollution, crime, drugs, family disintegration, etc. In addition, as against the purported role that technology would play in making the city's knowledge dominion obsolete has been proven ineffectual by how computers and the internet support even more data reposition than physical libraries and universities to foster global communities.

Diffusion of Innovations (1962)
Everett Rogers (1931–2004)

Everett Rogers, a professor of communication studies, popularized the theory arguing that diffusion is the process by which an innovation is communicated over time among the participants in a social system (Rogers 1962). The interdisciplinary theory suggests four key constituents: the innovation itself, communication channels, time, and a social system. It indicates that in order to self-sustain, an innovation must be widely adopted till a point at which an innovation reaches critical mass. The five attributes that determine success of innovation, include: (1) The perceived "relative advantage" of an innovation over the idea it supersedes by a particular group of users, for economic advantage, social prestige, convenience, or satisfaction, (2) Compatibility with existing values and practices; the degree to which an innovation is perceived as being consistent with the values, norms, practices and needs of potential adopters, (3) Simplicity and ease of use; the extent to which an innovation is perceived as difficult to understand and apply, (4) Trial ability; the degree to which an innovation can be experimented with on a limited basis, (5) Observable results; the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. According to Rogers, these five qualities determine 49 to 87 % of the variation in the adoption of new products. In addition, diffusion invariably undergoes the following five sequential user segments (Figure 25): *innovators, early adopters, early majority, late majority*, and *laggards*.

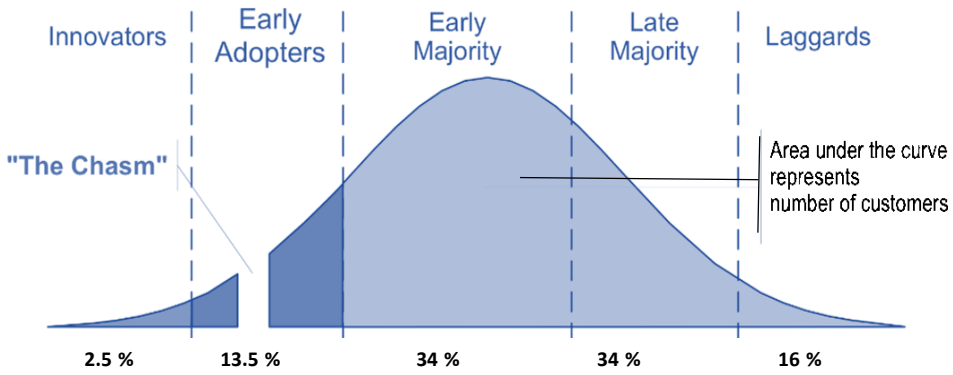

Figure 25: The diffusion of innovations curve (the percentage showing proportion of adopters), along with representation of the chasm in case of certain technologies

The *innovators* are a tiny number of visionary, imaginative trendsetters. They often lavish great time, energy and creativity on developing new ideas and gadgets. Once the benefits seem apparent, *early adopters* are those looking out for a strategic leap forward in using the innovation. As leaders and trend-setters, they are motivated to invest time and money into new ideas and products. to invest. These are followed by the *early majority* group, who are pragmatists, but won't act without solid proof of benefits. These are followers of mainstream trends, cost sensitive and at the same time averse to risks and fads. They require maximum performance with minimum disruption, complexity and learning.

The *late majority group* is conservative pragmatists who are uncomfortable to a new idea and taking risks. They are often influenced by the fears and opinions of laggards and would adopt a mainstream trend only for the fear of not fitting in. *Laggards* is the group that holds out to the bitter end for feat, scepticism over a new trend, product or behaviour. In order to explain the dip in adoption of certain innovations by early adopters was later introduced as "the chasm" in the rising curve (Moore 1991).

Symbolic Interactionism Theory (1969)
Herbert George Blumer (1900–1987)

A major sociological framework, *Symbolic Interactionism* was conceived by Mead (who proposed the theory of "looking glass self") and Cooley at the University of Chicago and traces its origins to Weber's assertion that individuals act according to their interpretation of the world, it was Herbert Blumer, a scholar of Mead who invented the term and explained that people produce common symbols by approving, arranging, and redefining them (Blumer 1969). The three key tenants are:

- Humans act toward things (objects or concepts) on the basis of the meanings they ascribe to those things.
- The meaning of such things is derived from, or arises out of, the social interaction that one has with others and the society.
- These meanings are handled and modified through, an interpretative process used by the people dealing with the things they encounter.

Symbolic interactionism has roots in phenomenology- a philosophy based on the intuitive experience or subjective meaning of reality and tends to use qualitative methods like participant observation. The theory holds potential

to explain several complex social phenomena. For instance, in case of smoking, the symbolic meaning (looking cool and finding greater acceptance among peers) overrides its factual health risks. Based on Blumer, Snow suggests four broader orienting principles: human agency, interactive determination, symbolization, and emergence (Herman-Kinney & Reynolds 2003). It is a positivist approach in sociology that led to Constructivism, which proposes that reality is what humans cognitively construct it to be.

The theory is relevant in social psychology and microsociology, explaining interactions between individuals. For instance, while a political movement might be seen by conflict theorist from the perspective of class or income inequality, symbolic interactionism would study how protestors communicate within the group using different signs and symbols in bringing a change. It is thus criticized for failing to consider either human motivations or emotions or macro social structures and forces. Most interactionist processes cannot be empirically tested through quantitative methods. The perspective also receives criticism for slighting the influence of social forces and institutions on individual interactions (Crossman 2020), nonetheless it attracts a widespread attention and application in social studies.

Principles of Intelligent Urbanism (1971)

Christopher Benninger (1942–), International Congress of Modern Architecture (CIAM)

In order to integrate diverse planning and management concerns in urban societies, the Principles of Intelligent Urbanism (PIU) is a set of ten axioms coined by Prof. Christopher Charles Benninger that are intended to guide the formulation of city plans and urban designs. These include environmental sustainability, conservation of heritage, the use of appropriate technology, efficiency of infrastructure, place-making, social access, transit oriented development, regional integration, human scale, and institutional integrity (Benninger 2001, Caves 2004).

The PIU evolved from the city planning guidelines formulated by the International Congress of Modern Architecture (CIAM), the urban design approaches developed at Harvard's pioneering Urban Design Department under the leadership of Joseph Lluis Sert (Bugadze 2018). The application of these principles is most widely seen in Benninger and his Asian colleagues plans. These principles became integral to the planning curriculum at the

School of Planning, Ahmedabad, founded by Benninger in 1971 and his plan for the new capital Thimphu in Bhutan (Benninger 2002).

Intelligent urbanism fosters the evolution of institutional systems that enhance transparency, accountability and rational public decision making (Leneurbanity 2015). It views plans and urban designs and housing configurations as expressions of the people for whom they are planned. The processes of planning must therefore be a participatory involving a range of stakeholders. The process must be a transparent one, which makes those privileged to act as guardians of the people's will accountable for their decisions and choices (Benninger 2002). Thus followers of the PIU consider urban planning and management as the most salient expressions of civility.

Pure Sociology (1976)

Donald Black (1941–)

As an alternative to individualistic and social-psychological theories, Donald Black introduced this sociological paradigm to reconceptualise supra-individual human behaviour (unexplainable by aims of actions) as social life to explain deviance, taboos or conflicts like lynching, terrorism, genocide as well as art, science and religion. Black (1976) sets forth a theory of law that he argues explains variations in law across societies and among individuals within societies. He argues that law can be conceived of as a quantitative variable, measured by the number and scope of prohibitions, obligations and other standards to which people are subject. Law varies, according to Black, with other aspects of social life, including stratification, morphology, culture, organization, and social control (Gottfredson & Hindelang 1979).

Stratification is the vertical aspect of social life, or any uneven distribution of conditions of existence, such as food, access to land or water, and money. Morphology is the horizontal aspect, or the distribution of people in relation to each other, including their division of labour, integration, and intimacy. Culture is the symbolic aspect, as religion, decoration, and folklore. Organisation is the corporate aspect, or the capacity for collective action. Finally, social control is the normative aspect of social life, or the definition of deviant behaviour and the response to it, such as prohibitions, accusations, punishment, and compensation (Black 1976).

Thus, the application of law across the social geometry considers *social status* (such as wealth, integration, culture, conventionality, organization,

and respectability) as well *social distance* (such as relational distance and cultural distance). For instance, relational distance connotes the degree of contact between the parties, so the theory anticipates greater application of law in a conflict involving strangers than those that are acquainted. This clearly explains why offenders killing strangers are severely punished than those killing intimates or why women raped by strangers would more likely testify the matter to the police. The use of the expression "pure" is plausible because the theory is posited to be politically and morally neutral, that violates conventional conceptions of social reality in general and legal and moral reality in particular (Black 1995). In addition, it lays emphasis to study sociology for the sake of furthering sociological knowledge.

Communicative Rationality (1979)

Karl-Otto Apel (1922–2017), Jürgen Habermas (1929–)

Communicative rationality is primarily associated with the works of Jürgen Habermas, one of the most influential contemporary philosopher and social theorist. The concept concerns with moral-practical reasoning very broadly answering to "how should I live"? describing human rationality as a necessary outcome of successful communication. The treatise, "Universal Pragmatics" is the philosophical study of the necessary conditions for reaching an understanding through communication. It suggests that human competition, conflict, and strategic action are attempts to achieve understanding that have failed because of modal confusions (Habermas 1979). The implication is this theory is that knowing how people understand one another could reduce conflicts within the society.

According to Habermas, communication through language necessarily involves the raising of "validity-claims" (distinguished as *truth*, *rightness* and *sincerity*), the status of which, when contested, can ultimately only be resolved through discussion under an egalitarian "ideal speech situation" (*discourse*), with the aim of achieving consensus. He relies on this concept to argue that democratic forms of social organization express more than simply the preferences of a particular cultural and political tradition. In his view, we cannot even understand a speech-act without taking a stance towards the validity-claim it raises, and this stance in turn anticipates the unconstrained discussion which would resolve the status of the claim. Social and political arrangements which inhibit such discussion can therefore be criticized from a standpoint which does not depend on any specific value-commitments,

since for Habermas achieving agreement (*Verständigung*) is a "telos" or goal which is internal to human language as such. A similar philosophical programme has been developed by Karl-Otto Apel, who lays more stress on the "transcendental" features of the argumentation involved (Dews 1998).

Baynes (1998) considers that *The Theory of Communicative Action* (Habermas et al. 1981) is a major contribution to social theory, in which authors locate the origins of the various political, economic and cultural crises confronting modern society in a one-sided process of rationalization steered more by the media of money and administrative power than by forms of collective decision-making based on consensually grounded norms and values.

Theory of Structuration (1984)

Anthony Giddens (1938–)

The nexus of structure and agency has been a central tenet in the field of sociology since its inception. Theories that argue for the pre-eminence of structure (also called the objectivist view in this context) resolve that the behaviour of individuals is largely determined by their socialization into that structure (such as conforming to a society's expectations with respect to gender or social class). Structuralists describe the effect of structure in contrasting ways. The French social scientist Émile Durkheim highlighted the positive role of stability and permanence, whereas philosopher Karl Marx described structures as protecting the few, doing little to meet the needs of the many. In contrast, proponents of agency theory (also called the subjective view in this context) consider that individuals possess the ability to exercise their own free will and make their own choices. Here, social structures are viewed as products of individual action that are sustained or discarded, rather than as incommensurable forces (Gibbs 2017).

Anthony Giddens argues that just as an individual's autonomy is influenced by structure, structures are maintained and adapted through the exercise of agency. Akin to the socialisation process, interface at which an actor meets a structure is termed "structuration". In this approach, Giddens argues that human agency and social structure are not two separate concepts or constructs, but these are together produced by social action and interaction. The study of structuration means examination and analysis of the ways in which social systems are produced and reproduced in social

interaction (Giddens 1984). Thus, Structuration theory in sociology offers perspectives on human behaviour based on a synthesis of structure and agency effects known as the "duality of structure". Instead of describing the capacity of human action as being constrained by powerful stable societal structures (such as educational, religious, or political institutions) or as a function of the individual expression of will (i.e., agency), structuration theory acknowledges the interaction of meaning, standards and values, and power and posits a dynamic relationship between these different facets of society (Gibbs 2017).

It is believed that Giddens's approach to social action is that of praxis–regular patterns of enacted conduct by active individuals who, as social actors, interact other social actors in situations involving diverse influences that include habit and patterns but also reflection and conscious decision-making. Adams and Sydie (2002) sum up structuration by pointing to three emphases of Giddens:

- **Human agency;** where the social actor is a rational actor who has the ability to make decisions.
- **Reflexivity;** this involves a self-consciousness on the part of the individual and an ability to monitor the ongoing flow of social life and, at least sometimes, take one's understanding of this flow of social life into account when considering appropriate action and deciding on a course of action.
- **Structure;** these are the patterns in the social world that affect individuals and are composed of rules, resources, and agency. For Giddens, structure is more specific and detailed than system, referring to structured practices. Rules and resources are the two primary features of structures such as market exchange, class structures, political organizations and processes, and educational institutions.

Though the theory received criticism since its conception, the concept has been central for extension of theory in sociology, especially the duality of structure—ideologies, methodologies (subjective/objective), and between those who focus solely on macro-processes, such as institutional power, and those who focus solely on micro-processes, such as situated interactions (Allen 2017). It is further argued (Mondal 2020) that, the dominance of functionalism and system theory in the U.S. had put the individual or the actor in background. This was not acceptable to Giddens and his theory tried to bring the individual (and his inter-relationships with the social structures) back into social theory.

Further, the theory relates to Giddens other works like describing the *double hermeneutic* (interpretation or understanding) that helps demarcating the human/social sciences from the natural sciences. Here Giddens (1993) argues that social sciences such as sociology don't just study what people do, they also study how people understand their world, and how that understanding shapes their practice. This is unlike the *single hermeneutic* (one-way) in natural sciences, where scientists try to understand and theorise about the way the natural world is structured.

Rational Reconstruction / Reconstructive Science (1992)

Jürgen Habermas (1929–)

The rational reconstruction is a philosophical and linguistic method that systematically translates intuitive knowledge of rules into a logical form. It is an approach to science and philosophy which attempts to put meanings into language properly. Rational reconstruction involves making explicit and theoretically systematizing the universal and inescapable conditions for the possibility of certain types of phenomena. It is a manner of explicating the deep generative structures that give rise to and allow for particular performances, behaviours, and other symbolically pre-structured realities (Habermas 1991).

While the natural sciences generate theoretical knowledge about the general structures of an observable reality, rational reconstructions (also called the reconstructive sciences) generate a theoretical knowledge of the deep structures of a reality accessible only through interpretation. Habermas views the task of the reconstructive sciences as moving in two directions, horizontal and vertical. The "horizontal" direction seeks to reconstruct fundamental and important competencies, while the "vertical" direction seeks to reconstruct the (genetic) logic of the development of these competencies.

Pedersen (2008) argues that the *rational reconstruction* method is an interesting, but problematic way of confronting some of the basic epistemological questions in the social sciences. It represents an alternative to both the empirical-analytical and the hermeneutic tradition. On the basis of this methodology, Habermas' work is situated between the transcendental and the empirical approach. A fundamental problem is that it remains unclear how to test the hypothesis put forward through rational reconstruction.

Theory of the City as Object (2002)
Bill Hillier (19xx–2019)

A professor of architecture and urban morphology in the University of London, Hillier developed a unique way of looking at the social, economic and environmental functioning of cities called as the *space syntax*. It encompasses a set of theories and techniques for the analysis of spatial configurations. The general idea is that spaces can be broken down into components, analyzed as networks of choices, and then represented as maps and graphs that describe the relative connectivity and integration of those spaces. It demonstrates how people relate to space in built environments, underlining that spatial configurations through their effect on movement, first shape, and then are shaped by, land use patterns and densities.

Hillier (2002) argues that there are strong cultural variations in different regions of the world, there are also powerful invariants. The problem is to understand how both cultural variations and invariants can arise from the spatial processes that generate cities. The socio-cultural factors generate the differences by imposing a certain local geometry on the local construction of settlement space, while micro-economic factors, coming more and more into play as the settlement expands, generate the invariants. Movement emerges as the strong force that holds the whole urban system together, with the fundamental pattern of movement generated by the urban grid itself. The structure of a grid is the pattern brought to light by expressing the grid as an axial map and analyzing it configurationally. An *axial map* is the least set of longest lines of direct movement that pass through all the public space of a settlement and make all connections.

Hillier utilized the newly employed computer aided design (CAD) technologies in accurately preparing maps for several global cities to show the laws of centrality and compactness. As per the law of centrality, an object placed centrally in a space will increase universal distance more than one placed peripherally. As per the law of compactness, more compact an object or group of objects, that is more its shape approximates a circle (or for practical purposes a square), then less will be increase in universal distance in surrounding space. Drawing on space syntax research his later work (Hillier 2012) establishes that all cities, the organic as well as the geometric, are pervasively ordered by geometric intuition.

Theory of Reflexivity (2007)

Anthony Giddens (1938–), Ulrich Beck (1944–2015), Scott Lash (1945–)

Reflexivity refers to cognizance of the circular relationships between cause and effect, be it in economics or social theory. Its earlier mentions are seen in the classical Greek tales showing *Oedipus effect,* commonly understood as the notion of a *self-fulfilling prophecy* (Merton 1936) or otherwise phrased as Thomas Theorem: If men define situations as real, they are real in their consequences (Thomas & Thomas 1928). In sociology, it reflects the ability of an agency to assess the dynamics of socialization and alter their position in the social discourse or structure.

Whereas minimal reflexivity leads to an agent largely shaped by the surroundings, a higher grade of reflexivity can be defined by an agent shaping own choices, norms and policies. Giddens argues that move to a post-traditional culture leads individuals to understand their self-identity as a reflexive task. Rather than passively accepting our identity as granted, we actively observe, reflect, moderate and guard as we evolve in life. It develops continuously as a product of the person's reflexive decisions and cannot be changed all of a sudden.

Over time, society is becoming increasingly more self-aware, reflective, and hence reflexive (Beck et al. 1994). This process and state is described by similar terms like *reflexive modernity*, *high/second/late modernity*. De-traditionalization is believed to lead to the emancipation of women, the rise of a meritocratic social order where achievement is valued over ascriptive characteristics of birth and the rationalization of social life (Belliappa 2013). It is even argued (Mellor 1993) that reflexive traditions can provide new, dynamic forms for the expression and development of religion within the context of high modernity.

Theory of Smart Cities (2011)

Colin Harrison (1960–), Michael Batty (1945–)

A key enabler for new theories of urban societies is instrumentation of Smart Cities that makes the invisible visible, allowing the use information to comprehend what is going on in cities at level of individual actions, rather than pure social or statistical abstractions in the past. It is beyond the information, communication, and technology (ICT) and requires a new

professional community: The Urban Systems Collaborative—to foster mutual learning among members of the architecture, planning, engineering, transportation, utilities, information technology, operations research, social sciences, geography and environmental science, public finance and policy, and communications profession, through an *Urban Information Model* (Figure 26).

A key hypothesis of this collaborative is that the increasing accessibility of information will enable us to develop Urban Systems models that are capable of helping citizens, entrepreneurs, civic organizations, and governments to see more deeply into how their cities work, how people use the city, how they feel about it, where the city faces problems, and what kinds of remediation can be applied (Harrison & Donnelly 2011). The theory has been argued to becoming an instrument of corporate storytelling tending to technocratic reductionism/determinism (Söderström, Paasche, & Klauser 2014).

There is an alternative viewpoint to this paradigm (Allam & Newman 2018) focusing on urban outcomes rather than technology in isolation. Instead, the modernist new town approach has emerged under this new rubric leading to many problems such as urban decay and unsustainable car dependence. Recently, by utilizing big data, machine learning and artificial intelligence, urban researchers have further expanded the scope of smart cities (Batty 2013, Allam & Dhunny 2019, Ullah et al. 2020).

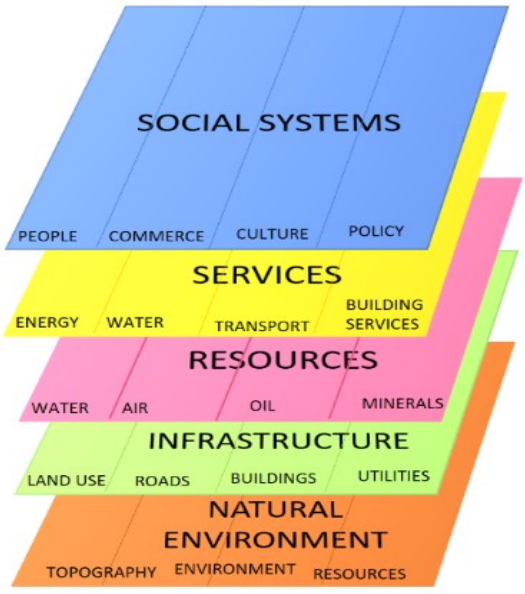

Figure 26: The Urban Information Model is a means to structure & classify layers of different information contained or flowing in networks crucial to realize smart cities

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Chapter 4
Economic Theories & Principles

Arthashastra (2nd–3rd BCE)

Vishnugupta a.k.a. Chanakya and Kautilya (350–275 BCE)

Arthashastra is an ancient Indian treatise in Sanskrit meaning the science of wealth or political economy, propounded by Vishnugupta *a.k.a.* as Chanakya and Kautilya. Rediscovered in 1905 and translated into English in 1915, the *Arthshastra* is one of the greatest political economy treatises and commonly compared to *The Prince* by Niccolò Machiavelli (published in 1532). *Artha* refers to the pursuit of worldly goods, personal success, stability, and social status including macroeconomics of trade, markets, administration, laws, courts, military strategy and public policy (Mark 2020). Here, Kautilya emphasizes the importance of intensive agriculture with fair taxation, both State owned and private businesses but with same tax laws, duly protected by penalties administered with clear and established rules. It argued that the punishment must be suitable to the crime; neither too lenient nor too harsh. Singha Roy (2018) shows that economic ideas of Kautilya are based on certain scientific principles and pertinent in modern times too. For instance, *Arthashastra* discreetly deals with taxation principles, international trade issues, labour theory of value, etc. predating several classical theories (Waldauer et al. 1996).

Kautilya shows a knowledge of basic economics that had no parallels in the Western economic thought until the publication of Adam Smith's Wealth of Nations in 1776 (Tisdell 2003). However, while Smith favoured self-interest led free market economy (invisible hand), Kautilya emphasized on public trust, *dharma* (ethics) and rule based economy as a prerequisite to economic prosperity (Sihag 2005). He thus regards money as valuable only to the extent it serves to acquire goods and thus professes virtues of ethical wealth generation and utilization (Yadav & Sanan 2012), in particular to the State economy. Tisdell (2003) expounds that although the king was the political centre in those times, Kautilya made it clear that he is bound by an implicit social contract with an ultimate objective of State policy being the happiness or welfare of his subjects. At the same time, he was keenly aware that the fortunes of the *kosh* (treasury) and the prosperity of the nation depended on its development of agriculture, industry, trade and commerce and the

efficient functioning of these economic sectors. Rangarajan (1992) argues that good governance is one of his central concerns and he gives much attention to agent-and-principal problems and asymmetry of information in relation to public administration. At the heart of Kautilyan economics is the obligation of the State to provide for social security and welfare of the people, for instance, redistribution of wealth during a famine and the collective ethics that hold a society together.

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Free Market Theory (1776)

Adam Smith (1723–1790)

Free Market forms the foundation of classical economic theory that was developed shortly after the birth of the industrial revolution and Western capitalism. Till then, most national economies followed a top-down, command-and-control policy system led by the monarchies and the mercantile (Young 2020). They held that wealth was fixed and finite, and that the only way to prosper was to hoard gold and tariff products from abroad. Accordingly, nations should sell their goods to other countries while buying nothing in return. Predictably, countries fell into rounds of retaliatory tariffs that choked off international trade (Blenman 2020).

In 1776, a Scottish moral philosopher Adam Smith published the treatise, "An Inquiry into the Nature and Causes of the Wealth of Nations", commonly known as *The Wealth of Nations*. Its central argument was that individual needs to fulfil self-interest results in societal benefit, in what is known as the "invisible hand". This, combined with the division of labour in an economy, results in a web of mutual interdependency that promotes stability and prosperity through the market mechanism. Smith rejects government interference in market activities, and instead argues that they should serve just three functions: protect national borders; enforce civil law; and engage in public works, e.g. education (Blenman 2020). The free market theory promotes an economic system based on supply and demand with little or no state control. Commonly practices through the *laissez-faire* (let it be) principle, it desires an absence of non-market pressures on prices and wages such as those from discriminatory government taxes, subsidies, tariffs, regulations of purely private behaviour, state-granted or coercive monopolies/transactions. As such, the classical economists assumed that if the economy was left to itself, then it would tend to full employment equilibrium (Anon n.d.). The work of classical economics became closely associated with economic, and later political freedom (Young 2020).

Utilitarianism (1781)

Jeremy Bentham (1748–1832), John Stuart Mill (1806–1873)

Utilitarianism is an ethical theory propounded by two prominent British thinkers Jeremy Bentham and John Stuart Mill, that states that the best action is the one that maximizes utility. It is one of the most influential and widely studied approaches in normative ethics, evolving from the pre-classical utilitarians like the British Moralists including Shaftesbury, Hutcheson, Hume and theological utilitarians such as Richard Cumberland and John Gay who believed that promoting human happiness was incumbent on us since it was approved by God.

Influenced by accounts of both Hobbes on human nature and Hume on social utility, during 1780's Bentham famously held that humans were ruled by two sovereign masters—pleasure and pain. "We seek pleasure and the avoidance of pain, they…govern us in all we do, in all we say, in all we think…" (Bentham 1789) leading to the principle of "utility" as a measure of actions for individuals and the government. This Benthamism philosophy was modified by his successor John Stuart Mill, who actually popularized the word "Utilitarianism" (Mill 1859). It emphasizes that the result or the outcome of an act is the real measure of whether it is good or bad, thus being considered as a teleological or consequentialist theory.

Bentham's Utilitarianism on pleasure and pain actually carried forward the ancient hedonistic school of thought (Aristippus Epicurus, Aristotle and Aquinas) that argued that pleasure and happiness is the most significant intrinsic good and the proper aim of human life (Driver 2014) and thus actions whose results increase happiness or diminish pain are good have a greater "utility". In order to determine the quantity of happiness that might be produced by an action, Bentham introduced the criteria of intensity, duration, certainty (or uncertainty), and its propinquity/nearness or remoteness/farness. He also includes its fecundity (will more of the same follow?), its purity (its pleasure won't be followed by pain & vice versa) and extent of that action (Cavalier 2002).

There have been several questions and criticisms to Bentham's approach, these include: (a) impartiality and agent-neutrality (whose utility? Individual or group? (b) how is happiness defined and how to measure pleasure (does everyone's happiness counts the same?), (c) there is a difficulty of attaining a full knowledge and certainly of the consequences of

our actions, (d) What constitutes the greatest amount of good (the limits or impacts up to which benefits from nature could be harnessed)?

So, although utilitarianism is arguably the most reason-based approach promoting maximum pleasure over unhappiness, it reduces the whole of normative ethics to a simple formula—the "best" approach, overlooking ethical discretion, wisdom, justice for individual rights. For example, a hospital has three patients surviving to receive organ donations of a heart, a kidney and a liver. If a relatively healthy patient is being treated in the same hospital, from Utilitarian perspective (producing the greatest consequential good for the greatest number), his organs can be harvested to save three lives at the expense of one life. Would it be an ethical or just decision?

Applying the theory, it may be possible to reason actions in unchartered, grey areas and immoral acts demanding direct or pre-emptive action including risky business deals, justifying disproportionate military force or even war. In addition, the utilitarianism's majoritarian and anthropocentric view excludes inherent values in nature's bio-geographical cycles, processes & biodiversity and negative environmental impacts. For example, creating a fast car can reach a destination quicker giving greater pleasure for maximum people would be more acceptable even at the cost of guzzling more fossil-fuel and increased fatality risks.

Mill modified Jeremy Bentham's approach of utilitarianism valuing greater happiness than pleasures. This is because he considered that animals enjoy many bursts of pleasures. For example, a "caterpillar eating leaves upon leaves" would find eating very pleasurable, but a humans are capable of higher pleasures as it takes more to make humans happy. He argued that we must consider the quality of the happiness, not merely the quantity. He argues that "It is better to be a human being dissatisfied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied. And if the fool, or the pig, are of a different opinion, it is because they only know their own side of the question. The other party to the comparison knows both sides" (Mill 1859), thus advocating for a rule based decision making.

There thus appear two types of utilitarianism, an act-based and rule-based. **Act:** The principle of utility is applied directly to each alternative act in a situation of choice. The right act is then defined as the one which brings about the greatest pleasure (or least pain) for the greatest number (Bentham 1789). **Rule:** An action is right if and only if it conforms to a

set of rules (moral principles) the general acceptance or promise of which would produce the greatest balance of pleasure over pain for the greatest number. (Mill 1859). Criticisms of this position point out that if rules take into account more and more exceptions, the rule principle would collapse into act utilitarianism. A more general criticism of this view argues that it is possible to generate "unjust rules" according to the principle of utility. For example, slavery in the past might be right if it led to an overall achievement of cultivated happiness at the expense of some mistreated individuals (Cavalier 2002).

The competing views and moral arguments between the two thoughts were carefully analyzed in late 19th century, in one of the most compelling treatise explaining how: (a) rule utilitarianism can benefit the majority whilst acting justice within the environment (Sidgwick 1874), and (b) egoism, the ethics of common sense, and rule utilitarianism can be understood as a principle of individual moral action (Brian & Henry 2020). Key classical economists like David Ricardo and John Stuart Mill heavily premised on the works of utilitarian writers, yet they conceptualized economic value from the supply side, essentially cost of land, capital and labour. The theory was later well-received by neoclassical economists like William Jevons, the founder of the marginal utility, and like Arthur Cecil Pigou, often regarded as the father of welfare economics, who attributed comparative preferences for comparative utilities unlike utilitarians who advocated for capitalism and free market. In the contemporary times, welfare economists argue for proactive role of governments within the free market economy.

Theory of Malthus (1798)

Thomas Robert Malthus (1766 –1834)

Malthus had deep interest in population studies and his key contribution was to highlight the relationship between food supply and population. In 1798, he propounded a theory in *An Essay on the Principle of Population* that food is necessary to the life of man and therefore, exercises a strong check on population. He opined that while food production increases in arithmetic progression, human population if unchecked increases faster in geometric progression (Malthus 1798). Some of his key assumptions considered a capitalist economy, three classes of workers, landlords and capitalist, the total supply of land being fixed, diminishing return from lands, and the growth of population directly related to the wage rate.

In order to analyse the trends and growth rate of population and food supply, the statistical techniques of simple liner regression and compound growth rate were applied. Malthus argued that while capitalist would invest, workers and landlord only consume. The increase in investment leads to increase in capital. Though per capita income would also increase, he suggested it will not continue forever.

The theory was essentially an empirical response to blind supporters of French Revolution and philosophers like Rousseau and Godwin (Godwin & Carter 1971), who favoured a utopian society with unbridled human power and prosperity without any controls. Malthus reasoned two types of checks hold population within resource limits: positive checks, which raise the death rate; and preventive ones, which lower the birth rate. The positive checks include hunger, disease and war; the preventive checks: birth control, postponement of marriage and celibacy (MacRae 2018). War, famine, and disease, he pointed out, had to be the eventual alternatives to the limitation of family size.

Secondly, his assessments were against the Poor-Laws that encouraged large families and widely held view of his day that size of population and high fertility rate added to nation's wealth. His book caused furious controversy and led him to prepare a more scholarly work (Dunn 1998). Writing before the industrial revolution, Malthus did not fully appreciate the impact of technology (i.e., pesticides, refrigeration, mechanized farm equipment, and increased crop yields) on food production that triggered the agricultural revolution. It caused food production to meet or exceed population growth and made prosperity possible for a larger number of people. The incidence of famine has diminished, mostly caused by war or by destructive government policies, such as price controls.

Malthus also failed to anticipate the widespread use of contraceptives that brought about a decline in the fertility rate (Landsburg 2019). Nevertheless, after 200 years after Malthus first published his ideas, his message remains prophetic. Epidemics may be less lethal and crops more abundant, but populations are still outstripping food production in many parts of the world, and wars remain as destructive as ever (Dunn 1998). The challenges posed by poverty, food crises, deforestation, desertification, water scarcity and severe ecological impacts by changing climate, especially in developing countries make Malthusian theory central to the debates of sustainability.

Ricardo Theory of Rent (1815)
David Ricardo (1723–1823)

Presented by David Ricardo in his book, "On the Principles of Political Economy and Taxation". theory of rent, the Ricardian theory of rent also known as Law of Rent states that the rent of a site is equal to the economic advantage obtained by using it to the most productive use, against using a marginal (or the best rent-free) land for the same activity, given the input of capital and labour remain constant (Ricardo 1817). While looking land beyond soil, the theory considers the economic rent and locational value associated with private appropriation of any natural factor of production, being equally applicable to urban or rural locations.

The economic rent is a surplus income—excess of total payments to a factor of production (land, labour or capital) over and above its minimum supply price or opportunity cost i.e., what is required to bring the particular factor into production (Nipun 2020a). The theory premises how bargaining power of cultivators never dips below the obtainable produce on the best available rent-free land, for whenever rent leaves them with less than they could generate on free land, they can move to new locations to generate an additional margin of production. As landlords have locational monopoly, rent becomes the differential between the productive land capacity and the margin of production, forming a basis of the law of limiting marginal utility.

Using empirical data, Ricardo demonstrated differential margins of production, for all plots of land have varying degree of productive capacities; some being highly fertile while other are less. Similarly, there may be differences in the situation of the different plots of land. Lands favourably situated (say, near the market) have greater advantages than those which are not so situated (say, far away from the market). The surplus enjoyed by superior lands over inferior is called the *differential rent* or *situation rent* (Nipun 2020a).

The Ricardian rent is often confused with contract rent which is the actual payments tenants make for use of the properties of others (Barlowe 1986). There are other criticisms on account of unrealistic assumptions of fixed supply or scarcity of land, availability of marginal land, perfect competition, dismissing alternative uses, rent and price relation, etc. However, the treatise presents the first clear explanation of the source and magnitude of economic rent that land should accrue for its use to varying production.

Absolute and Comparative Advantage (1819)
Adam Smith (1723–1790), David Ricardo (1723–1823)

The theory of absolute advantage was developed first by Adam Smith in his famous book *The Wealth of Nations* and later, David Ricardo published his book *On the Principles of Political Economy*. David Ricardo then extended it to incorporate the *comparative advantage* theory. He showed that why nations need to trade in a mutually beneficial manner (Kılıç 2002). Both Smith and Ricardo demonstrated this with empirical data. To put it simply, absolute advantage is the inherent ability of an individual, organization or country that allows it to produce a given good in fewer resources—generally raw materials, manpower, or time. It essentially means to produce a specific good in an efficient and effective manner at a relatively *lower marginal cost* without compromising its quality.

The absolute advantage can be the result of a country's natural endowment. For example, Saudi Arabia has the world's abundant oil resources, the United States has extensive farmlands to grow corn and wheat, Guatemala and Colombia have climates suited for producing coffee, while Chile and Zambia have richest copper mines. Undoubtedly, these can produce it with fewer resources than others, and trading will benefit all parties. However, thinking about trade just in terms of geography and absolute advantage is incomplete. It actually occurs because of comparative advantage.

Comparative advantage refers to the entity's capability of producing the specific good at *lower marginal cost* and *lower opportunity cost* in comparison to other entities. The question it should be asking to itself when it transacts with others is this: "What do we give up to produce this good"? For example, if Chile produces copper, the resources it uses cannot be used to produce other goods such as corn. As a result, Chile gives up the opportunity to produce corn. In absolute advantage where the emphasis is only on marginal cost, comparative advantage takes into account both marginal and opportunity cost (Greenlaw and Shapiro 2018).

Thus, it can be argued that transactions based on absolute advantage to entities may not be beneficial or sustainable for the economy as these focus on maximizing production without considering the opportunity cost of production. However, comparative advantage is more tenable in helping entities in taking decisions related to resource allocation, domestic productions and import/export of goods.

Theory of Distribution (1820)

David Ricardo (1723–1823)

The theory of distribution essentially deals with the determination of the levels of payment to the various factors of production (Anushree 2020), essentially land, labour, and capital. Traditionally, economists have studied how the costs of these factors and the size of their return rent, wages, and profits are fixed. The theory of distribution holds the key to an understanding of the whole mechanism of the economic system or the macroeconomics. The Ricardo's theory was based on two principles: *marginal principle* and *surplus principle*. The former explains the share of rent, the latter the division of the residue between wages and profits. As assumption, the economy is broadly divided into agriculture and industry demonstrating how forces in agriculture serve to determine distribution in industry (Kaldor 1955).

Rent is the difference between the product of labour on *marginal* land and the product on average land, or (allowing for the intensive, as well as the extensive, margin). The difference between average and marginal labour productivity which depends on the elasticity of the P–Ap curve (Figure 27), i.e., the extent to which diminishing returns operate. The marginal product of labour (or, in classic a parlance, the "produce-minus-rent") is not however equal to the wage, but to the sum of wages and profits. The rate of wages is determined quite independently of marginal productivity by the supply price of labour. In modern parlance, the Ricardian hypothesis implies an infinitely elastic supply curve of labour at the given supply price. Labour demand is not determined however by the P–Mp curve, but by the accumulation of capital which determines how many labourers can find employment at the wage rate 0W. Hence the equilibrium position is not indicated by the point of intersection between the P–Mp curve and the supply curve of labour, but by the aggregate demand for labour in terms of cornel the "wages fund".

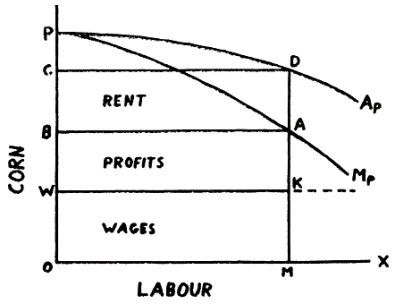


Figure 27: The theory of distribution explains how in steady state, the real wages will stagnate at subsistence level, the interest rate of capital will stay at zero and rents will maximize

In a steady state situation, the real wages will stagnate at subsistence level, the interest rate of capital will stay at zero and rents will reach its maximum level. Ricardo explains how this steady state is painful, especially for the working class. However, this steady state can be delayed with technological progress or international trade. Anushree (2020) argues that no doubt, the marginal productivity theory is the basis of most theoretical discussions on the issue of distribution. However, with all its restrictive assumptions, notably universal perfect competition and stationary equilibrium, it is not a very accurate representation of reality.

General Equilibrium Theory (1874)

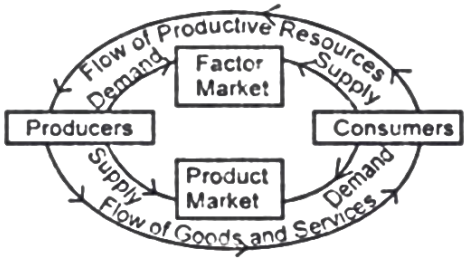
Leon Walras (1834–1910)

The theory was propounded by the French economist Léon Walras during the 1870s, for his ground-breaking research *Elements of Pure Economics* (Walras 1954). An economy can be in general equilibrium only if all consumers, all firms, all industries and all factor-services are in equilibrium simultaneously and they are interlinked through commodity and factor prices. General equilibrium exists when all prices are in equilibrium; each consumer spends his given income in a manner that yields him the maximum satisfaction; all firms in each industry are in equilibrium at all prices and output; and the supply and demand for productive resources (factors of production) are equal at equilibrium prices (Chand 2020).

The general equilibrium analysis is based on the following key assumptions: (1) There is perfect competition both in the commodity and factor markets, (2) Tastes and habits of consumers are given and constant, (3) Incomes of consumers are given and constant, (4) Factors of production are perfectly mobile between different occupations and places, (5) There are constant returns to scale, (6) All firms operationalize under identical cost conditions, (7) All units of a productive service are homogeneous, (8) There are no changes in the techniques of production, and (9) There is full employment of labour and other resources.

Given the above assumptions, the economy is in a state of general equilibrium when the demand for every commodity and service is equal to the supply for it. The decisions of consumers for the purchase of each commodity must be in perfect accord with decisions of producers. Similarly, decisions of owners for selling each factor service must be in perfect harmony with decisions of their employers.

Figure 28: The General Equilibrium Theory can be understood simply as an economy with two sectors, the household and the business, that works on exchange of goods and services (real flows) and monetary flow between these



Such a general equilibrium is characterized by two conditions in which the set of prices in all product and factor markets is such that (Kurz & Salvadori 2002): (1) All consumers maximize their satisfactions and all producers maximize their profits; and (2) All markets are cleared which means that the total amount demanded equals the total amount supplied at a positive price in both the product and factor markets. We can understand this simply with an economy having two sectors, the household and the business, that works on exchange of goods and services (real flows) and monetary flow between these. In the product market, consumers purchase goods and services from producers while in the factor market, consumers receive income from the former for providing services. Thus consumers purchase all goods and services provided by producers and make payments to the latter. The producers in turn, make payments to consumers for the services rendered by the latter to the business, wage payments for labour services, interest for capital supplied, etc. Thus payments go around in a circular manner from producers to consumers and from consumers to producers (outer rings in Figure 28). There are also flows of goods and services in the opposite direction to the money payments flows. Goods flow from the business sector to the household sector in the product market, and services flow from the household sector to the business sector in the factor market (inner rings). These two flows are linked by product prices and factor prices. The economy is in general equilibrium when a set of prices is allowed at which the magnitude of income flow from producers to consumers is equal to the magnitude of the money expenditure from consumers to producers.

The general equilibrium analysis of the economy has its limitations, for instance: (1) It is based on certain impractical assumptions contrary to the real-world conditions, like there being perfect competition in the economy, (2) It presents a non-temporal or static analysis where all consumers and producers consume and produce the same products ceaselessly without any lapse of time. Their preferences and economic decisions remain identical in perfect harmony with one-another. In practice, producers and consumers

are constantly evolving in terms of their preferences, aims of reducing expenditure or costs, improving technology, etc. in addition to externalities by the environmental conditions and state policies/intervention. As no two factor services are homogeneous, there are no constant returns to scale. Thus any progression towards general equilibrium is diminished and it is merely a utopian proposition.

Theory of Surplus Value (1867)

William Thompson (1834–1833), Karl Marx (1818–1883)

The concept originated in the 1820–30s from Ricardian socialism (classical views on capitalist exploitation that stated that labour is the source of all wealth and exchange value while rent, profit and interest were distortions in the free market). The origin of the phrase is attributed to the economist William Thompson (1824) that was later evolved and popularized by Karl Marx's use of the German word *Mehrwert*, which connotes as "more worth" or simply Surplus Value. According to Marx's theory, surplus value is equal to the new value created by workers in excess of their own labour-cost, which is appropriated by the capitalist as profit when products are sold (Marx 1863). It is considered to be the difference between the amount raised through a sale of a product and the amount it cost to the owner of that product to manufacture it: i.e. the amount raised through sale of the product minus the cost of the materials, plant and labour power.

In the contemporary times, this would include the sum of net distributed and undistributed profit, net interest, net rents, net tax on production and net receipts associated with royalties, licensing, leasing, certain honorariums, etc. (Mandel 2004). With the theory of Surplus Value, Marx targets exploitation in capitalism. He reasons that value of the product produced by labour is greater than the actual price or wage of labour. The increasing exploitation of the worker beyond necessary time leads to the surplus wealth accumulation by capitalists thereby deepening the rich and poor divide. Such a political economy that extracts the labours productivity for a commodity and does not permit to decide the new value of his creation against his inputs is injustice. Prychitko (2019) suggests that the labour theory of value is a major pillar of traditional Marxian economics, which is evident in Marx's masterpiece, *Das Capital* (1867). The theory's basic claim is simple: the value of a commodity can be objectively measured by the average number of labour hours required to produce that commodity.

Economic Base Theory (1928)

Pieter Court (1618–1685), Robert Haig (1887–1953), Douglass North (1920–2015)

The first appearance of the idea of an economic base can be traced back to 1659 when a Dutch cloth merchant named Court published a manuscript on the prosperity of his home city as the direct result of the its export-oriented industries (Wang & vom Hofe 2007). However, it was empirically tested in 1927 by Haig, an American expert in public finance and taxation, while preparing the Regional Plan of New York. He proposed that the regional economy can be subdivided in two key sectors, basic activities and non-basic activities.

The basic activities are those which export goods and services to different regions outside the economic confines of the community for example large scale industry. The non-basic activities are those which provide for the needs of the residents within the community's economic limits such as the services provided by the local barbers, tailors, retail shops etc. (Haig 1927). Because import-export flows were not monitored at local levels, it was not imperative to study industry output and trade flows.

Alternatively, Haig used employment data in New York region to evaluate location quotient, essentially the ratio of incomes in basic and non-basic economy and compare it with other regions. The theory posits that money inflows from other regions (i.e. external revenues) are the main engines of economic activity at local level (Poinsot & Ruault 2019). It establishes that while an increase in demand for goods and services is considered to be a prerequisite to economic growth in a place, yet such a growth can be sustained only when this demand is satisfied by increasing basic activity exports from local production.

Later, the economic base model was developed for the United States (North 1955) that explicitly recognized the important role of supply factors in determining the nature and growth potential of a region's export base. In practice, however, most economic base models of this and subsequent periods have maintained a fairly strict demand orientation (Krikelas 1992).

The Debt-Deflation Theory of Great Depressions (1933)
Fisher Irving (1867–1947)

The theory was developed by Irving Fisher, a professor in Yale University to explain the cause of the Wall Street Crash of 1929 and the ensuing Great Depression. It points to over-consumption, over-spending, and under-investment that leads to destabilization in the relationship between debt and deflation. The combination of increasing debt and decreasing prices that results an increased value of debt leading to financial distress (Fisher 1932). Assuming that, at some point of time, a state of over-indebtedness exists, this will tend to lead to liquidation, through the alarm either of debtors or creditors or both.

Then we may deduce the following chain of consequences in nine links (Fisher 1933): (1) Debt liquidation leads to distress selling and to (2) contraction of deposit currency, as bank loans are paid off, and to a slowing down of velocity of circulation. This contraction of deposits and of their velocity, precipitated by distress selling, causes (3) a fall in the level of prices, in other words, a swelling of the dollar. Assuming, as above stated, that this fall of prices is not interfered with by reflation or otherwise, there must be (4) a still greater fall in the net worth's of business, precipitating bankruptcies, and (5) a like fall in profits, which in a "capitalistic"; that is, a private-profit society, leads the concerns which are running at a loss to make (6) a reduction in output, in trade and in employment of labour. These losses, bankruptcies, and unemployment, lead to (7) pessimism and loss of confidence, which in turn lead to (8) hoarding and slowing down still more the velocity of circulation. The above eight changes cause (9) complicated disturbances in the rates of interest, in particular, a fall in the nominal, or money, rates and a rise in the real, or commodity, rates of interest

Fisher was also quite clear that deflation alone in an environment without great private debt does not necessarily cause economic disaster. Fisher turns to solutions to debt deflation, and his cure is "reflation" or price stabilization, a cure he appears to think can be achieved mainly by monetary policy. The theory has since the 1980s rekindled interest amongst mainstream economist Ben Bernanke and post-Keynesian economist Hyman Minsky (Minsky 1992, Keen 1995).

General Theory of Employment, Interest and Money (1936)
John Maynard Keynes (1883–1946)

The General Theory brought one of the most significant shift in economic thought, establishing macroeconomics while contesting the tenants of classical economics. Keynes (1936) introduced the theory during the middle of the Great Depression, when millions of workers in the US and Europe had been unemployed for years, and economic orthodoxy could not account for this "anomalous" situation. He debated classical theories based on the idea that production creates its own demand and the economy always recovers to full employment after a shock. Keynes called his treatise the *General Theory* because he conceived classical doctrine as only a special case of a more complete approach (Rojas 2017).

It explicates that recessions and depressions can occur repeatedly because of inadequate or fluctuating demand in the market for goods and services. In response to low levels of economic activity and widespread unemployment across the world, Keynes called for an increase in government expenditure in order to boost the market. In doing so, the theory presented new concepts like the principle of effective demand and liquidity preference, the consumption function and prominence to the marginal efficiency of capital and the multiplier effect. This conflicted the laissez-faire approach with minimal government intervention in the classical economic policy. The manuscript is organized in six books and its contents were summarized for easy understanding by Paul Krugman and others (Blunden 2002, Krugman 2006, Rojas 2017), readily accessible on the internet.

The macroeconomic implications and policy applications of the Keynesian model include (Blinder 2008): (1) Aggregate demand is influenced by a host of economic decisions—both public and private—and sometimes behaves erratically, (2) Changes in aggregate demand, whether anticipated or unanticipated, have their greatest short-run effect on real output and employment, not on prices, (3) Prices, and especially wages, respond slowly to changes in supply and demand, resulting in periodic shortages and surpluses, especially of labour.

The Keynesians do not think that the typical level of unemployment is ideal—partly because unemployment is subject to the caprice of aggregate demand, and partly because they believe that prices adjust only gradually. They mostly advocate active stabilization policy to reduce the amplitude of the business cycle, which they rank among the most important of all

economic problems, meanwhile some Keynesians are more concerned about combating unemployment than about conquering inflation.

Most notably, the theory popularized the Keynesian multiplier, that was first introduced by Richard Kahn (Kahn 1931). It asserts that more the government spends—or invests in the economy—the greater the chance that the economy will flourish. Regardless of the type of government spending, it will lead to cycles of economic prosperity and increased employment, raising gross domestic product (GDP) by a larger amount of the increase. So $1 billion in government spending will raise a country's GDP by more than the amount spent. This idea was at the core of the New Deal and the growth of the welfare state. Later, Milton Friedman and others contended that the Keynesian multiplier reasoning ignores how governments finance spending by taxation or through debt issues (Friedman 1962). Raising taxes takes the same or more out of the economy as saving, while raising funds by bonds causes the government to go in debt. Recently, it has been shown (Beattie 2018) how the growth of debt becomes a powerful incentive for the government to raise taxes or inflate the currency to pay it off, thus lowering the purchasing power of each dollar that the workers are earning.

Harrod-Domar Growth Model (1939)

Roy Forbes Harrod (1900–1978), Evsey Domar (1914–1997)

Developed exclusively by Roy Forbes Harrod (1939) and Evsey Domar in (1946), the model premises capital as the crucial factor of economic growth (Karmakar 2020). On the one hand, new investment generates income (through multiplier effect); on the other, it increases productive capacity (through productivity effect) of the economy by expanding its capital stock. While classical economists emphasised productivity aspects of the capital and took for granted the income aspect, Keynes paid greater emphasis to the issue of income generation. Harrod and Domar took special care to deal with both the problems generated by investment in their models based on several key assumptions (as expounded in Karmakar 2020).

Among others, these included: (i) How steady growth can be achieved in an economy with a fixed capital-coefficient (or capital- output ratio) and a fixed saving-income ratio? (ii) What are the conditions for maintaining steady uninterrupted growth? (iii) How do the natural factors limit the growth rate of the economy? In order to discuss these issues, Harrod adopted three

different concepts of growth: the *actual growth*, the *warranted growth*, the *natural growth*. Actual growth is the real rate increase in a country's gross domestic product per year. *Warranted growth* rate is the rate of growth at which the economy does not expand indefinitely or go into recession. *Natural growth* is the growth an economy requires to maintain full employment. For example, if the labour force grows at 2 % per year, then to maintain full employment, the economy's annual growth rate must be 2 %. The model suggests that the rate of economic growth depends on two things (Pettinger 2019): (1) Level of Savings (higher savings enable higher investment), and (2) Capital-Output Ratio (a lower capital-output ratio means investment is more efficient and the growth rate will be higher). Although developed to analyze the business cycle, the model was adapted to "explain" economic growth, concluding that (Welker 2012):

- Economic growth depends on the amount of labour and capital.
- As less developed countries often have an abundant supply of labour, it is a shortage of physical capital that holds back economic growth and development.
- Net investment leads to more capital accumulation, which generates higher output and income.
- Higher income allows higher levels of saving.

Overall, the model argues that the only way to increase GDP of a country is by increasing the savings rate or transfer of capital from abroad and at best represents growth occurring in a circular manner (Figure 29).

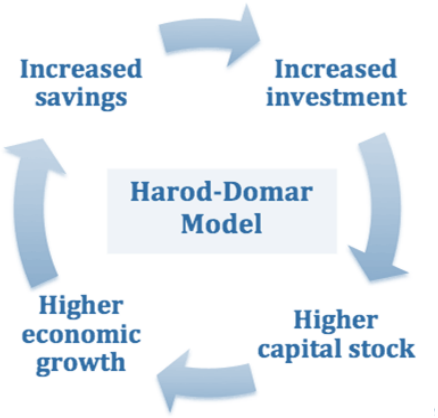


Figure 29: According to the Harrod-Domar Model, growth occurs in a circular manner, increased investments leading to higher capital stocks, economic growth and savings

There are many criticisms of Harrod-Domar Model too. Pettinger (2019) broadly presents these as:

- Developing countries often find it difficult to increase saving due to poverty. On the other hand, there are countries that experienced rapid growth rates despite savings, such as Thailand.
- Harrod based his model on looking at industrialised countries post-depression years, that later did not explain for long-term growth rates.
- The model ignores factors such as labour productivity, research & development.
- It assumes the existence of a reliable finance system, transport system and skilled labour that are often limited in developing countries.
- The model explains boom and bust cycles through the importance of capital. In practice, businesses are influenced by additional things like expectations.
- Harrod assumed there was no reason for the actual growth to equal natural growth and that an economy had no tendency to full employment. However, this was based on the assumption of wages being fixed.

Stage and Sector Theory (1940s)

John Bates Clark (1847–1938), Irving Fisher (1867–1947)

The Stage and Sector Theory (also known after its proponents as the Clark Fisher Model) was developed in the 1940s. It describes the changing balance of employment over time, and has been used mainly at a national level (Burtenshaw 2016). Here, Clark and Fisher proposed that every economy will go through certain stages of development of key sectors (Figure 30), namely:

(1) Primary Sector: It is related to the activities of extracting raw materials from natural resources, for instance mining, forestry, fishing & agriculture. This is the main economic activity for low-income countries.

(2) Secondary Sector: The second stage is industrial and related to construction & manufacturing sectors, the part that processes natural resources into goods that people want. As economies develop, income will rise.

Since agriculture goods have low income elasticity of demand (IED), demand for them will increase but at less than proportionate of income. Compared to manufacturing goods, relatively it has higher IED. Therefore, as income

increases, demand for it will also increase at a higher rate. This will lead to rapid industrialisation and shrinking of the agriculture sector. This is the main economy of middle-income countries.

(3) Tertiary Sector: The third stage is related to sectors that enable goods and services. Logically, as people feel even much richer, they will now demand for more and better services e.g. banking, transport and communications, quality education, medical facilities, entertainment & travel. The tertiary sector has very high IED (could be more than 1). This is the core economic activity of high-income countries (Low 2008).

As an extension to the above, the fourth stage is research and development i.e. the Quaternary sector includes scientific research, knowledge economy, IT/ICT, specialized education, management, consulting, information processing, finance, etc.

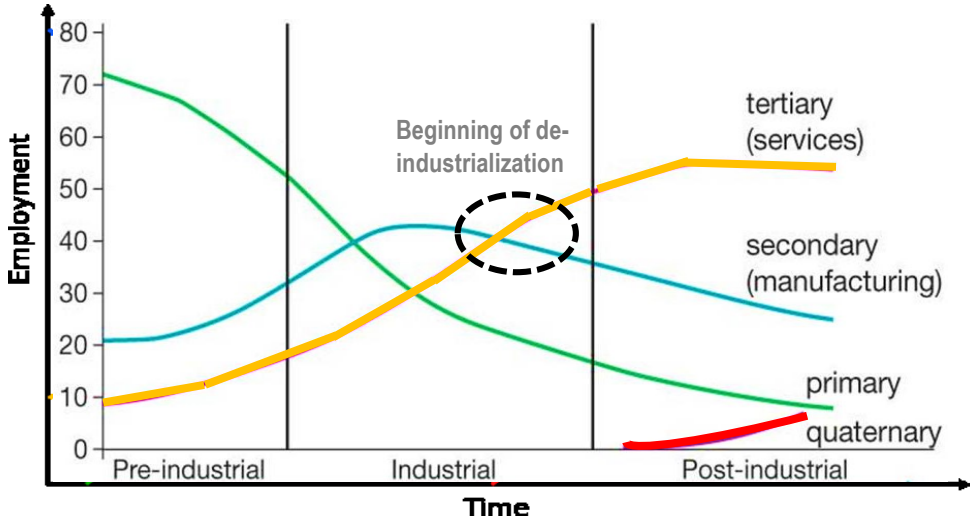


Figure 30: The Clark's sector model explains the sequential evolution of primary, secondary, tertiary and quaternary sectors of economy. Source: Adapted from Nickcampbell18 (https://commons.wikimedia.org/wiki/File:Clark's_sector_model.svg), "Clark's sector model", marked as public domain, details on Wikimedia Commons: https://commons.wikimedia.org/wiki/Template:PD-self

Input–Output Model (1941–1953)
Wassily Leontief (1906–1999)

In 1941, a professor at Harvard University, Leontief devised an input-output (I-O) table for the American economy (Leontief 1941). It largely drew from Francois Quesnay's elementary *Tableau économique,* Léon Walras' work *Elements of Pure Economics* (Walras 1874) and significantly from the method of material balance planning developed by early soviet economist like Alexander Bogdanov, Vladimir Groman and Vladimir Bazarov and Gosplan- the State Planning Committee (Belykh 1989), where Leontief had his formative education.

Based on the assumption that each industry in the economy has two types of demands: external demand (from outside the system) and internal demand (demand placed on one industry by another in the same system), Leontief developed his model representing sector input and output with matrices and their relation through linear equations. The Nobel Prize winning work presented a quantitative method to determine inter-dependence among various economic sectors.

In order to produce goods, industries required raw materials from the agricultural sector as well as goods produced by the other industries. so, each industry must produce enough to supply the needs of the other industries as well as the external demand (Editors NWE 2020). Leontief paved the way for systematic large-scale modelling efforts and for a sounder empirical base for all of economics (Carter & Petri 1989). The concept of flow of commodities from one industry in a region to another industry region has given rise an inter-regional models. The regional input-output analysis is basically of three types:

1. Local impact studies (which examine the impact of a new industry located in a given area on the total change in the level of economic activity; in order to understand the total change of the inter-relations in an input-output matrix)
2. Regional balance of payments studies (which try to quantify the relation of a region to the rest of the economy)
3. Inter-regional flow studies (which seek to examine quantitatively the structural relationships between regions)

Polenske (1995) further demonstrates the model's application in four other spatial typologies: regional, intra-national, multiregional, and interregional.

Game Theory (1944)

John von Neumann (1903–1957), Oskar Morgenstern (1902–1977), John Nash (1928–2015)

Game theory is a theoretical framework for conceiving alternative or multiple situations among competing players. In some respects, game theory is the science of strategy, or at least the optimal decision-making of independent and competing actors in a strategic setting (Hayes 2020). The theory was propounded by the Hungarian-American mathematician John von Neumann in a paper in the early 1940s, followed by a book co-written with an economist Oskar Morgenstern, which considered cooperative games of several players (Neumann & Morgenstern 2004). Later, the theory got extended by the mathematician and Nobel Laureate John Nash extensively popularized in the movie *A Beautiful Mind* (2001).

There are several definitions, types and examples involved. The theory uses specific terminologies like game, players, payoff, information set, strategy, Nash Equilibrium. There are many types of game theories (e.g. cooperative/ non-cooperative or competitive, symmetric/asymmetric, simultaneous/ sequential, etc.). While there are several applications, the theory is popularly demonstrated by the Prisoner's Dilemma, the Dictator's Game and the Volunteer's Game.

A common example that we see in everyday life is related to public goods: if all the residents of a society decide to become good citizens and decide not to throw trash in the open—the society benefits as a whole (even the property rates might go up!). But an individual might behave in a rogue way (selfish?) by throwing trash in the open—the cost of cleaning is borne by the whole society. This also extends to the free-rider problem and tragedy of commons. Game theory has a variety of applications in economics, business, political science, biology, computer science and even philosophy. It has helped and is currently helping strategists of every kind all over the world to better design their environments, to suit their overall needs (MBACB 2020).

Needless to say, the theory goes beyond the classical theory of probability (pure chance) and applied to a wide variety of real-world situations in which the choices of players interact to affect the outcome, for example, to determine what political coalitions or business conglomerates are likely to form, the optimal price at which to sell products or services in the face of competition, the power of a voter or a bloc of voters, whom to select for a

jury, the best site for a manufacturing plant, and the behaviour of certain animals and plants in their struggle for survival (Davis & Brams 2020).

Game theory revolutionized economics by turning away from steady-state equilibrium in neoclassical economics toward the market process that has to deal with entrepreneurial anticipation, price-fixing, competing behaviours, strategic choices, collusion, etc. in imperfect market competition. In addition, its most potent application lies in behavioural economics and demand assessment (Samuelson 2016). Meanwhile, there are certain limitations of the theory too. Like most other economic models, it assumes that people act rationally for self-interest and utility-maximization. In practice, humans cooperate and are concerned about social-welfare, self-image and improving their social status too.

Dual-Sector / Lewis Structural Change Model (1954)

William A. Lewis (1915–1991), John CH Fei (1923–1996) and Gustav Ranis (1929–2013)

William Arthur Lewis' paper, "Economic Development with unlimited supplies of labour" at the Manchester School (Lewis 1954), is one of the most frequently cited publications by any modern economist with a key focus on "dual economics" of the traditional/agricultural and the modern/industrial economy coexisting undergoing "structural transformation" (Nipun 2020b). John C. H. Fei and Gustav Ranis later extended the Lewis model to what is commonly known as the Surplus Labour model or the Lewis-Fei-Ranis model of economic development (Ranis & Fei 1961). It is a labour equivalent to what Harrod–Domar model deliberates for savings and investments in under developed countries (Figure 31).

Essentially, the agricultural sector is assumed as subsistence, of low productivity, incomes, savings, underemployment while the industrial sector is considered technologically advanced with high levels of capitalist investment operating in a largely urban environment. Lewis suggested that the modern industrial sector would attract workers from the rural areas. Industrial firms, whether private or publicly owned could offer wages guaranteeing a higher quality of life. The migrating workers entering into the industrialized economy would become more productive, generate greater incomes, savings and taxes that would enable governments to fund necessary development (Welker 2012). An increased investment into the industrial sector in the less developing countries is thus desirable. Moreover, as labour productivity is low in traditional agriculture, people leaving rural

areas would have little impact on output. Thus food availability for the remaining villagers would increase generating surplus and income increase.

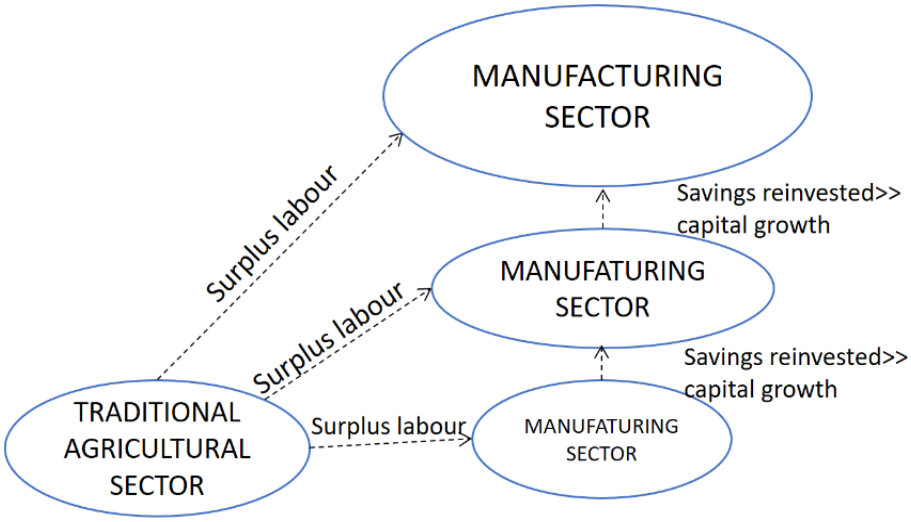


Figure 31: The Lewis Structural Change Model of Growth is largely a labour equivalent to what Harrod–Domar model, arguing for increased savings and investments to usher growth in the manufacturing sector in under developed countries

There are several limitations of the model. It basically explained the historical growth of the then industrialized nations disregarding the realities of the current LDCs. In certain instances, surplus labour may not exist in rural economy because of either lesser population or greater production. In other cases, increasing rural-urban migration may further exacerbate urban poverty and inequality. The assumption of a constant demand for labour in industries is debatable due to technological improvements. Similarly, savings from higher incomes earned in the industrial sector may not occur in event of higher spending or "capital flight" i.e. transfer of savings to other places. Most importantly, the model overlooks the element of training or skill development and its costs.

Modernization, Structural & Dependency Theory (1954)

Raul Prebisch (1901–1986), Celso Furtado (1920–2004), Wallerstein (1930–2019)

The modernization theory suggests that traditional societies will develop as they adopt more modern practices. Drawing from social thoughts of Max Weber and Talcott Parsons, the concept studies the internal factors of a country, assuming that with assistance, traditional societies can be developed in the same manner as industrialized countries have been. With modernization theory advocates asserting that modern states are richer, powerful and their people are able to enjoy higher standards of living, it became, it became a dominant paradigm in economics and social studies in the 1950s, positively influencing grants and aid programmes of several developed countries to the developing world. Nevertheless, the theory is often viewed as being Eurocentric or biased towards the Western model of industrialization to become modern, as such ignoring or undermining the traditional and primitive and cultural systems. It drew strong criticism from multiple sides including structuralists, socialists and dependency theorists.

Structuralist economics or Structuralism is an approach that stresses on the typical structural features while undertaking economic analysis. Proposed by Latin economists Raúl Prebisch and Celso Furtado in early 1950s, it conceives global economic inequality and distorted development as an inherent structural feature of the global exchanges. The structuralists identified specific rigidities, shortcomings and attributes of economic structure in developing countries to evaluate their policy decisions. Developed in the times following World-War II, the theory tried to go into the roots of poverty in developing countries, the imperialism/colonialism to argue that resources flow from a "periphery" of poor and underdeveloped societies/nations to a "core" of wealthy ones, thereby strengthening the notion that "rich become richer while poor become poorer" in a world system (Ahiakpor 1985). Dependency theory argued against modernization claiming that underdeveloped countries are not merely basic versions of developed countries, but have their own distinctive structures and features. For application purpose, dependency theorists can be typically divided into liberal reformists and neo-Marxists. While liberal reformists typically advocate for targeted policy interventions, the neo-Marxists believe in a command-centered economy (Schmidt 2018). Based on dependency theory, Wallerstein (1974) furthered the world-systems theory (WST) that viewed the world not as binary but composed of *core countries*, *semi-periphery countries* and *periphery* countries.

Rostow's Model: The Five Steps of Economic Development (1960)
Walt Whitman Rostow (1916–2003)

In 1960, the American economic historian, W.W. Rostow theorised that countries traverse five linear stages of economic development (Figure 32), through certain likely conditions in investment, consumption, and social trends at each stage (Rostow 1960). The stages and transition periods may occur at varying lengths from country to country and even their region to region. For the economies of least developed countries to develop, the right conditions for substantial investment would have to be created. For instance, if aid or foreign direct investment occurs at stage 3, the economy needs to have reached stage 2 (Welker 2012). The two basic model assumptions are that countries want to modernize and grow, and that the society agrees to the materialistic norms of economic growth. Jacobs (2020) summarizes the five stages of economic development proposed by Rostow (1960) as:

1. **Traditional Society:** This stage is characterized by a subsistent, agricultural based primary economy, with intensive labor and low levels of trading. The population has limited scientific perspective on the world and technology.
2. **Preconditions to Take-off:** Here, a society begins to develop cash crops, export of raw materials, roads, railways, ports, small manufacturing, and a more national/international outlook, as opposed to regional, with individual and social mobility.
3. **Take-off:** A short period of intensive growth, in which industrialization and urbanization starts to occur, and workers and institutions become concentrated around the new industries.
4. **Drive to Maturity:** This stage takes place over a long period of time, industries diversify, development of transport infrastructure & service industry, standards of living rise, use of technology increases, and the national economy expands and diversifies, large scale investment in social infrastructure.
5. **Age of High Mass Consumption:** Here, a country's economy flourishes in a capitalist system with a largely urban society having disposable income for additional goods beyond basic needs. A widespread and normative consumption of high-value consumer goods like cars. Rostow believed that Western countries, most notably the United States occupied this last "developed" stage, also known as the post-Industrial economy.

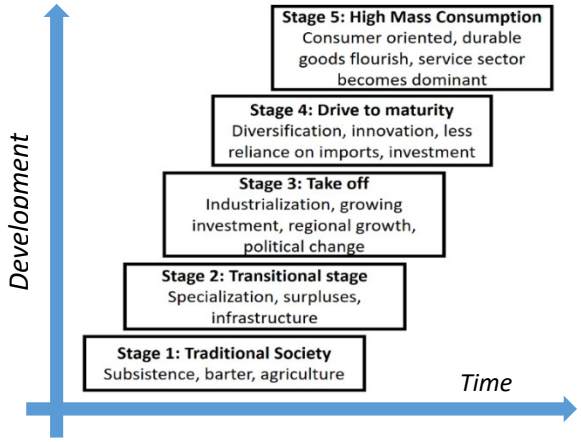


Figure 32: The Rostow's Model demonstrates the five stages of development in a traditional society transforming into a high mass consumption economy

There are several limitations of the Rostow's model:

- It does not fully apply to the Asian and African context. Historically, these colonized regions faced over-exploitation of resources, lop-sided development, systematic racial discrimination of people in development, poverty, civil war or unrest and boundary disputes. Then, different regions within these countries are at different stages of development. Also, conditions relating to the take-off and pre take-off stage are quite similar and overlapping there.
- The model presumed that the pathway of western economies is ideal and can be followed universally. One size fits all, and those that don't are a "problem". As later evidence showed, there are several methods and policies to development.
- The model does not account for deindustrialization at all and rather shows that growth can be put on auto-pilot mode till it attains the maturity stage. On the contrary, Kuznets research demonstrates that growth cannot be automatic, and requires constant interventions.
- The model overlooks global and liberal trade arrangements that allow industries to be relocated to lower-wage places like S.E. Asia, China, etc.
- Widely criticized by environmentalists as it justifies mass consumption of resources as the highest and desirable goal to economic development, disregarding ecological limits to generate resources and the overall environmental impact.

Rational Choice Theory (1961)
George Homans (1910–1989)

The Rational Choice Theory (RCT) is used to model human decision making, especially in microeconomic contexts, where it helps experts better understand the social behaviour in terms of rationally explicit actions, where individuals use their self-interests to make choices that will provide them with the greatest benefit. How individuals decide greatest benefit is dependent on personal preferences. For instance, one person may decide they want to drink alcohol because it relieves their stress while for another it is a cause of health ailments. Yet, both individuals frame these decisions to drive the greatest benefit out of it (Amadae 2017). RCT is often discussed and associated with the concepts of utility maximization, the rationality assumption, self-interest, and the invisible hand. It assumes that individuals are rational actors using rational information to try to actively maximize their advantage and minimize their losses. Adam Smith was one of the first economists to develop the ideas of RCT through his studies of self-interest and the invisible hand theory, leading to positive benefits for the whole economy, thus lobbying for less government intervention and more free-market (Ganti 2020). The assumptions for RCT to prevail are:

1. All actions are rational and made due to considering costs and rewards.
2. The reward of a relationship or action must outweigh the cost for the action to be completed.
3. When the value of the reward diminishes below the value of the costs incurred, the person will stop the action or end the relationship.
4. Individuals will use the resources at their disposal to optimize their rewards in control of their decisions, overlooking unconscious drives, tradition or environmental influences (2U Inc. 2020).

The theory is used in business (purchasing behaviours), politics (positioning, campaigning, voting pattern), sociology, psychology and philosophy though with several limitations. For instance, one could say that individual action drives large social structures, this is hardly explained. Secondly, in case of survival or instinct driven decisions, there may not be time to analyse costs benefits. Eventually, it does not explain how social norms ethics and values influence decisions, like in case of philanthropy that only involves giving. Here, prospect theory and psychodynamic theory attribute decisions to gratification from favourable preferences and unconscious processes respectively.

The Quantity Theory of Money / Monetraism (1963)
Milton Friedman (1912–2006), Anna Schwartz (1915–2012)

The early beginning of the theory is attributed to the Polish mathematician Nicolaus Copernicus in 1517 (Volckart 1997), later restated by many philosophers like John Locke, David Hume, Jean Bodin, though best popularized during 1950–60s by economist Milton Friedman (Friedman 1956) and his book with Anna Schwartz titled, "A Monetary History of the United States, 1867–1960", released in 1963 (Friedman & Schwartz 2008).

Fundamentally, the quantity theory of money (QTM) states that more money equals more inflation (the rate at which the level of prices rise) and that an increase in money supply does not necessarily mean an increase in economic output. If the amount of money in an economy triples, price levels also triple which cause inflation. The consumer therefore pays thrice as much for the same amount of the good or service, expressed through the Fisher Equation: MV=PT, where M = money supply, V = velocity of circulation (the number of times money changes hands), P = average price level, and T = volume of transactions of goods/services.

Consequently, Friedman argued that the inflation would decrease if the money supply is increased at the same rate of GDP is increased. One implication of these assumptions is that an increase in the money supply results in a decrease in the value of money because an increase in the money supply also causes the rate of inflation to increase and purchasing power to decrease. Thus, it requires more units of currency to buy the same quantity of goods or services.

Throughout the 1970s and 1980s, the QTM became central to the rise of *Monetarism*, a macroeconomic school of thought wherein governments are expected to implement policies influencing money supply to foster economic growth. At the same time, QTM has been criticized by many Keynesian economists, that argue that the price level is not strictly determined by the money supply. Changes in the money supply could have effects on real variables like output (Minsky 1976). These arguments challenge the QTM's assertion that policies attempting to influence the money supply are the best way to address economic growth.

Basic Needs Approach (1976)
International Labour Organization

The basic needs approach (BNA) is one of the most important methods to address the issue of poverty and people's well-being in developing countries. The concept has origins in the study titled, The Worker's Standard of Living (ILO 1938) on improving labour nutrition and the Hierarchy of Needs model (Maslow 1943) that emphasizes on meeting survival needs. Goulet further defines three key elements within this: (1) food, shelter and clothing, (2) enhancement needs, and (3) luxury needs (Goulet 1971). In 1974, the UN's Cocoyac Declaration states that, "Our first concern is to redefine the whole purpose of development. This should not be to develop things but to develop man. Human beings have basic needs: food, shelter, clothing, health, education" (UN 1974). The most significant consolidation of the concept was in 1976, when the International Labour Organization's World Employment Conference introduced BNA to satisfy basic human needs as the overriding objective of national and international development policies (Jolly 1976), underlining that "first, they include certain minimum requirements of a family for private consumption: adequate food, shelter and clothing, as well as certain household equipment and furniture. Second, they include essential services provided by and for the community at large, such as safe drinking water, sanitation, public transport and health, educational and cultural facilities" (ILO 1977).

BNA usually defines the absolute minimum resources essential for long-term physical well-being, usually in terms of consumption goods. Usually countries do it by estimating a poverty line that indicates the amount of income required to satisfy those needs. It needs to be emphasized that while human rights based approaches call for more equitable sharing of community resources as a matter of moral or legal right, particularly as a response against historic or systematic injustice, the need based approach aims to provide additional resources to help marginalized groups in obtaining the access to community services. Further, critiques of BNA argue that its consumption oriented activities lead to a decline in economic growth, but as BNA focuses on larger "ends" (eradication of poverty) than the "means", the advantages of BNA cannot be undermined. In fact, a co-benefit of such an approach is people's participation and community development. BNA was endorsed as a development agenda by several governments, workers organisations and it influence public polices of development agencies around the world, until late 1980's and early 1990's when neo-

liberal strategies starting gaining favour as effective instruments to satisfy human needs (Gough et al. 2007). Yet, the concept gave way to several important global development perspectives like the human development index, the Millennium Development Goals and now the Sustainable Development Goals.

Neoliberalism (1989)

Friedrich Hayek (1899–1992), Milton Friedman (1912–2006),

Often invoked, but quite ill-defined, neoliberalism is a political-economic model advocating liberal traditions, essentially individualism, property rights, economic liberalism, along with the rule of law. It revives the 19th century ideas related to privatization, *laissez-faire* approach (Adam Smith's "invisible hand"), free trade, market competition with limiting role of governments by austerity drives and reduced spending. Relatively unheard of until the 1990s, Neoliberalism grew into prominence with policies of Margaret Thatcher—the prime minister of the U.K. from 1979 to 1990 and Ronald Reagan, the 40th president of the U.S. from 1981 to 1989 (Kenton 2020a) and became popular with the Washington Consensus in 1989, a set of standardized policies developed by the International Monetary Fund (IMF), World Bank and the US for funding crisis-wracked developing countries, on conditions of privatization, trade and market reforms (CID 2003).

Denord (2009) gives an exhaustive account of how Neoliberalism was "officially" coined in France in 1938 when a group of liberal European and the American intellectuals gathered in Paris to discuss Lippmann's book The Good Society. They discussed the failure of classical liberalism principles during the Great Depression and its socio-economic aftermaths amidst growing socialism. A number of think tanks were planned in different countries to revive liberalism policy, that went beyond the *laissez-faire*. Although the policy got stalled because of World War II, the idea gestated in trans-Atlantic academic and professional circles. However, by the 1970s, economic stagnation and increasing public debt prompted economist like Friedrich von Hayek in Britain to argue interventionist measures aimed at the redistribution of wealth suggesting totalitarianism. In addition, American economist, Friedman rejected monetarism, government fiscal policy as a means of influencing the business cycle. Their views were ultimately embraced by Thatcher and Regan governments during 1980's to

push economic reforms in the UK & the US respectively (Smith 2019). Flew (2014) shows how the usage of the "neoliberalism" includes: (1) an all-purpose denunciatory category; (2) "the way things are"; (3) an institutional framework characterizing particular forms of national capitalism, most notably the Anglo-American ones; (4) a dominant ideology of global capitalism; (5) a form of governmentality and hegemony; and (6) a variant within the broad framework of liberalism as both theory and policy discourse. For a complete overview of neoliberalism, Davies (2014) bibliographically maps its different varieties and trajectories. The policy found acceptance in several countries like the Germany, Australia, New Zealand, Argentina, Chile, Mexico, Brazil, Japan, South Korea, Taiwan and many South-east and Middle-east Asian countries too. The application in China and India has been evident since 1980's and 1990's respectively supported by varied sorts of controls from their governments.

There are many criticisms of neoliberalism for promoting monopolies, increase market fundamentalism (over faith in efficiency of markets), excessive globalization—depriving sovereign nations of the right to self-determination in the world-order, inequality, increased financial instability (IMF 2020) and financialization. In fact, the latter two have been directly responsible for the financial crisis and great recession during 2007-08, impelling several political and economic experts to question unregulated financial and banking markets. Neoliberalism is also disapproved of invading too much into community services like education and health leading to unfair practices, bringing private interests in public good and price issues. As such, neoliberalism finds notable condemnations in sociological and humanities viewpoints.

Human Development Index (1990)

Mahbub ul Haq (1934–1998), Amartya Sen (1933–)

The human development concept was developed by economist Mahbub ul Haq, who working at the World Bank in the 1970s argued that existing measures of human progress (in particularly Gross Domestic Product) failed to account for the true purpose of development—to improve people's lives, thus necessitating a new metric i.e. the human development index (HDI). Working with Nobel Laureate Amartya Sen and other economists, in 1990 HDI was published the first Human Development Report, commissioned by the United Nations Development Programme. Fundamental to the human

development approach is the concept of basic capabilities valued by everyone including good health, access to knowledge, as well as a decent material standard of living.

The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean (UNDP 2020). The Index has several limitations, the most crucial being its over-simplification of human development. It falls short in explaining work opportunities, quality of life, inequality issues. Several economists have raised the criticism of the HDI that it is essentially redundant as a result of the high correlations between the HDI, its components, and simpler measures of income per capita. In the case of HDI, the inclusion of the components is problematic because it is easily plausible that higher average incomes directly lead to both more investment in formal education and better health and longevity, and definitions and measurement of years of schooling and life expectancy can vary widely from country to country (Chappelow 2020).

Kuznets Curve & the EKC (1995)

Simon Kuznets (1901–1985), Gene Grossman (1955–), Alan B. Krueger (1960–2019)

Simon Kuznets was a Russo-American statistician and economist who received the 1971 Nobel Memorial Prize in economics for his empirical interpretation of economic growth. He set the standard for national income accounting, enabling accurate estimates of gross national product for the first time, that helped advance ideas of Keynesian economics and the study of econometrics (Halton 2020). In the 1950s, Simon Kuznets hypothesized (Kuznets 1955) that as an economy develops, market forces first increase, then decrease the overall economic inequality of the society, which is illustrated by the inverted U-shape of the curve (Figure 33). There are criticisms to this representation, arguing that the hypothesis and the resulting curve is based on the countries used in Kuznets' data set. Further, the curve does not reflect an average progression of economic development for an individual country, but historical differences in economic

development and inequality between countries in the dataset. Later, more countries have undergone rapid economic growth that did not necessarily follow this pattern (Moffatt 2019).

In 1995, a modification of the curve, known as Environmental Kuznets Curve (EKC) was developed to chart the rise and decline of pollution in an industrializing nation's economy (Grossman & Krueger 1995). Popularized by the World Bank, it similarly demonstrates that environmental indicators deteriorate as an economy industrializes until a turning point is reached. The indicators then begin improving again with the aid of new technology and more money that is funnelled back to society to improve the environment (Moffatt 2019). Though EKC does explain for decline of air and water pollutants in industrialized economies, it has limited applications in explaining the environmental phenomena too. For instance, climate change data shows that carbon emissions have risen for both developed and developing economies. In addition, the curve neither explains the rising consumption of natural resources in the developed economies nor exporting of their industrial emissions to countries in the global South, which are also involved in producing goods for themselves. In addition, EKC is contingent on environmental monitoring and progressive policies and their impact (Lieb 2004), for instance, recent evidence shows however, that developing countries are addressing environmental issues, at times adopting developed country standards with a short time lag and sometimes performing better than some wealthy countries (Stern 2004, Ota 2017).

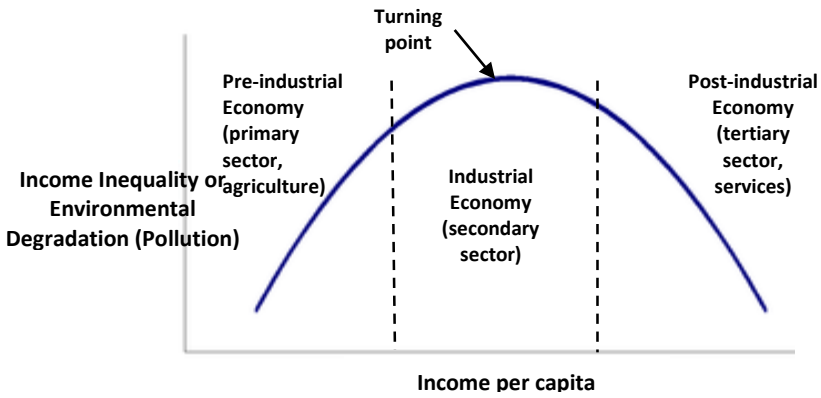


Figure 33: Simon Kuznets curve and the following EKC show how poverty and environmental degradation (pollution) diminish with prosperity

Trickle Down Growth & Development Model (1996)
Philippe Aghion (1956–), Patrick Bolton (1957–)

In 1997, Philippe Aghion and Patrick Bolton presented a trickle down growth & development model in the presence of imperfect capital markets, and it analyses the trickle-down effect of capital accumulation. It states that tax breaks and financial benefits for large corporations, businesses, investors, entrepreneurs and the wealthy will trickle down to everyone else. The argument hinges on two assumptions: All members of society benefit from growth, and growth is most likely to come from those with the resources and skills to increase productive output (Kenton 2020b). With tax reductions as well as looser regulations, more money remains in the private hands leading to greater investments in new businesses, technological upgradation and hiring of more workers. This results into new higher productivity and economic growth. The surplus money creates demand for goods and provides further impetus to economic growth and jobs. More money in the hands of the workers leads to greater spending in consumer goods, retail items, automobiles and invest in luxury or premium goods, housing, stocks and savings. Thus, due to the trickle-down effect, the standard of living of the population and income equality are expected to increase.

There are three main conclusions obtained from this model. First, when the rate of capital accumulation is sufficiently high, the economy converges to a unique invariant wealth distribution. Second, even though the trickle-down mechanism can lead to a unique steady-state distribution under laissez-faire, there is room for government intervention: in particular, redistribution of wealth from rich lenders to poor and middle-class borrowers improves the production efficiency of the economy both because it brings about greater equality of opportunity and also because it accelerates the trickle-down process. Third, the process of capital accumulation initially has the effect of widening inequalities but in later stages it reduces them: in other words, this model can generate a Kuznets curve (Aghion & Bolton 1997).

There are several criticisms of the model, arguing that trickle-down policies typically increase wealth and advantages for the already wealthy few. Questions arise such as, which industries receive subsidies and which ones don't? And, how much growth is directly attributable to trickle-down policies? Critics argue that the added benefits the wealthy receive can distort

the economic structure. A tax cut for a corporation might go to stock buybacks while wealthy earners might save the extra income instead of spending it, limiting economic growth. Critics also attest that any economic growth that's generated can't be tied back to the trickle-down policies (Kenton 2020b). Rhetorically, trickle down model is summarized as: the principle that the poor, who must subsist on table scraps dropped by the rich, can best be served by giving the rich bigger meals (Blum n.d.).

Theory of Asymmetric Information (2001)

Joseph Stiglitz (1943–), George Akerlof (1940–), Michael Spence (1943–)

Joseph Stiglitz (1961), George Akerlof (1970) and Michael Spence (1973) developed the theory, which was formalized in 2001 with the award of the Nobel Prize for their analyses of markets with asymmetric information. The trio showed that economic models predicated on perfect information are often misguided because, in reality, one party to a transaction often has superior information, a phenomenon known as information asymmetry (Fontinelle 2020). This could be understood by three key concepts—*screening, adverse selection* and *signalling.*

Screening: Joseph Stiglitz studied the insurance market where the *screening* is performed by companies. These divide customers into different risk classes by offering a menu of contracts where higher deductibles can be exchanged for significantly lower premiums.

Adverse selection*:* Through a range of market studies, George Akerlof demonstrated how in certain markets where sellers have more information than buyers about product quality can contract into an *adverse selection* of low-quality products (Akerlof 1978). He also pointed out that informational problems are commonplace and important. He showed how asymmetric information of borrowers and lenders may explain skyrocketing borrowing rates on local Third World markets; but it also dealt with the difficulties for the elderly to find individual medical insurance and with labour-market discrimination of minorities.

Signalling*:* Michael Spence identified an important form of adjustment by individual market participants, where the better informed take costly actions in an attempt to improve on their market outcome by credibly transmitting information to the poorly informed. Spence showed when such *signalling* will actually work. While his own research emphasized

education as a productivity signal in job markets, subsequent research has suggested many other applications, e.g., how firms may use dividends to signal their profitability to agents in the stock market (Nobel 2001). Today, the applications of this theory may appear common, but these were ground-breaking then, which would pave way for study of behavioural economics later.

Behavioral Economics & the Prospect Theory (2002)

Daniel Kahneman (1934–), Amos Tversky (1937–1996)

Daniel Kahneman, an Israeli psychologist and economist conducted experiments in decision making from 1970 onwards that consolidated and found acclaim as behavioural economics in 2002. He argued that people do not always act out of rational self-interest, as the economic theory of expected utility maximization would predict. Kahneman was awarded Nobel Prize for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty (Nobel 2002). He along with his colleague Amos Tversky identified common cognitive biases that cause people to use faulty reasoning to make irrational decisions. These biases include the anchoring effect, the planning fallacy, and the illusion of control. Anchoring is the use of irrelevant information, such as the purchase price of a security, as a reference for evaluating or estimating an unknown value of a financial instrument (Chen 2020). Their article *Prospect Theory: An Analysis of Decision Under Risk* is one of the most frequently cited in economics journals (Kahneman & Tversky 2013).

The award-winning prospect theory shows how people really make decisions in uncertain situations. We tend to use irrational guidelines such as perceived fairness and loss aversion, which are based on emotions, attitudes, and memories, not logic. For example, Kahneman and Tversky observed that we will expend more effort to save a few dollars on a small purchase than to save the same amount on a large purchase (Fontinelle 2020). In contrast to the utility maximization theory which assumes that perfectly rational decisions are taken by agents, the prospect theory reasons the *actual* behaviour of people. The term *prospect* was earlier referred to the predictable lottery experiments, later extended to prediction of other forms of behaviours and decisions. Fontinelle (2020) further articulates that Kahneman and Tversky also showed that people tend to use general rules,

such as representativeness, to make judgments that contradict the laws of probability. For example, when given a description of a woman who is concerned about discrimination and asked if she is more likely to be a bank teller or a bank teller who is a feminist activist, people tend to assume she is the latter even though probability laws tell us she is much more likely to be the former (AlKhars et al. 2019).

Management of Common Pool Resources (2009)

Elinor Ostrom (1934–1998)

A common pool resource (CPR) is essentially a resource that is neither a private good (food, car, house), fully public good (air, roads, parks, library, public radio/TV) or an exclusive club good (cinemas, golf clubs, societies, satellite television) but yet shared resource like a grazing land, ground water, wildlife, fishing area, irrigation system, etc. A CPR is vast but with definite capacity benefitting a group of people/users when shared. As Garret Hardin (1968) pointed out, exploitation by certain individuals in self-interest and profit maximization from such a resource leads to *tragedy of commons.* The conventional economic theory or policies either suggest a *command and control* (regulatory) approach with solutions varying from bans, strict rules and regulations, licencing, permits, etc. in resource use or else *market/ privatization* approach making the CPR a private, marketable, excludable good. Elinor Ostrom and her colleagues recognized that this standard dichotomous way of understanding the options for dealing with CPRs is not adequate. They studied many CPRs around the world and learned that the overharvesting can be eliminated or reduced (Tomer 2019) through eight design principles necessary for sustainable management (Ostrom 1990):

1. Clearly defined boundaries
2. Congruence between appropriation and provision rules and local conditions
3. Collective-choice arrangements allowing for the participation of most of the appropriators in the decision making process
4. Effective monitoring by monitors who are part of or accountable to the appropriators
5. Graduated sanctions for appropriators who disrespect common rules
6. Conflict-resolution mechanisms which are cheap and easy to access
7. Minimal recognition of rights to organize (e.g., by the government)
8. In case of larger CPRs: Organisation in the form of multiple layers of nested enterprises, with small, local CPRs at their bases.

Ostrom (2009) later professed its plausibility by encouraging communication, and developing trust among the CPR users thereby fostering cooperation. Thus CPR can be managed collectively without government or private control, as long as those users are physically close to it and communicating (Fontinelle 2020). This research led to Ostorm becoming the first woman in economics to be conferred Nobel Prize in 2009.

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Chapter 5
Transition to Sustainable Societies: From ideas to practice

1. The Evolution of Sustainability Theory

In a study on the evolution of sustainability theory, Shi et al. (2019) argue that it has gone through three periods of development: the embryonic period (before 1972), the moulding period (1972–1987), and the developing period (1987–present). It clearly evolves from the fuzzy concept in the 1970–80s, towards pursuing the sustainable use of natural resources in Millennium Development Goals (MDGs) to the exclusive Sustainable Development Goals (SDGs) in 2015. The post-SDG period (from 2015 onwards) can be particularly considered as the policy period as there is a target and reporting mechanism to pursue global goals by countries within their respective national policies. For this, SDGs use global indicator framework that includes 231 unique indicators (UN 2021a). An overview of this framework clearly indicates that the current sustainability concepts not just aim at safeguarding the natural environment and production modes but also guarantee social standards to support decent quality of life worldwide.

At the same time, greater linkage between the environmental, social and economic pillars is a key concern for practical application of the concept. Mensah & Casadevall (2019) through an extensive literature review, combine aspects of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and the Recursive Content Abstraction (RCA) analytical approach and argue that decision-makers need to be constantly mindful of the relationships, complementarities, and trade-offs among these pillars and ensure responsible human behaviour and actions at the international, national, community and individual levels in order to uphold and promote the tenets of this paradigm in the interest of human development. More needs to be done by the key players—particularly the United Nations, governments, private sector, and civil society organisations—in terms of policies, education and regulation on social, economic and environmental resource management to ensure that everyone is sustainable development aware, conscious, cultured and compliant.

This inter-disciplinary research traversed through knowledge from multiple domains and time periods covering prominent schisms, different terminologies and interpretations of thought to deduce the most profound understanding of what constitutes sustainability within a human society. In this pursuit, this book does not claim to have found all the answers to most of the sustainability related challenges of the Anthropocene, however, it does bring together several interesting viewpoints and approaches that can mark the beginning of realistically ideating and realizing sustainable societies, thus providing multiple answers. While the societies around the globe are in a state of constant flux, sustainability research is trying to respond quickly and thus itself evolving swiftly. Yet there are certain fundamental dilemmas that it needs to reflect on. In the Introduction chapter, we identified several research gaps in actualizing sustainability on the ground. Amongst others, these include:

1) Sustainable development favours incrementalism against dynamism
2) Sustainability science stands against biased ideological positions
3) The global sustainability is challenged by systemic variabilities
4) Lack of empirical assessments in social aspects of sustainability
5) Several disagreements on key priorities within the scientific community
6) The appropriateness of datasets and indicators in sustainability practice
7) Sustainability being loggerheads with neo-capitalism and globalization
8) Uncertainty of sustainable consumption being a micro-social or macroeconomics problem
9) The missing links between sustainability and local governance
10) Modern socio-political institutions incapable to handle transitions, and
11) Transposing solutions misplacing social priorities

Thus, there is an utmost necessity to bridge these gaps- by making substantive and operational connections between the key themes of environment, economy and the society. Upon comprehensive assessment of theories in these disciplines, there emerge a set of the most relevant set of perspectives within each sustainability system, as summarized here.

1.1. Environmental System: The environmental worldview has largely witnessed an evolution from theocentricism to anthropocentric paradigm to environmental determinism and possibilism. Environmental determinism, also known as geographical or climatic determinism, is a principle which articulates how the physical environment shapes or controls human activity, culture, societies and states towards particular development pathways

(Keighren 2015, Lewthwaite 1966). The Febvre's Possibilism, a refined version of this concept is according to which there are no necessities but everywhere possibilities and man as a master of these possibilities is the judge of their use. It can be further understood as man decides but only from the choices presented by nature. In brief, people can moderate the environment to their will, but in perpetuity the environmental principles would prevail obliging humans to negotiate.

The American anthropologist Julian Steward studied this as cultural ecology, as the ways in which culture change is induced by adaptation to the environment (Steward 1972). This considered that although environment can influence the character of human adaptation, it does not determine it solely. While environmental determinism and possibilism treated environment and culture as separate entities and attributed correlations, probabilism through cultural ecology treated both as an integrated system, a continuous evolution of a society with its environment, through technologies, practices, and knowledge that allow people to sustain. Whereas a conventional study of human culture in an area would argue, "how does the environment affect culture"? but the probabilism school of thought would ask, "in what ways does human kind adapt to its environment"? It would study functional behaviour of how groups (rather than individuals) utilize or manage environment resources and while doing so how their lifestyles affect their non-material culture. But, with the advent of each wave of technology, we constantly see humans challenging the bio capacity limits to a point of no-return, whether it is population explosion after the green revolution, extracting underground water and oil using pumps and exhaustion of greenhouse gases in the atmosphere to create an almost irreversible global warming.

People of different inclinations, *cornucopians* to deep ecologists all cohabit our contemporary societies. While most environmental theories indicate the importance of developing a symbiotic relation between man and nature, their focus and approach could largely be classified into six key typologies, as indicated in Figure 34. The adherents of the first approach believe that technologies can provide an unbridled solution to all environmental challenges and humans have the inherent capabilities to advance these.

The second set of approaches are basically an extension of the idea of environmental possibilism highlighting numerous opportunities offered by technology depending on its judicious use and adaptation by humans. The third set of environmental approach is reactive, largely dealing with

fundamental ideas of changing growing human impacts on their natural surroundings. The fourth set of environmental approaches is a huge group that argues for environmental conservation based on a preventive world view commonly understood as the precautionary principle. This includes *Environmentalism*, *Green Theory*, *Ecocities*, *Healthy Cities* and the like paradigms promoted in anticipation of protecting the environment. The fifth set of environmental approaches focus on the individual: how s/he interacts with the environment: psychologically, experientially, sociologically, etc. in different times or situations. *Deep Ecology* and *Ecological Systems Theory* are a prime example of such an approach.

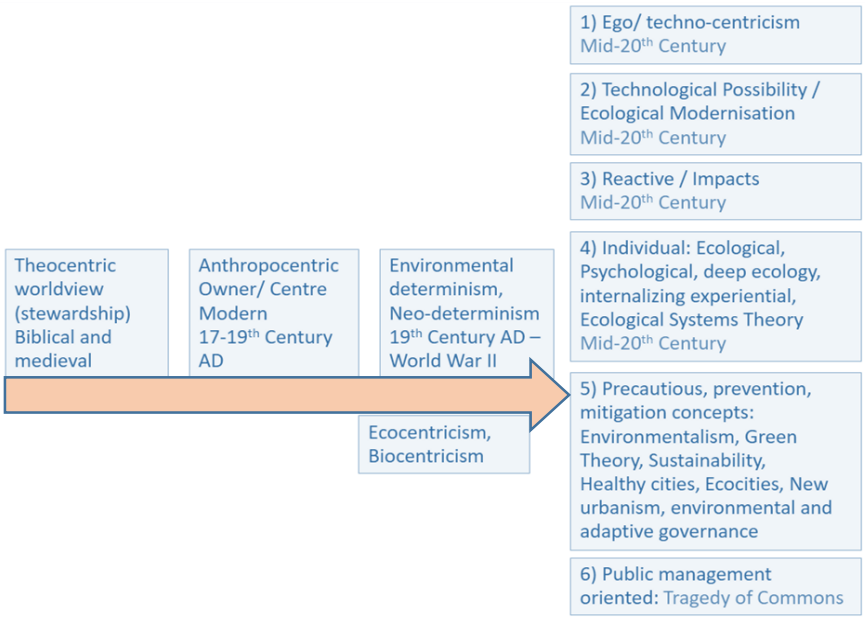

Figure 34: The evolution of different concepts and perspectives in the environmental system

The last set of approaches attempt to elucidate the management of environmental phenomenon through nuanced empirical assessment. For instance, the Environment Kuznets Curve links environmental impacts with economic development of nations, or the Ostrom's theory of *Common Pool Resources* that explains the tragedy of commons and then suggests steps for better management. These can be in the form of adaptive practices or measures that generate development co-benefits for the environment. But more often, public policies tend to overlook adaptive measures out of inertia

and economic costs. Waiting too long can perpetuate environmental disasters of higher magnitude and impacts calling for even more intensive fire-fighting measures.

1.2. Social System: It is interesting to observe how some social system theories provide an explanation to the problems of sustainability and transformations into the future. In this regard, social theories can be broadly understood promulgating six key perspectives. The most fundamental set of social theories is the traditional ones describing a status quoist or a static view of the system. For example, the ancient theory of *dharma* deals with rights, duties, virtues for human progress, social bonds, institutions and behaviour. Its manifestation in the modern social thought is closely associated with the *social contract theory* (SCT). The SCT requires that people agree to surrender individual freedom to the state for mutual protection as they acquire a sense of moral and civic obligation. This obligation must be retained by governments by resting on the consent or *general will* which requires proper and time to time representation through participatory instruments. It is true for all policy decisions, even more so now when it comes to dealing with existential threats, environmental challenges and global sustainability. Adherence to the state law and its policies is in fact implied, as emphasized by Kant in 1797 suggesting that consent is not fundamental to a social contract view, but it is the people's duty to agree. These social theories emphasize on benefits of human progress and social evolution. During 1830–40s, Comte argued for universal order, humanity, benevolence, secular ethics, science in a society. The call of sustainable transitions these days is a natural progression to these principles, under which educated people, civic groups and institutions in many societies across the world can be seen demanding their governments to provide for clean air or make a switchover to green energy.

The second dominant set of theories attempt to focus on the contradictions and tensions within the society and argue for a more far-reaching change. For instance, Marxist theories laying stress on an egalitarianism tend to establish a classless society having equitable access to the basic resources and distribution of wealth. These attributes are equally relevant today when there is a global movement through the millennium development goals and the sustainable development goals in providing for greater access to basic amenities like clean water, non-polluting cooking fuel, reliable internet and work opportunities for people living in disadvantaged communities and regions. The 20th century *Deviance* and *Social Disorganisation* theories

further try to explain social inequities that can be crucial while implementing sustainable societies. This suggests that though a sustainable society is an ideal while seeking global transformations, it too should be analysed and pursued specifically to internal fractions. Does sustainability paradigm reach everyone equally, especially the most vulnerable social groups or it favours a few chosen ones? In terms of operationalization, the disruptive shades of *Marxist theories, Critical Theory*, and *Deviance Behaviour* are useful too if the negative energies of the youth are properly channelized to create useful technologies, applications, etc. using artificial intelligence, machine learning and other innovations. These would help leapfrog to desired radical changes in the sustainability goal.

Here, the applicability of a third set of approaches- the incremental ones becomes imperative. The incremental approaches largely offer a constructive role of education, media, socialisation in building a generation. According to Mannheim, social consciousness and perspective of youth reaching maturity in a particular time and place (termed as *generational location*) is significantly influenced by major historical events of that era- becoming a *generation in actuality* (Willis 1977). The end of the Cold War era, expanding neo-liberal economics, globalization, climate change, the digital revolution, and the COVID-19 pandemic are some key events in the last few decades that have shaped the thought of this generation. The gradual gaining recognition and popularity of sustainability can be understood through the theory of generations. At the same time, the concept underscores the significance of *inter-generationality* in sustainability too that bears the power to stimulate future generations making them committed to its cause.

The fourth set of theories argue for context based social constructs that are innately associated with a culture. For instance, the theory of *Gemeinschaft und Gesellschaft* highlight how specialization, and professionalism pervades modern human societies than the traditional ones. There is often this elemental argument that new technologies and systems would destabilize the existing jobs, capital and socio-economic and socio-cultural systems, thus resisting change. Durkheim's *Sociological Theory* argues that it is the new social structures in urban settlements that unfold such opportunities. Following his theory, one can infer how order, balance and sustainability is maintained within a society by social bonds, division of labour and freedom to choose or perform different roles/tasks, especially in the contemporary urban societies.

Most importantly, these social theories underscore the role of local *place making* to bring together multiple disciplines, economic forces, socio-political interests and institutions. For instance, the town and country planning theory establishes linkages between the region and the city, in facets of environment, physical geography, urbanization, work and leisure. In his theories of the *ideal type* and *the city*, Weber studied ecological-demographic characteristics of cities considered to be relatively dense and closed settlements. He submitted how a city is intertwined with larger forces, e.g. political and economic processes, rather than itself being a cause of distinct urban living.

The "urban community" is evident through multiple interactions: *social actions* (meaningful human interaction); *social relations* (arrangements of the elements of social actions); *social institutions* (the abstract notion of social relations as a network of social actions). At the same time, urban societies are themselves prone to becoming too immune to transformations. From Simmel's work on *The Metropolis and Mental Life*, one learns how at times societies become incapacitated to react to new sensations due to saturation of ideas. Sustainable societies would have to ensure that while the idea of sustainability becomes the focus of socio-cultural narratives, it does not get over-generalized to create a *blasé effect*. A case in point is *greenwashing* by businesses and non-government entities, that puts off people's interest and faith in genuine environmental conservation concerns.

Here, the role of micro-sociological concepts, the fifth set of social approaches becomes significant. This set essentially deals with the psychological and experiential aspects of the individual, like the *Maslow's hierarchical model* of needs or the *looking glass theory*. Just as it can influence personal attitudes for improvisation, it has the potential to influence positive sustainability attitudes in a society. Similarly, the *Thomas Theorem*, a micro individual conception of a problem can guide people to identify, understand and interrogate sustainability in their own context. The same holds valid for a society where it may like to interpret transition challenges as per its own circumstances, background, interests as Robert Mead puts it, "the self". He argues that people remember and base their knowledge of the world on what has been useful to them and are likely to alter what no longer "works". It is indeed useful for young people to contribute to a more cost effective and energy efficient paradigm. Extending on *symbolic interactionism*, he introduced the concept of *social behaviourism- a* concern of the stimuli of gestures and social objects with rich meanings that develop through

language, play, and game. In this process, the cyclical reflections between "I" and "Me" can help evolve an acceptable sustainability behaviour in transforming societies, especially those in rapidly developing context.

Lastly, there is this sixth set of management and governance oriented social theories that present a multi-faceted and rational view of the social systems. These seek in an in-depth understanding of societies demystifying and deconstructing their grand theories. Like several such social theories, sustainability is a *grand theory* that needs to be articulated in middle range to be interpreted and tested in multiple context and varying circumstances for on-ground transitioning. Similarly, the *social exchange theory* discusses about cost-benefits in behaviour. This kind of theory can be used to evaluate the effectiveness i.e. rewards or costs associated with sustainability initiatives as well as negotiating exchange between multiple groups within a society.

Communicative rationality is one such process based theory propounded in 1979 that advocates for consensus over an issue, between different social/ interest groups through communication and discussion. It is interesting to see how it has been used to effect during formulation of the sustainable development goals and brokering a successful Paris Agreement in 2015 after nation states failed to achieve desired results from the earlier frameworks like the Millennium Development Goals and the Kyoto Protocol. It gives a good prototype of how societies can be transformed in adopting sustainable practices by constructive dialogue and consensus building between different stakeholders involved in policy making and governance.

Similarly, Giddens' *theory of structuration* (Adams & Sydie 2002) stresses the role of *human agency* (where the social actor is a rational actor who has the ability to make decisions), *reflexivity* (self-consciousness on the part of the individual in social life when deciding on a course of action) and *structure* (patterns in the social world composed of rules, resources, and agency). Here, rules and resources include market exchange, class structures, political organizations and processes, and educational institutions. Indeed, overtime societies are increasingly becoming more self-aware, reflective, and hence reflexive (Beck et al. 1994). *Reflexivity* refers to cognizance of the circular relationships between cause and effect, be it in economics or social theory. Whereas minimal reflexivity leads to an agent largely shaped by the surroundings, a higher grade of reflexivity can be defined by an agent shaping own choices, norms and policies. The theory of reflexivity aligns with neo-determinism and similar ecological themes which help in further

shaping sustainable choices, norms and policies. Through greater reflexivity, societies tend to become more aware and in fact at times assertively portray about their sustainable behaviour, norms and practices.

While systematic study of societies is crucial to sustainability transitions, borrowing knowledge from ecology and environment is also beneficial to understand environment-human interactions, social exchanges and in turn reflect on the society's relation with its surroundings. For instance, Robert Park's *human ecology* demonstrates how ecological concepts (symbiosis, community, competition, invasion, domination, succession, etc.) can be used to explain different social phenomenon. In addition, his *participant observation* practice is an evolved empirical research method to study societies. The ecological, place-based social thought is fertilized by new techno-centric theories on Principles of Intelligent Urbanism, Smart Cities and works of Bill Hillier. His work suggests that just as urban societies demonstrate strong cultural and spatial variations across the world, expressed through space syntax, compactness, grids, axialities, etc. (Hillier 2012), their choices for sustainable alternatives would also vary considerably.

1.3. Economic System: On the face of it, there seem to be only a few economic theories that focus on sustainability, but inter-disciplinary issues in environment, economics and society are palpable. For instance, Kautilya's *Arthashastra* and Malthus' *An Essay on the Principle of Population* in substance deal with inter-connections between environment and economics, especially related to agricultural production. In fact, to this day, challenges posed by poverty, food crises, deforestation, desertification, water scarcity and severe ecological impacts by changing climate, especially in developing countries makes the Malthusian theory central to the debates in sustainability.

The economic system is replete with concepts that underline the importance of balance in the real world, viz. *supply and demand theory*, Walras' *general equilibrium*, etc. At the same time, it is observed that while classical economic theories value factors of production–land, labour, capital, etc., these disregard the ecological or sustainability value of the natural resources. For instance, the Smithsion view of free market economy where governments should serve just three functions: protect national borders; enforce civil law; and engage in public works, e.g. education (Blenman 2020), detaches economic activity with public health and well-being, including the environment, thus leaving the market to operate unfettered by private

interests. But several empirical theories can be extended into the sustainability paradigm. A case in point is the Ricardo's *theory of rent* that evaluates the economic value of different types of land for its internal, locational and external attributes. It finds semblance in ecological modelling if one aims to assess the true value of natural assets and resources. It is equally useful to measure economic viability of sustainability initiatives when it comes to long-term planning.

Transactions based on absolute advantage to entities may not be beneficial or sustainable for the economy as these entail maximizing industrial production without considering the opportunity costs. However, comparative advantage is more tenable in helping entities in taking decisions related to resource allocation, domestic productions and import/export of goods. The concept of absolute and comparative advantage when applied to the global sustainability conundrum indicates that trade, exchange of services, etc. may be mutually beneficial to societies and countries, but one would have to consider the fall outs of logistic or cargo emissions and the advantages from local production and consumption of goods (in terms of smaller ecological footprints).

The *economic base theory* builds on the concept of *absolute and competitive advantage* towards ensuring local socio-economic well-being. It suggests that economic activity can be sustained by not merely demand creation, but by increasing the base activity exports from local production. It thus establishes how developing specializations, augmenting local manufacturing and trade with the outside world is intrinsic to sustaining a society.

As chinks in the free market approach got exposed during the Great depression in 1929, the Keynisian *general theory of employment, interest and money* started advocating for reasonable government interventions to regulate the economy in creating a welfare state. It argues that the pro-capitalist, *laissez faire* approach in business cannot be allowed to operate with impunity. Secondly, the governments hold a special role and responsibility in ushering investments in sustainable infrastructure, businesses, transport, employment, housing and well-being of the people. At the time of long-term global sustainability, mid-term climate and immediate COVID-19 crises affront the human civilization, the relevance of greater role of governments in ensuring people's socio-economic well-being cannot be overstated.

While sustainability transition is a new concept, the arguments on growth have been integral to the field of economics. Economic theories that explain transitional growth include the *Harrod-Domar Growth Model*, *the Stage and Sector theory*, *Lewis Structural Change*, *Rostow's Five Step Model of Economic Development* and the *Environmental Kuznets' Curve*. The *Harrod-Domar Growth Model* presents distinction in the types of economic growth: *natural growth* (required for full employment), *actual growth* (gross domestic product per year) and *warranted growth* (the rate of growth at which the economy does not expand indefinitely or go into recession) thus indicating sustainable economic growth. Most development theories or economic growth models, for instance the EKC and Rostow's model basically presume a definite economic system and trajectory as a given for the developing countries, that may not necessarily demonstrate their actual situation and aspirations. The sustainability transitions paradigm is a good opportunity especially for growing and emerging economies to leapfrog sectors and stages of development. It is plausible through innovations in sustainable energy, expanding the access of efficient transportation like electric vehicles and encouraging applications of digital interphase and artificial intelligence in production and distribution systems.

Most macro-economic theories are applied at the national level only. Testing these theories and methods like the *inter-regional input output model* to an appropriate regional scale can contextualize local impacts, regional balance and sustainable flows between the regions. It helps better understand forward and backward regions and establish sustainable economic linkages between these. Akin to the Keynesian theory of encouraging public investments in infrastructure and market reforms (exemplified in the New Deal), the Trickle Down Growth & Development Model (1996) too demonstrates the application of the multiplier effect in sustaining societies.

Meanwhile, monetarism (QTM) suggests for financial intervention aimed at controlling money supply to influence growth and stability. Rational choice theory is often discussed and associated with the concepts of utility maximization, the rationality assumption, self-interest, and the invisible hand. In fact, it considers for a fair cost-benefit analysis as the basis of serving a rational choice, disregarding socio-cultural norms, ethics, psychological reasons, ecological need and environmental values. In this regard, the HDI model unlike other economic models directly focuses on promotion of societal well-being through indicators of health, education, income in assessment of economic capital.

The effective management of resources and information around these is imperative. CPR, the Malthus theory and the EKC opine linking economics with the natural ecology and encourage to have a negotiating approach towards regulating natural resources and pollution in the society. The Game Theory's extensive application to real world problems can help articulate negotiation between environment, economic and societal, demands/drivers to attain semblance in decision making. Meanwhile, the *Theory of Asymmetric Information* (2001), *Behavioural Economics* and the *Prospect Theory* (2002) are information and behaviour centric paradigms. Concepts like screening, adverse selection, signalling, prospect can be used to create informed and persuasive choice towards sustainable alternatives, behaviour and business expansion, advertising, corporate communication.

The findings from the previous chapters illuminate key ideas and approaches that emerge from the collective body of environmental, social and economic concepts, and secondly, help suggest how can these be creatively integrated to enrich sustainability theory and productively utilized in transforming current societies. It needs to be emphasized that while this sustainability research draws from deeper understanding into economics, ecological and societal principles, in no way does theoretical constructs and approaches of any one of these disciplines become overarching to determine the future sustainability agenda. Yet, the fact remains that sustainability debates were not to arise had the natural environment had not been degraded during modernization era. Thus, the value of ecological sustainability of the planetary ecosystems cannot be undermined. It needs to be recognized that when it comes to advancing transformations in a green social setup, the concepts and models discussed in this research has to be applied judiciously keeping in view the conditions of time and space.

In addition to insights from specific theories, this investigation inspires us to start discerning between a sustainable and unsustainable societies, through their behaviour and interactions within and with the surroundings. Unsustainable societies are more formal and inflexible within and with the environment. To an extent, trying to make technological solutions and rules for excessive control of nature as a virtue of defining their civilization. The dikes of the Netherlands against sea-level rise and the ordeal of erecting walls against Mexican migrants by the US shows that the developed societies are imprisoned by its own structures and grappling for more resources to sustain its boundaries, at times even importing it from the outside. How

much are such formal mechanisms resilient to actual or perceived external crisis has been evident too often in the recent past, but undoubtedly such mechanistic approach to deal with environmental problems cannot go on. On the contrary, sustainable societies are more flexible, open in the interactions amongst their agencies and the environment. Formalizing their connections with the nature via defining rights for access and use of resources would animate a give and take relation and further alienate the societies from the environment. Examples include rights over forests, wildlife and traditional medicinal plants in traditional societies in the developing and least developed countries. Some of the most crucial differences between unsustainable and sustainable societies are indicatively listed in Table 3.

Table 3: The distinction between unsustainable and sustainable societies

Unsustainable Societies	**Sustainable Societies**
Development model supersedes the environmental capacity to self-rejuvenate	The economy and society function within the ecological bio-capacities
Prioritize economic growth	Favour equilibrium with self-evolution
Driven by individual greed, private good/profits	Driven by public good
Quantitative approach & functionalism supersede experiential quality	Qualitative approach with creativity and flexibility
Industrial notion of time and resources discounting long-term consequences	Biological and Inter-generational notion of time and resources
Competition, insecurity & power wielding over perceived external threats	Internally resilient, mutual respect and cooperation with external actors
Practice standardization, mono-culture	Practice cultural diversity
Favour formality, rules & regulations	Promotes dynamism, cultural norms & practices, government less governance
Centralization of power, political-social structures	Decentralization and sharing of responsibilities and accountability
Promotes mass-production, market economy & globalization	Favour localization, sustenance of indigenous knowledge, goods & services
Social values promoting peer-pressure, career development, social status, security & power structures	Social values encouraging equity, fairness, humanity, self-confidence and self-determination.
Top to bottom transfer of ideas, socialisation and power	Multiple connections exchanging ideas, social learning and responsibilities including bottom-up transfers
Products, social activities and space are priced and remain unshared in a society	Greater sharing of products and community space
Self-conceptualized models by experts, institutions & corporates claiming to demonstrate reality are more valued than reality itself	Community's perception, experience and emotive values towards reality are more important than scientific models

2. Growing Relevance of Sustainability Transitions

The study of sustainability transitions has been gaining interest in the last two decades, with growing body of research publications. A bibliometric survey using the query on "sustainability transition" generates 578 titles in google scholar up till May 2021. The number of publications is increasing rapidly. Prior to 2010, only 121 titles were published. From 2010 to 2015, the number increased to 134 titles, followed by 323 from 2016 to 2021. What are the dominant themes of the research on sustainability transitions? A closer examination of the content focus of the 578 titles published so far, it is found that a majority of these, i.e. 159 titles pertain to energy, 74 to economics, 64 to food, 46 to forestry & agriculture, 39 to environment, 38 to technology, 37 to climate, 28 to water, 25 to society, 7 to transport, 6 to waste, and 6 to culture (overlaps included).

Sustainability transitions has been defined as the long-term, multi-dimensional & fundamental transformation of large socio-technical systems towards more sustainable modes of production & consumption (Markard et al. 2012). If one is to threadbare this definition, it has noteworthy time, scale, scope, direction, systems and technology aspects. There is extensive literature on the study of historic transitions and its pathways (Geels 2002/ 2005, Geels & Schot 2007, Smith et al. 2005), transitions in practice or everyday life (Jalas et al. 2017, Shove & Walker 2007/2010, Spaargaren 2011). Further drawing from Kern & Markard (2016), sustainability transitions can be understood to exhibit certain distinct characteristics. It is value-laden and contestable with conflicting views, for instance trade-offs between expensive low-carbon pathways and nuclear risks. Köhler et al. (2019) show that though the scope of sustainability transitions research has broadened and connections to established disciplines have grown stronger, at the same time, we see that the grand challenges related to sustainability remain unsolved, calling for continued efforts and an acceleration of ongoing transitions. Transition studies can play a key role in this regard by creating new perspectives and approaches to help the society move in the direction of sustainability.

2.1. Issues in sustainable transitions: Sustainable transition inherently deals with problems that are complex, uncertain, long-term thereby involving power & politics central to vested interests, winners & losers, coalitions & alliances. This necessitates sustainability transition to be multi-dimensional, systemic interacting, for e.g. interaction of multiple technologies or governance sectors and be context dependent, considering distinct burdens

of path dependency and different scenarios even though the sustainability goals and targets are universal. Thus, sustainability transformation requires breaking through the "path dependency" that defines the way things are done (Tiberius 2011). The report by United Nations Economic and Social Commission for Asia and the Pacific (Jacob et al. 2018) identifies three barriers to transformation that make change difficult. The first is *inadequate human and institutional capacity*; the second is *institutional rigidity*, which diminishes institutions' capacity to evolve; and the third is *inadequate social momentum for change*. Socio-cultural factors, gender and other dimensions of inequality, and imbalances in access to decision-making also affect prospects for transformation.

As transition is rarely linear, pragmatic governance requires deliberate foresight into managing the unknowable (Kaivo-oja & Stenvall 2013) i.e. the inherent complexity and the inter-disciplinarity due to the complexity of problems e.g. global warming. Thompson (2001) argues that to explore possible pathways into the future, surprises should explicitly be taken into account. One can appreciate the use of multi-agent models in predicting unexpected elements. This considers the role of multi-level perspective, actors and intermediaries in sociotechnical transitions. Niche, regime, and landscape levels and interconnections between the three are traditionally used to picture historical development of emerging technologies. Multilevel analysis expounds how factors in different levels influence a development process. Schneidewind et al. (2012) use the multi-level perspective as a fruitful heuristic in order to identify potential pathways for a broader diffusion of transdisciplinary sustainability science. Similarly, the proactive participation of stakeholders and intermediary actors has been understood as that of key catalysts that speed up change towards more sustainable socio-technical systems. Some intermediaries are specifically set up to facilitate transitions, while others grow into the role during the process of socio-technical change (Kivimaa 2019).

While deliberating on the interlinkages between the multi-level perspective and futures studies, Vähäkari et al. (2020) argue that the futures studies approach to sustainability and transitions aims more to detect, prepare and adapt to changes (Bell 1997, Wilenius 1999). Although, there are theoretical similarities between sustainability transitions and systems approach, most transition phenomena are often categorized by their scope: megatrends, trends, weak signals and black swans focusing more on the broader context than the niche level.

At the same time, sustainability transitions require to sustain its focus on core systems. The European Environment Agency (EEA) in its five-yearly flagship report (EEA 2019), concluded that, despite improvements in recent decades, Europe's environmental outlook is worrying. The globalised and systemic character of the environmental challenges ahead implies that achieving the EU's long-term sustainability goals will require fundamental change in core societal systems, in particular those related to food, energy, mobility and the built environment. Achieving such transitions will require much more than incremental efficiency improvements. It will instead demand long-term, profound changes in dominant practices, policies and ways of thinking, which will in turn demand new knowledge. It will mean overcoming the short-termism currently dominating political and economic thinking, and instead embracing long-term, integrated, global perspectives. To illustrate it through the example of climate change, the mixture of *adaptive, precautionary* and *reactive policies* becomes imperative. *Precautionary policies* are necessary to limit harmful surprises, but due to the current trends of change it is inevitable to prepare for system changes. Therefore, *adaptive policies* are necessary to increase the adaptive capacity of nature and society. Finally, surprises can still lead to extreme events not prepared for, such that *reactive policies* need to be available.

2.2. Approaches and Methods for Sustainability Transitions: While exploring the role of sustainability transformations and practice for societal change, Loorbach et al. (2017) distinguish three approaches in studying transitions*: socio-technical*, *socio-institutional*, and *socio-ecological*. In parallel, Patterson et al. (2017) note that a variety of conceptual approaches have been developed to understand and analyse societal transition or transformation processes, including: *socio-technical transitions*, *social-ecological systems*, *sustainability pathways*, and *transformative adaptation*. In terms of analysis, Turnheim et al. (2015) present three methods of transitions to sustainable and low-carbon societies: *quantitative systems modelling*; *socio-technical transition analysis*; *and initiative-based learning*. Each of these approaches present a partial and incomplete picture, which has implications for the quality and usefulness of the insights they can deliver for policy and practice and argue for bridging and linking these around three areas of joint knowledge production: defining common analytical or governance problems to be tackled through integration; establishing shared concepts (boundary objects); and establishing operational bridging devices (data and metrics, pathways evaluation and their delivery).

Transition modelling is an emerging but growing niche within the broader field of sustainability transitions research. Köhler et al. (2018) review some of the main strands in modelling of socio-technological change with regards to their ability to address these characteristics. These are: Ecoinnovation literatures (energy-economy models and Integrated Assessment Models), evolutionary economics, complex systems models, computational social science simulations using agent based models, system dynamics models and socio-ecological systems models. They argue that a promising line of research is to develop innovative models of co-evolution of behaviours and technologies towards sustainability, involving change in the structure of the societal and technical systems.

For instance, Köhler et al. (2009) developed a model that uses the concepts of transition theory as a framework for assessing possible pathways by which a transition to a sustainable mobility society might happen. The modelling approach combines agent-based modelling techniques with a system dynamics structure. Based on the UK data, the results showed that Hydrogen Fuel Cell Vehicles (FCVs) come to dominate, but only in the very long run (after 2030), while biofuels and internal combustion engine-electric hybrids are the main alternatives to the regime in the next 10–30 years, because: (a) they are already developed, and (b) they fit better into current infrastructures. The model shows that technological transitions are most likely. Lifestyle change transitions require sustained pressure from the environment on society and behavioural change from consumers.

This can necessitate greater diffusion of technologies Markard (2017), and many of these could in fact be low-tech like urban community gardening to transform local food supply, rainwater harvesting practices for sustainable water regime, as well as benefits from low energy buildings, the library of things and sharing economy. Lately, a new area has been emerging in the design for the sustainability field, where sustainability transitions theories are integrated with design theory, education and practice. This emerging area is referred to as design for sustainability transitions or transition design

2.3. Management/governance of sustainability transitions: There are in-built tensions between the open-ended and uncertain processes of sustainability transitions and the ambition for governing such a process. Markard (2017) highlights the role of policy making and governance in transition management (Kemp & Rotmans 2005, Loorbach & Rotmans 2010, Rogge & Reichardt 2016, Voss 2006). The role of (incumbent) actors &

strategies and the resulting politics of transitions is also thoroughly covered in literature (Avelino et al. 2016, Farla et al. 2012, Kern & Smith 2008, Smink et al. 2015, Smith & Stirling 2007). On the contrary, transition management has been conceived as a new mode of governance for sustainable development.

Most notably, Loorbach (2007) presents the transition arena as a mental, physical and institutional space for *experimentation*, *envisioning* and *network-building* that is legitimized by regular policy. Here, different types of innovators with various backgrounds, perspectives and ambitions are brought together and develop shared long-term perspectives and a transition agenda that increasingly will influence regular policy. Frantzeskaki et al. (2012) further demonstrates how transition management as a governance approach has the potential to overcome the tensions between the open-ended and uncertain process through selective participatory processes of *envisioning, negotiating, learning* and *experimenting.*

In addition to the process, the geographic features of sustainability transitions, in particular its application at the sub-national scale is also acknowledged. For instance, Coenen et al. (2012) argue for having a spatial perspective on sustainability transitions. Using the case of wind energy, Bento & Fontes (2015) demonstrate spatial diffusion and the formation of a technological innovation system in the receiving country. Bulkeley et al. (2010) innately focus on the relationship between cities and low carbon transitions. Similarly, Wirth et al. (2013) show that local and informal institutions matter in expanding new biogas technology in a society. It is necessary to understand the circumstances in which a certain development is taking place (Verbong & Geels 2007, Markard et al. 2012).

The emphasis on the relevance of context, place-specificity in sustainability can be seen through social movements in industry reorientation in the United States (Geels & Penna 2015), grassroot initiatives in community energy (Hargreaves et al. 2013), and evaluating the role of local communities in radical activists versus strategic managers (Smith 2006). Hansen & Coenen (2015) synthesise insights on the importance of place specificity for sustainability transitions, pointing to important future research areas within the field of the geography of sustainability transitions.

3. Way Forward for Sustainability Transitions

As evident from the study of ideas and debates in environment, social and economic systems confounding and compel to take positioned perspectives. The positions are driven by interests, principles and ethics of different groups or systems, each orienting responses and transitions to their normative pathways. *This research argues for a rather calibrated and system-based approach where sustainable societies and their transformation should be visualized as a part of the co-evolutionary process of such diverse interacting systems* across disciplines and scales (illustrated in Figure 35).

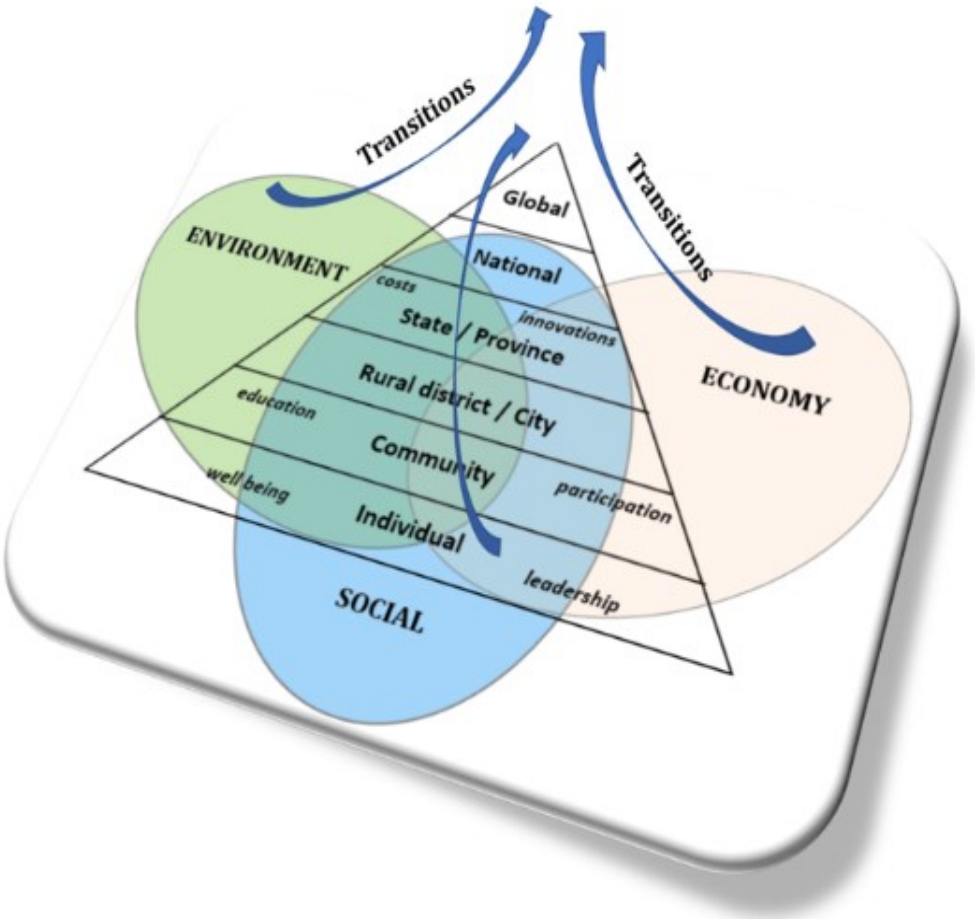

Figure 35: Sustainable societies and their transformation should be visualized as a part of the co-evolutionary process of diverse interacting systems across disciplines and scales

The transformations have to be devised towards maintaining sustainability of this complex system that can then be worked through its individual systems. The systems approach of infusing sustainable transition into a society should respond to fundamental questions like, "How could we live sustainability"? or "How do we enhance the way people perceive sustainability"? or "How could we possibly adopt transformations towards sustainability"?

Recently, academics have tried to understand sustainability from the prism of complexity theories (Wells 2012, Peter & Swilling 2014, Tainter & Taylor 2014). Natural systems are sustainable because they manage environment complexity through biological and ecological diversity and evolution. Similarly, human societies could become sustainable if they deal with complexities through a flexible, inclusive and evolutionary approach, adapting the economic and social systems to the environment (Holling 2001). But, the knowledge available in disciplines of economics, ecology or sociology is specialized of only a part of sustainability and incapable of holistically interpreting its diverse challenges and consequences. In this regard, the primal need of diffusing complexity is to start integrating the principles of ecological, economic, and social science theories, keeping note of Albert Einstein's advice that everything should be made as simple as possible, but no simpler (Raymond 2003). So to phrase it plainly, if sustainable society is a utopia (like a utopian society), what is the central theme of this utopia?

While numerous practices are cited as threats to sustainability, such as political corruption, social inequality, the arms race, and inflating government expenditures, environmental risks remain at the heart of the discussion. Of course, what is central to environmental sustainability remains a matter of intense debate. Approaches may range from a moderate greening of current systems to rather radical transformation of the global political and economic order. Most importantly, managing long-term environmental issues such as fossil-fuel consumption, regulation of natural resources and toxic wastes, addressing global warming and the loss of biodiversity are of critical importance to efforts to achieve sustainability.

Thus, a sustainable society can be conceptualized as one which despite its existential and developmental challenges recognizes how to live within its ecological limits, unceasingly. It also offers an opportunity to socially adapt and advance while integrating economic, social, and environmental considerations in decision making as well as negotiating the future needs.

3.1. Sustainability is a politico-economic and socio-cultural challenge: As more and more countries embrace democratic political institutions and market reforms across the globe, they are also getting exposed to globalization, consumption of mass-products and associated perils like environmental pollution, social inequality and cultural hegemony, *in toto* lesser sustainable than ever before. This fact does not undermine the virtue of democracy and public reforms. Democracy as a representation of individuals, custodian of civic liberties and human rights is incredible, but once governments openly or covertly prioritize an uninhibited free-market economy represented by few conglomerates having private interests (their proponents becoming richer at the cost of more & more companies bankrupting every decade) over socio-cultural and environmental interests of its ordinary citizens, a sustainability challenge is bound to escalate.

The need for sustainability cannot be generalized unless the global contours of unsustainability are critically analysed. An obvious query can be to ascertain which countries have the highest and most unsustainable ecological footprints? An assessment of the Global Footprint Network's ecological footprint data (in global hectares per capita) of 188 countries shows that out of the top-50 countries with values above 4.4 hectares/ capita (Global Footprint Network 2021), 37 countries belong either to the developed countries or fuel-exporting countries, as per the UN country classification (UN 2014).

In addition to higher footprint in their own territories, transfer of manufacturing industries, their greenhouse gases and air-pollution to the developing countries remains a contentious issue. The developed countries account for the GDP of these industries in their national accounts but exclude the greenhouse gas responsibilities of the products and services availed from the developing countries. Thus, mere grandstanding by the rich countries supporting ideals of sustainability would not suffice, unless the fossil-based political economy nexus that actually runs in the developed countries is completely dismantled, without any emission exports to the global South.

Secondly, it would be futile to believe that the ecological predicament can be controlled by instruments of economic policy in these countries. Unsustainability is not just locked in the industrial and energy production systems of the evolved markets, it is deeply ingrained in their cultural values- consumption pattern of goods, sense of entitlement and control. The Western modern culture is responsible in the creation and augmentation of

the global environmental challenges, most notably, the developed world has contributed about 60–80 %, of the global temperature rise (Wei et al. 2012) and necessitates a fundamental change. Thus it would not be erroneous to assert that sustainability inherently entails debunking westernization and the techno-supremacist worldview it harbours about itself. The status quo needs to be questioned more firmly with what kind of transition does a society want- a radical one or an incremental one, a top to bottom or a bottom-up one needs to be interpreted. The developed countries that have extraordinary high per-capita emissions certainly need to adopt more radical approaches for sustainable transitions.

3.2. Transitions need to be culturally diverse and inter-generational: Cultural diversity amongst human beings is crucial to maintain their ability to evolve and sustain. While social interactions during colonialism, modernism and globalization have brought fusion, these have also impacted indigenous traditions. Realizing the gravity of the situation, the Convention on the Protection and Promotion of the Diversity of Cultural Expressions conferred that the protection, promotion and maintenance of cultural diversity are an essential part of sustainable development for the benefit of present and future generations (UNESCO 2005).

Interestingly, sustaining local cultural values and their ingenuity does not find any explicit mention in the global sustainable development goals (UN 2015). Thus acknowledging the problem, setting goals and continually adhering to those is just one aspect; the other and most important feature is to devise socio-cultural strategy for sustainable transitions. It would tend to cater the socialisation process that defines our thinking, attitude making and behaviour patterns in favour of sustainability. It would also guide how constructive participation, societal structures or organisation and communication can lead to sustainable development in a particular culture. As Mahatma Gandhi famously said, be the change you want to see in this world (Gandhi 2008), cultural values and community behaviour of a society equally changes from within as from outside. In view of technological innovations, policies and practices steered from outside by international market regimes, evolving native viewpoints for adapting necessary transitions is imperative.

Alike biological evolution, the knowledge about sustainability is not a one-time code but a constantly learning and interacting process. Sustainability cannot be perpetual or self-evolving unless its training becomes inter-generational, transmitted as ideas and experiences from grandparents to

their youngsters. The constant practice of living with nature, promoting diversity during one's early years as a child and teenager can imprint life-long lessons in a generation. Thus, it becomes vital that this process is invigorated and internalized in the collective memory of societies that aspire to be sustainable. This is only possible through creating and disseminating shared stories & narratives on sustainability that have a strong potential to influence our children's moral education, social responsibilities one owes while growing up, the political-economy and built environment one becomes a part of as a mature citizen.

3.3. Sustainability transition requires fresh values, messages and mediums: Media is a potent tool for speedy transmission of news about wars, stock markets, movements, pandemics, wildfires, cyclones, etc. with life-size images, videos and heart-wrenching reportage from affected regions. The mass-media, alike government policies, educational & social institutions, plays a substantial role for market economics and globalization that sustains all of them, thus could they be expected to become agents of change for sustainability too? For instance, as most television channels are owned, sponsored and advertised by large business conglomerates, can they be expected to give an equivalent screen space and prime time to environmental protection, ecological sustainability, conservation movements and social austerity campaigns that thaw consumption of globalized mass-products?

As of now, critical existential challenge like deforestation of tropical rainforests and global warming do not find itself atop politics, sports, entertainment or business topics in the popular media. Al Gore's documentary "An Inconvenient Truth", Greta Thunberg's speeches and Friday for Future campaign and debates on climate change struggle to find sufficient space and outpour. Thus mass-media faces credibility issues on two major counts: (a) misplaced priorities within its content messaging, and (b) compromises made with agencies and networks that financially support it. Both result in genuine presentation of environmental and socio-cultural narratives for sustainability taking a backseat.

But there is a silver lining to this grey cloud too. The second decade of the 21st century has seen an upsurge in the use of social media across the globe, particularly amongst the youth population. With its growing penetration and application, as a process of socialisation, there is still an untapped potential for social platforms like the Facebook, YouTube, Instagram to be effectively used for promoting global sustainability. For instance,

organisations like the United Nations, Centre for International Governance Innovation, The Energy & Resources Institute have popular channels on YouTube that relay video or podcast events on sustainability. Most importantly, there is plenty of bottom-up activism and awareness videos being created and shared by common people, social influencers, youth, etc. on themes of environmental education, producing and consuming nature friendly goods, green agriculture, reducing carbon footprint, making green buildings, zero waste, plastic free and grid free living, presenting feature content, case studies or do-it-yourself techniques. These jargon free and easy to comprehend style messaging finds immediate connect with common people as evident from the number of views they attract.

Dealing with sustainability communication, the approach should not just be systematic but targeted dissemination. Instead of putting the old wine a new bottle, sustainability messaging has to be profoundly creative, innovative that question the conventional worldview, consumerist values and practices of the modern economy and societies. At the same time, the message has to be utmost simple—*what you cannot explain to your grandmother or neighbour, it's unlikely you could to a wider audience*.

Globalization is not just an inter-continental exchange of materials, goods and services, but a culture that promotes mass-consumptive behaviour and vast extraction of environmental resources. The conventional institutions responsible for basic socialisation like the family, school, religious organizations on the one hand and popular media like newspapers, television serials, commercials, movies on the other have largely been promoting a set of values that have brought us to this challenging situation. The markets finance both media houses and their message, directly buying advertisement spots or through subtle methods of influencing content. Thus in popular culture, grave issues like global warming or even COVID-19 are not a genuine concern unless they have any commercial utility.

On the other hand, the culture of sustainability is not oriented to the same old values and invariably requires different messages and mediums of expression. Following Marshall McLuhan, the famous Canadian philosopher and media theorist who famously attributed for coining the phrase "the medium is the message" (McLuhan 2006), the choice of media would play a crucial role in transitioning to sustainability. Thus mediums connecting directly, effortlessly and without any costs with the groups that could bring change like the youth, children would bear the most traction in effecting a positive change. During the post-enlightenment period, scientists and

universities have demonstrated an important role in raising questions, inspiring social movements and a pro-active role of these actors in rekindling sustainability values still holds good.

3.4. Sustainability transition seeks leadership—every individual counts: Sustainability would not descend from the heavens but would have to be promoted by the people themselves and then demanded from their governments. As Winston Churchill famously said, "First we shape our buildings, thereafter they shape us" (Judd 2008), the same holds good while pursuing sustainable transitions in a society. Across the developed or western world and developing societies in Asia, Africa and the South America, there are innumerable people that live in particular political order, social norms, and economic system harbouring untenable practices, but as reflective individuals innately envisioning a future beyond these in favour of sustainability principles and practices. The quantum of such people may be infinitesimal than those around them, but through educational institutions, arts, movements, active projects, social engagement, talks these can voice their ideas, foster real and virtual networks with like-minded people and snowball their ideas and initiatives into transformative action. While academia, non-governmental institutions, civil movements, boot camps and conventional media can be test sites to foster such ideas, the increasing use of social media in creating a boundless society with innovative thinking is central to realize a globally sustainable society.

Leadership is a potent bridge between our individual lives and global sustainability paradigm. The practice of sustainability essentially requires some true role models. While there is semblance of some leadership in sustainability, as institutions, science, academics, activists, philanthropists, entrepreneurs, even politicians & celebrities endorsing some form of sustainability ideas or the other (UN 2021b), it is too fragmented and formal. The model of sustainability that binds both global reality and individual lives finds no noteworthy proponent or leader who can be emulated. One of the reasons could be that sustainability is multi-disciplinary discipline still evolving with no all-know experts and expertise, yet the dearth of sporting a leader from within is surprising. At the same time, why does a sustainability hero have to be a scientist, politician or a celebrity? In search of true role models, it becomes crucial to ponder that aren't farmers practicing organic farming and sustainable fishing or communities doing sustainable forestry and using natural materials to make their little homes authentic flag bearers of sustainability? Thus, ideas and guidance ought to

be followed from genuine innovators in one's own context who have practiced simple but effective ingenuity and methods to create huge opportunities for a change towards sustainability. Furthermore, the society needs to not just follow such sustainability icons but promote them through collective efforts, providing platforms for knowledge exchange and enabling them through active financial support.

3.5. Traditional knowledge is indispensable: The fundamental problem in steering transformations for sustainability is that the idea of sustainability is being led by nations and societies that have historically been the key actors responsible in rapid depletion of resources to fuel industrialization, mass production of consumer goods, environmental pollution and global climate change. The key challenge they face is to cheer-lead for sustainable development despite themselves following economic and social pathways that are still entrenched in unsustainability. The mere setting of higher targets for green energy would not do much unless excessive consumption of consumer goods and transfer of industries to the developing nations is curbed. There is a lot of hope associated with the role of corporate sustainability too. Central here is the notion of the so-called *triple bottom line* and the *Environment, Social and Governance* (ESG) frameworks (Alhaddi 2015, Mac Cormac & Haney 2012) that expects businesses to pay attention to social and environmental performance in addition to financial returns.

Once again, this approach is top-bottom missing out on transparently seeking the right kind of sustainability required in a particular kind of society. On the other hand, local sustainability emphasizes the importance of place, its needs and aspirations. Here, the role of traditional knowledge systems cannot be understated. These bottom-up and age-old approaches adopted by cultures to live in harmony with their surroundings are time-tested and need to be honoured. A very pertinent example can be seen when it comes to harvesting the forests for non-timber forest products or herbal medicines. Who should one regard more concerned about its sustainability? The local people that inhabit in and around these forests knowing what and how to grow at the back of their hand, the government and experts who want to declare it as a protected forest or the markets and industry who would support forests to be an open resource for unlimited use. A top-down systems approach would perhaps have no room for local voices. The right of the indigenous communities over their resources has to be acknowledged while giving them sufficient know-how and capacities to deal with market forces.

The traditional knowledge offers a robust alternative to the formal and technological approaches practiced generally in the developed countries. It would be interesting to see how the European and the North American societies who have been cut off from their traditional roots twice, first with the propagation of Christianity from the 5th CE (Rome) to the 14th CE (Lithuania) and secondly with post-industrialization dissolution of their rural societies would fall back on or respond to this search. Recently, there are some incipient trends towards rediscovering the natural and cultural roots. The youth are connecting with virtues of vegan diet, Yoga and low-carbon footprints. In addition, the study of several pre-Christian indigenous societies, their traditions are gaining popularity in the Europe and the US.

At the same time, their multi-brand corporates are exporting innumerable consumer goods in the markets of developing world, finding new customers and subscribers. The developing societies are at cross roads of whether to accept foreign products, trends and lifestyles as a mark of becoming a truly globalized citizenry or to adhere to their traditional cultural values and knowledge systems. In terms of sustainable choices, the answer is pretty straight forward, but how would transformations pan out depends on how people would assert their attitudes and behaviour in real time. Meanwhile, it is expected that public systems do not shut doors to indigenous societies, their ideas, traditions and knowledge systems when it comes to policy making.

3.6. Despite transitions, the prevailing institutions need to be invigorated: The gap between sustainable goals and the real world development seems to become wider and wider. Most governments, businesses and societies acknowledge sustainability as a desired cause, and declare their support for the global sustainable development goals, they want transformations to be least disruptive from radical changes. Their key argument seems to be that sustainability principle is intertwined with ideals of development, social justice, democracy, jobs, ecological conservation, climate goals and overall wellbeing that comes along with stability. This multidimensionality of transitions as well as the inter-sectoral systems within the governments functioning are deemed pivotal in preserving sustainability. But the argument is not completely factual if closely observed around the globe because democratic governments considered to be most stable, progressive and egalitarian are also the some of the most unsustainable and wasteful ones. Then, there is the issue of state involvement and ownership in several unsustainable practices. For instance, many industries and power plants

that are a significant contributor of environmental pollution and GHGs in these countries are actually public-owned enterprises. This essentially suggests two plausible options for sustainable transitions- either change the ongoing institutions or use the same governance system to become more sustainable. The degree of change would obviously depend on their current capacity and flexibility to adapt. Experience shows that man-made systems that are formal tend to modify the environment to the benefit of the society while sustainable models are essentially simple, flexible, evolutionary, diverse try to enable a society to harmonize with its environment. They draw on ideas and alternatives from cultural needs and experiences- for adopting new technologies and policies in dealing with the external and existential challenges. Thus, while change is necessary, stability and resilience is so desirable.

The experience of handling the COVID-19 crisis shows that societies need to be resilient to nature induced shocks bearing macroeconomic ramifications. The healthcare infrastructure demands, public health centres with essential quarantine facilities, emergency and life support equipment, oxygen, refrigeration, medicines vaccinations and much superior research and development facilities. It seeks upkeep and fostering of local supply chains-sustaining products and labour during the lockdowns essentially requires ensuring basic needs of people i.e. food and livelihood, especially for daily wagers and the poor. Such a green recovery impels for being prepared against other natural based risks and hazards too, like floods, earthquake, tsunami, cyclones and storm surges in coastal areas. Both COVID-19 and sustainable transitions share certain common goals, approaches for development interventions and co-benefits too. Sustainable transitions are also necessary in civil areas, making neighbourhoods and housing in cities better prepared and resilient to emergencies. This is possible by providing sufficient dwelling space, social distancing, safe access and adequacy for community facilities like daily stores, green spaces, secure and walkable pathways to work opportunities (Sethi & Mittal 2020, Sethi & Creutzig 2021). Thus one can confidently argue that green recovery i.e. sustainably transitioning with COVID-19 are two mutually benefiting paradigms.

3.7. Transitions Architecture—for governing without governmentality: Global governance systems are under acute stress. The role of the United Nations, World Health Organization, International Court of Justice in case of taking and implementing their decisions is being contested in multiple instances, a few case in point are navigation of international seas, global

terrorism, origins and handling of COVID-19, the human rights of Uyghurs in China. Recent developments have shown that globalisation and greater interconnectedness has mixed-blessings for the humankind. The political and economic interest of countries are now more intertwined with each other. This leads to differentiated priorities among allied interest groups too. For instance, even politico-culturally rooted NATO allies like the US and the EU have found themselves on opposite sides of the fence. The treatment of countries like China in matters of manufacturing and trade, Russia in case of security issues with Ukraine and Iran in case of implementing the nuclear deal. When it comes to the time to time disregard of the internationally brokered climate deals like the Kyoto Protocol and the Paris Agreement by the US dispensation, absolving itself of any moral responsibility in mitigating GHGs it caused historically is a testimony of how weak does the global writ runs. The response to COVID-19 has in fact further exposed countries and regions who have traditionally advocated for greater connectivity, free trade, open markets and human to human contacts. When it came to easing out intellectual property rights (IPR) and life supporting materials of COVID-19 vaccination for Africa, Brazil and India, the US, UK, Canada and the EU were either found to clamp IPRs, over-stock, embargo essential materials than saving the humanity and global good they often claim to stand for.

The global sustainable development is similarly devoid of a rule-based architecture. Growing capitalism, energy emissions and displacement of pollution from the global North to the South is factual and an ongoing process. Then how do countries transition towards the goal of global sustainability? It is crucial to develop a transition framework supporting market regimes that: (a) make such transfers accountable and costly, (b) internalizes exporting of environmental pollution from global North in their national GHG accounting, (c) If such transfers occur, the market ensures that certain proceeds from such transaction help minimize environmental impacts, enhance social benefits and most importantly sponsor clean, renewable and resilient energy infrastructures. One of the means to operationalize this would be to internalize emission trading in international trade.

At the national level, the sustainability transitions architecture has to unleash maximum governance with minimal governmentality. This entails greater push in sustainability policies through four significant forms or modes of transition, i.e. to *Supervise, Economize, Capacitate* and *Participate* (SECP transition architecture). Supervise includes all those planning,

regulating and auditing activities that the government and public agencies can undertake by themselves. Economize refers to putting in place all such economic instruments that incentivize, economize and facilitate sustainability functions. These instruments can take advantage of both market based and non-market based methods. Capacitate means to take capability building measures in government, private sector and with social groups through formal arrangements. This includes giving greater legal rights or stakes in sustainability projects and programmes. Participate connotes all such measures that facilitates the private sector, the community organisations and social-groups to take voluntary part in sustainability transitions.

Lastly, there are some special measures that can be instrumental while applying sustainability transitions on the ground, these include:

(1) The operationalization demands finding suitable measures of performance in each system. As per the United Nations, there are select targets and indicators, though limited to sustainable development. The indicators of sustainability transformations ought to provide a comprehensive depiction of the process and the desired state of satisfying each system, its needs, survival/existence, efficacy, well-being preparedness, resilience and adaptability to change.

(2) The idea of *digital transformations to Sustainability* that combines the use of digital applications (hard and soft), machine learning and artificial intelligence while upholding the maintenance of an individual's privacy rights is gaining ground and seems to be a promising way forward to accelerate sustainability transitions using new technologies.

(3) Cloud funding sustainable transitions—radical initiatives that involve high-tech procurements, huge investments or cost-benefit ratio in the beginning but promise substantial environmental and socio-economic impacts in the long-run can be cloud funded by governments. In economically stable societies, this community-support component can be factored into state sponsored projects during the planning stage itself.

(4) Sustainability mobilization, communication and education activities supported by governments in development initiatives, intra-sectoral and stakeholder cooperation, public participation, formal schooling and skill development, popular and social media messaging can strengthen their positive commitment to the transformation process, while weeding out the usual deviance and hesitant behaviour associated with social systems.

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Sustainable Societies: Transition from theories to practice

The national economic situation, rapidly changing societies, increasing environment pollution amidstglobal warming around us are some of the most burning topics in day-to-day discussions, news and scholarly discourses. What we see are only the consequences of protracted actions, policies and decisions. The issues associated with these phenomena are highly complex that challenge a direct interpretation of their root causations, indications, results and long-term impacts. For instance, is the issue of managing natural resources for industry & business operations within a country an economic problem? Or is it an ecological one? Or rather a social one? Could it be resolved with theories and techniques of either of these fields? Well, the issue and its redressal requires a combination of all the three disciplines. And yet actions to integrate all of these fields have typically by-passed one or more.

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