

How Societies Move on? Conceptualising Societal Transition Processes and Its Implications on Climate Change Adaptation

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Abstract

This article is first of its type aimed at retrieving the core sociological insights of classical, modern, and post-modern era, about the patterns of societal transitions, and situates those theoretical ideas in recent environmental discourse to support climate change adaptation endeavors. For this drive, a methodic literature review with theoretical coding has been carried out in three phases: 1) preliminary structuring, 2) systematic scrutiny, and 3) final selection of reading materials. The recurrent strands are described into three different sections: 1) classical sociology and societal transitions, 2) modern sociology and societal transitions, and 3) post-modern sociologies for societal transitions. Finally, this article highlights the recent grounds of sociological enquiry for the advancement of carbon reduction efforts and concludes by pointing out some learning lessons: climate change is a social issue; we need to institutionalise developmental leapfrogging of periphery and semi-peripheral nations by passing liability on core nations with high per capita carbon emissions; carbon reduction is dependent on the principles of equitable global development; Kuznets' curve in the late capitalism is not a sustainable choice; resource efficiency is a temporary jack and societies would have to move for economy-wide carbon reduction paths. This study offers the conceptualisation of climate change issues in a sociological way, and provides a playing ground for sociologists, environmental activists, development professionals, and related social scientists, to realise their capacities for a meaningful contribution in steering our societies towards a sustainable direction.

Keywords: sociological perspectives; environmental governance; climate justice; adaptation science; social systems; sustainable development; sustainability transitions

Introduction

We have a common resource—our planet, with a finite capacity of resilience to resist the anthropogenic damage—nine planetary boundaries (Rockström et al., 2009). Yet, our patterned lifestyles influenced by western modernisation, industrialisation, and urbanisation are far beyond the enduring capacity of our planet. Four out of nine planetary boundaries have already been transgressed including two core ones: climate change and biosphere integrity (Steffen & Rockström, 2015). These trajectories are projected to compromise the survival of our future generations largely, as the recent estimates are pointing to an average increase of human-induced carbon emission (CO₂) at the rate of 0.2°C per decade (IPCC, 2018). Similarly, another study amounts the average of projections that global warming is likely to boil our planet with an increase of 3.2°C by 2100, which has not only environmental but socio-economic and public health implications, where Asian cities will be the worst affected (Holder et al., 2017).

In the environmental sector only, nearly 60% of the global ecological (common) treasures have already been exploited unjustly (Dasgupta & Ehrlich, 2013). The largest proportion of such an

extinction is from the global north, including the group of seven (G7) countries, where approximately one quarter of the world's population lives. In these countries, the average CO₂ emission per capita is ranging from 9.8 to 18.2 tons every year (Fritz & Koch, 2016). Inversely, most of its abrupt effects such as heatwaves, floods, health, and other socio-economic impacts are projected to be faced by the global south where approximately three quarters of the world's population lives. The average CO₂ emission from these developing and under-developed countries is ranging from 0.2 tons to 4.4 tons per capita every year, which is too low as compared to the developed world (Fritz & Koch, 2016). A recent study cites that one richest person's emission of carbon in a developed country is possibly tantamount to the emissions made by 70,000 people in a poorest country (Harlan, Pellow, Roberts, & Bell, 2015) (p. 127).

With these unjust developments in the last century, a consumption-based anthropogenic pressure has severely damaged almost everything including public health, land systems, ozone layer, and beautiful creatures living deep in oceans (Rockström, 2016). In the aftermath of such a carbon-intensive developmental 'misconduct', a sustainability crisis of our planetary boundaries is mounting day by day. Although, all countries will have to jointly enjoy the payback of environmental debt, it turns out that, the poor developing people with a second and third class status, are due to be worst affected (Holder et al., 2017). In response to this 'environmental debt' largely created by the developed world, sustainability efforts require that we fulfill our needs in a way to limit global warming well below 1.5°C by the end of this century (IPCC, 2018). It requires a significant transformation in our global social systems through role model countries. But, if a country with one of the highest per capita CO₂ (United States) is not ready for any turbulence in its economy, and withdraws from the Paris Agreement (Tollefson, 2017), what should we expect from the poor developing nations with a very basic level of developmental deficit. These developing people with three-quarter of the world's population are still on their way to achieve the same standards of life in core countries. These global development trajectories require a robust change in our social development systems to ensure the sustainability of this planet.

Decades of unequal attention paid to natural, physical, and technical aspects of environmental issues, now there is a growing acknowledgement of a scholarly gap for dealing with social facts—social norms, values, and laws (individuals, groups, communities, and societies), that shape environmental vulnerabilities at different levels: cities, countries, regional, and the globe (Grabs, Langen, Maschkowski, & Schöpke, 2016; O'Rourke & Lollo, 2015; Schanes, Giljum, & Hertwich, 2016). A recent knowledge highlighted in peer reviewed papers reveal that most attention with respect to the contribution in the area of environmental issues has been downplayed by sociologists, and that they are lagging behind in their due role in climate change adaptation. A recent study noted that, sociologists have contributed only 3 percent of the total number of publications focusing on climate change (Brulle & Dunlap, 2015) (p. 7). It shows that the right people (sociologists) are not on the right job (research direction), and we need to fulfill this so called scholarly gap by analysing our contemporary social structures with devastating carbon-intensive lifestyles driving us to environmental vulnerabilities—the puppet issues, whose strings are largely in the hands of our societies (puppeteer) worldwide.

Notwithstanding to latter said scholarly gap, this paper seeks to not attest to the claim and so argues that sociology has a great theoretical inheritance to categorically analyse our global social systems by using multiple sociological lenses, which has implications for addressing climate change issues. Therefore, this study revisits the classical, modern, and postmodern sociologies on societal transitions which has implications for climate change adaptation. It identifies three main sociological perspectives for dealing with climate change issues. 1) Structure functionalists' perspective, 2) conflict perspective, and 3) symbolic interactionists' perspective. Structure functionalists believe to

‘regularise’ our needs for climate justice action such as Paris Climate Accord and Sustainable Development Goals (SDGs). They believe on the ‘cooperative’ functioning of macro, meso, and micro level social institutions. For example, the United Nations (UN) and Belt and Road Initiative (BRI) at the macro level, the country level governmental programmes and community organisations at the meso and micro level respectively. The structural functionalists’ approach for institutionalising our global needs sometimes conflict with national and local agendas which gives birth to ‘conflict’ perspective. These conflicts require a comprehensive understanding of not only the ‘world social systems’ at a global level but also the diverse form of social order at the grass-roots level such as social groups, communities, culture, inter alia, called a ‘symbolic interactionists’ perspective (Bershady, Cuff, & Payne, 1981). The latter said three perspectives are discussed in detail in the section 3.2 of this article.

By synthesising these sociological strands, this paper argues that sociologists have a history of working on environmental health issues which provides a great theoretical inheritance to combat global warming. Sociology is a subject that emerged out of a significant social change in the history of human societies, particularly in the nineteenth century. Therefore, sociological works provide an in-depth knowledge to conceptualise the processes of societal transitions. However, a general review of the contemporary literature on climate change reveals that, a substantive amount of scientific analysis has ended up with similar questions such as how social structures evolved? How to intervene in carbon-intensive social norms/practices? How can we transform our societies for larger benefits of sustainable development? How to establish new patterns of social interaction in our complex modern societies? (Loorbach, Frantzeskaki, & Avelino, 2017; Mont, Neuvonen, & Lähteenoja, 2014; Gert Spaargaren, 2011; Welch & Yates, 2018).

Interestingly, these are those simple questions that sociology has addressed more than a century ago. Thus, this article takes the challenge of not only identifying the theoretical traditions of sociologists to conceptualise the patterns of societal transitions, carbon-intensive modern lifestyle, economic development path, and climate change issues, but also to illuminate the pathways given by sociological theories to purposefully intervening into our modern social systems for climate change adaptation (Pellow & Nyseth Brehm, 2013). With this particular focus, this paper aims at identifying the potential ‘transition processes’ of societal transformations which sociologists tell us for realising a meaningful change in world social systems. For this purpose, this study first mines the classical golden perspectives of sociology on societal transitions (classical sociology), and appropriately situate them in response to the contemporary environmental discourse—consumer societies, climate change, sustainable development etc. Secondly, it classifies these sociological theories into three different perspectives: functionalists, conflict, interactionists (section 3.2)—modern sociology. Lastly, this article highlights the working of post-modern sociologies for pro-environmental societal transitions.

These theoretical insights of the classical, modern, and post-modern sociologists not only provide readers a sequential understanding of the history of sociological work on societal transitions from micro to meso, to macro level, but also provide an opportunity to sociologists, climate change activists, and related social scientists, to critically analyse their own capacities for a meaningful contribution in the area of sustainability research. Thus, the later part of this paper includes: 1) a brief introduction of the research methods adopted for this article; 2) the work of classical sociologists and its implications for dealing with climate change; 3) the classification of modern sociological perspectives for dealing with climate change; 4) the work of post-modern sociologies in the era of globalisation and its implications for dealing with climate change.

Methodology

To qualify the completeness and thoroughness of a theoretical work, a qualitative research approach guided by ‘what constitutes a theoretical contribution?’ (Whetten, 1989) coupled with a methodic literature review (Bryman, 2013) (p. 102) and theoretical coding (Saldana, 2013) (p. 224) has been adopted. This combination contains a rigorous way for identifying and analysing ideas with explicit procedures and minimal biasness in selecting/reviewing reading materials (Onwuegbuzie, Leech, & Collins, 2012). This approach provides an evidence-based trustworthy reporting to policy makers especially in the fields of social policies (Nowell, Norris, White, & Moules, 2017). The research questions such as how can we drive a pro-environmental societal transitions with a particular directive of sustainability transitions, are well addressed with this lens (Bryman, 2013) (p. 103).

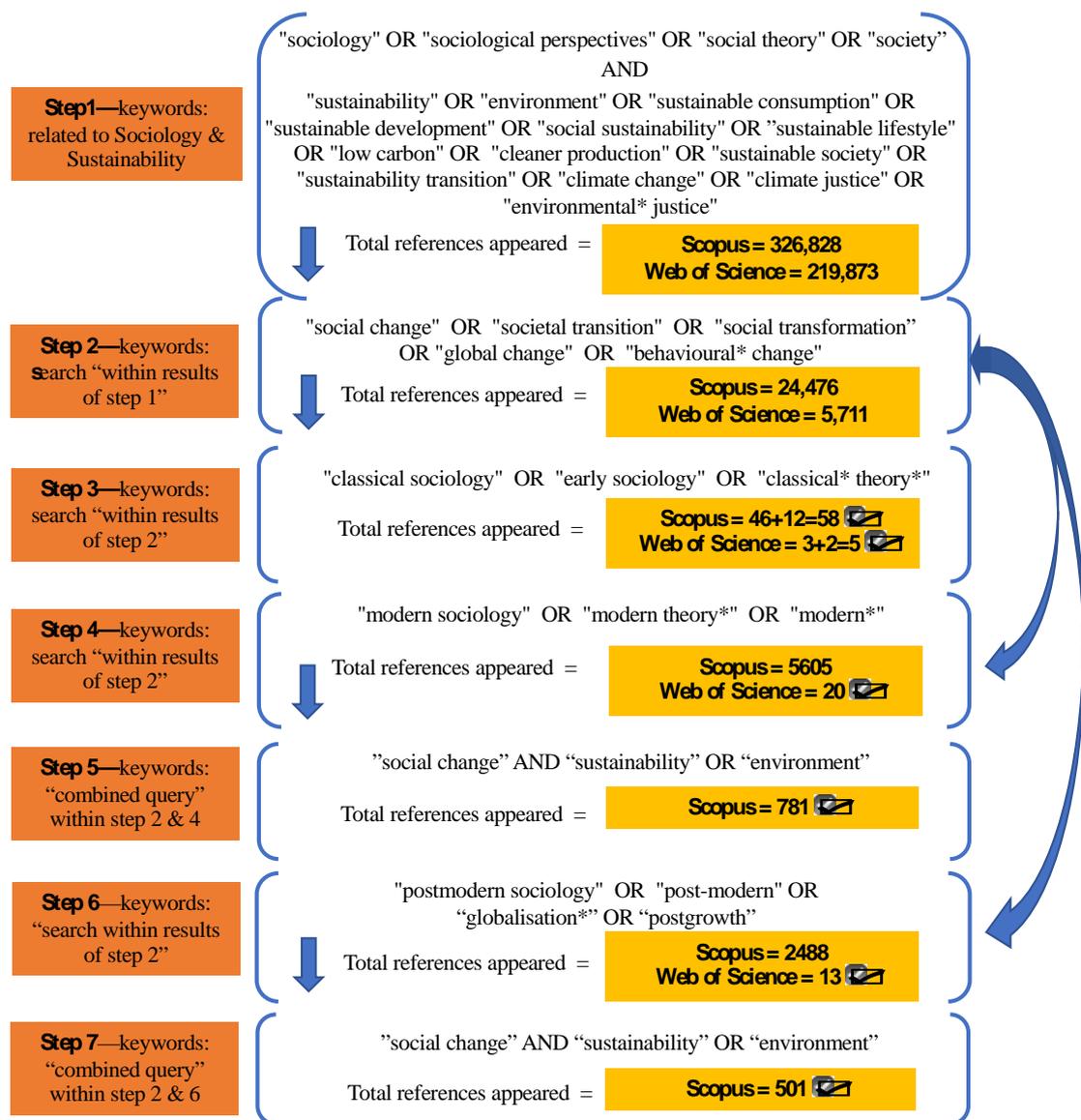
The appraisal of reading materials is based on original articles and book chapters mainly but not limited to it. Books, review articles, and general media reports are also examined at the preliminary stage. The reading materials are identified by searching keywords mainly in Scopus— $n=61$, Web of Knowledge— $n=17$, and the web portal of the library in Zhejiang Normal University, Jinhua, Zhejiang, P.R. China. The latter-third source is used for reviewing books at the initial phase only—phase 1. Following a systematic method at the second phase, a total number of 78 ($61+17$) documents are selected for a thorough review at the final phase—phase 3. The corpus is defined based on the following criteria at phase 2. A step by step detail is depicted in figure 1.

Phase 2—in the first step, a maximum possible key terms and phrases related to “sociology” and “environment” were searched from the aforesaid first two databases (Scopus & Web of Science) without any time frame. Scopus claims to be the largest abstract and citation database of peer-reviewed articles and Web of Science as the world’s leading collection of scholarly works. These two databases provided a very comprehensive set of peer-reviewed literature. The key terminologies were searched in topics, abstracts, and keywords of peer-reviewed original articles and book chapters only. These online databases were accessed on June 14, 2019 (see graph 1 for a complete set of key terms and phrases). The total number of references appearing at this stage were: Scopus= $326,828$ and Web of Science= $219,873$. Concerning the objective of this paper, this large set of publications is further examined by searching all possible documents related to “societal transition” (and related terms and phrases) only. This stage increased the likelihood of having materials to conceptualise the ‘processes’ of societal change for sustainability transitions. The references appeared at the second step were: Scopus= $24,476$ and Web of Science= $5,711$. Thus, to conceptualise the epistemological strands of three core categories more exclusively: classical sociology and societal transition processes, modern sociology and societal transition processes, and postmodern sociology and societal transition processes, related terms and phrases (graph 1) were categorically searched within the dataset of step 2. In the third step, (for classical sociology only) the references appeared were very fewer: $n=46$ /web of science 3. On the other hand, a large set of documents appeared (in case of Scopus only) for modern sociology: $n=$ Scopus 5605 /web of science 20 at step 4, and postmodern sociology: $n=$ Scopus 2488 /web of science 13 at step 6. Therefore, the method for selecting materials from each source was modified in the following way.

For classical sociology, to deal with very fewer references, an expanded search (not within the dataset of step 1 or 2) with keywords and phrases related to “classical sociology” only was operated on June 15, 2019. The total references appeared after limiting to original articles and book chapters only were (Scopus= 12 /Web of Science 2, after removing divergent fields). Finally, the third step for ‘classical sociology’ was finalised after combining both fewer references and expanded operators $n=$ Scopus $46+12=58$ /web of science $3+2=5$ as a representative dataset in phase 3.

Moving ahead to modern and postmodern sociology, and dealing with too many references appeared in Scopus, one more step (5 and 7) was added for each category by combining data sets for

further search. For modern sociology, the results of step 4 were combined with step 2 for a more saturated base, and then repeated the keywords search: “social change” OR “sustainability” OR “environment” (see graph 1). At this stage (step 5), the total references appeared after retaining ‘original articles’ and ‘book chapters’ only were: n= 781. These 781 references of Scopus (step 5) were retained as a representative dataset for modern sociology in phase 3. Finally, the corpus for postmodern sociology is defined by following the similar criteria as of modern sociology (combined query) where n= 501. These 501 references were retained as a representative dataset of postmodern sociology in phase 3.



Note: step 5 (for modern sociology) and step 7 (for postmodern sociology) are expanded searches to further squeeze the large set of references appeared in Scopus. These expanded operators provided a more saturated base for selecting reading materials in phase 3.

Figure 1. Review Process

Phase 3—a critical appraisal of full papers from each above-mentioned category (classical, modern, and post-modern) is based on reviewing titles and abstracts selectively. The preference criteria varied between relevance rate, citation rate, and document accessibility. Although the process of phase 2 minimised the bias in choosing reading materials, yet, the screening of documents is very selective in phase 1 and phase 3. Hence, the selection of materials is limited to papers in the English language only. The eligible reading materials are cross-checked by at least two independent experts before moving for further scrutiny. Finally, the pertinent strands (theories and empirical findings) are defined into three distinct periods of sociological contributions, directly or indirectly, dealing with climate change issues: 1) the classical sociology and societal transition processes—work carried out before 1940s to the emergence of “sociology” term, 2) the modern sociology and pro-environmental societal transitions—the work carried out in 1940s to 1987, before the emergence of “sustainability” term in the landmark UN document—Our Common Future, 3) the post-modern sociology and pro-environmental societal transitions (1987 to onward). Thus, the paper offers a well-defined insight of sociological theories to enlighten our pathways to climate change adaptation and sustainability transitions research.

Results

(Pathways to Societal Transitions and Climate Change Adaptation—Sociological Approaches)

The first part identifies the thoughts of eleven classical sociologists. This section starts with what founding fathers of sociology say about societal transitions, and how others build on or counter with their ideas. It covers a ‘mixed review’ of all levels of sociological imagination. Their ideas are further ingrained in environmental discourse. The second part includes a ‘categorical’ review of micro (or interactional), meso (or group and class conflict), and macro (institutional, structural and systematic) level modern sociologies about societal change. This part also places the mixed thoughts of classical sociologists in modern sociological perspectives in a categorical way. Finally, the third part identifies two recent areas of sociological enquiry, and their roots in the history of sociological work for dealing with environmental health issues.

Classical Sociologies on Societal Transitions: (before 1940s to the emergence of “sociology” term)

August Comte (1798-1857) coined the word sociology—a subject that he believed to develop scientific models, after physics, for studying social change—social physics. Comte’s ideas about social systems are influenced by invariable natural laws. He claims that our societies are like human body organs which cooperatively support the functioning of the whole body—a homogeneous doctrine (Comte, 2000) (pp. 33-40). Comte felt that social order in our societies is not natural, as many consider environmental and sustainability issues, rather ‘socially constructed’ and predictable with a positivistic (scientific) approach. Comte views societal transitions in terms of human progress in an evolutionary way. He claims that every society passes through three stages: theological stage (supernatural beliefs), metaphysical stage (logical thinking), and positivistic stage (science). His Law of Three Stages about societal transitions was first published in May, 1822, in 191 pages, with a title “prospectus of the scientific worlds for the reorganisation of society.” (Comte, 2000) (p. 9). His idea of unidirectional societal transitions suggest a non-market approach for environmental justice action which is in line with article 6 point 8 and 9 of Paris Agreement (United Nations, 2015)

Can we still deny the fact of unidirectionality? The global trends of rural-urban migration, industrialisation, modernisation, motorisation, and carbon-intensive development patterns globally, have led many researchers to call for ‘leapfrogging’ western models of human development for the

pursuit of environmentally just societies (Schroeder & Anantharaman, 2017; Tukker, 2005). On the other hand, a widely used IPAT, STIRPAT, and ImPACT analytical models (Richard York, Rosa, & Dietz, 2003), which measure the driving (human) forces of environmental externalities, are exactly one example of Comte's positivistic approach. He mentions in his positive philosophy that "...we cannot thoroughly understand any terrestrial phenomenon without considering what our globe is, ...as its situation and motions affect the conditions of everything upon it, ...which in astronomy would merely modify some co-efficient, would largely affect or completely destroy our social development" (Comte, 2000) (p. 153). His epistemological perspectives of 'positivism' are worth reviewing for pro-environmental societal transitions.

Herbert Spencer (1820-1903) dissents Comte's 'homogenous doctrine' with the idea of "structural differentiation." He posits that social order in our societies is subject to evolve in diverse forms of integration—inorganic (homogeneity), organic (heterogeneity), and supra-organic (heterogenous multiformity) social evolution. He argues that, societies, similar to the biological organisms are getting more heterogenous and complex with the passage of time. This complexity leads us to establish new social institutions to fulfill the contemporary needs and determine functional capacities as per changing environment—survival of the fittest (1898: Vol. 1, 228-241) (McKinnon, 2010; Spencer, 2012). He mentions that, "mankind survives not through arrangements which refer to it as a whole, but by survival of its separate societies; each of which struggles to maintain its existence in the presence of other societies (1898: Vol. 1, 227) (Spencer, 2012). The establishment of UN, IPCC, etc. (social institutions) is an example of our heterogenous but integrated needs in the era of environmental crisis; and it would be an apparent neglect if we do not consider Spencer's work of 'energetic sociology' for conceptualising the changing role of energy (social force) in industrial production and trade (social) systems in our unjust societal patterns leading us to environmental vulnerabilities (McKinnon, 2010).

Similarly, Emile Durkheim (1858-1917) also shows his tendency to define the processes of societal transitions, however, he argues that the idea of attributing social physics (Comte) and biological evolution (Spencer) to changes in our societies is too speculative without providing solid methodological principles for studying social life. He fulfills this gap by inventing a new term 'social facts' the first principle of sociology, which means the 'external forces,' similar to 'things,' 'objects,' or events in nature that shape individual's behavior in a particular direction such as peer groups, household environment, government policies, transport infrastructure, or product availability, or purchasing power determining prosumer behaviour in prosumer markets (Durkheim, 1982) (pp. 50-59). His idea of 'social fact' enlightens our path towards an environmental just societies. It shows that pro-environmental behaviours are not to be developed within a person rather external forces such as societal rules, organisational pressures at different levels are worth considering as paths to environmental justice. The study of these external forces pay a vital role in transforming our production and consumption systems, which has implications for sustainability transitions (Wittmayer, Avelino, van Steenberg, & Loorbach, 2016). Durkheim also emphasises on 'social solidarity' as a key to a sustainable society. As societies move from 'mechanical solidarity' (people with common cultural identity e.g., rural people) to 'organic solidarity' (a multicultural social setting e.g., megacities), their 'social bonds' keep them alive. He maintains that social institutions such as family, economy, politics, and religion etc., are powerful mechanisms for driving environmentally just societies. He refers to social institutions that, "...their genesis and their functioning', ... indicate 'crystallising' or instituting, of 'certain modes of action..." (Durkheim, 1982) (p. 5). His works illuminate 'institutional' mechanisms for environmental justice action.

In contrast to Comte, Spencer, and Durkheim's emphasis on ideas, values, and evolution, Karl Marx (1818-1883) and Frederick Engels (1820-1895) in *The German Philosophy* inscribe that, "life is not determined by consciousness, but consciousness by life." (Marx & Engels, 1947) (p. 15). They provide a materialistic outlook to examine social life that physical organisation of people determine the nature of individuals (mode of life) and what they produce and how—means of production. Marx appears as a pioneer of conflict perspective, who views societies are in a constant state of competition, power struggle, and the pressure of class systems (social stratification), leading to increased production and consumption, which requires a radical response (revolution) for system changes and environmental justice. He considers 'class struggle' between rich and poor as a major driver of environmental vulnerabilities (Malešević, 2010). In *The Communist Manifesto*, referring to capitalist system, Marx and Engels write that, "society as a whole is more and more splitting up into two great hostile camps, into two great classes directly facing each other: bourgeoisie and proletariat" (Marx & Engels, 1964) (pp. 58-59). Their writings postulate that the pressure of capitalist system has led our societies towards modern science, technology, and urbanism in a reckless and unjustified distribution of resources and environmental crisis. They believe that certain changes in our societies are dependent upon, and characterised by certain production systems, re-creating social inequalities, which are subject to radical reforms. Marx theory of 'metabolic rift' explains agricultural destruction due to market-based process of urbanisation undermining environmental sustainability. It is, however, quite evident that how market-based economies have substantially widened the gap between rich and poor globally. A recent study cites that a rich person living in a developed country can possibly emit carbon equal to emissions by 70000 poor people in least developed countries. The countries of global north have already surpassed three times of their safe share of CO₂ emission in the atmosphere. On the other hand, 10 percent of the poorest people, largely in the global south, shares only less than 1 percent (Dunlap & Brulle, 2015). Inversely, they are the most vulnerable to face appalling consequences of climate change. The study of social inequalities, equity, and climate justice is core of sociology with great disciplinary potential for the analysis of alternative social systems, mitigation strategies, and adaptation pathways to climate justice (Passerini, 2007).

Max Weber (1864-1920) rejects Marx's materialistic point of view. His ideas also contrasted with Comte, Spencer and Durkheim's standpoints to view societies as a physical world (physics or biology). He argues that, the organisation of modern life is raised on science, technology, and bureaucracy, which are general social processes needed for efficiency and technical knowledge in modern societies. He contends that modern lifestyles, competitive markets, and power structures in the era of globalisation, contain abstract social procedures (e.g. social norms—folkways, mores, and laws) called 'rationalisation' (Weber, 1930) (pp. 36-80). He clarifies that the process of rationalisation depends on setting 'goals' and defining 'strategies' to achieve those ends. He further states four distinct but interdependent 'social spheres' as important determinants of social life for environmental justice: politics, law, economy, and religion. He argues that, although economic factors pay an important role in shaping behaviours and establishing capitalist systems, yet, the nucleus of social life is historically based on non-economic forces such as religion, status, security feelings, and life comforts (Morrison, 2006) (pp. 276-281). Therefore, these are important determinants for environmental justice. Weber's sociological insights help us in explaining the problems of lifestyle diseases (conspicuous consumption) in the contemporary era (Evans & Jackson, 2007; Warde, 2015).

George Simmel (1858-1918) is a typical sociologist who eclipsed all the above-said in micro-sociology. Simmel, opposite to macroscopic and somewhat blurred views, visions society with a high definition lens. He zooms in social relations and finds our societies in a form of 'reciprocal interaction' (Gross, 2000). Simmel defines different 'forms' of social interaction (e.g., exchange, con-

flict, domination, prostitution, sociability) and ‘types’ (e.g., stranger, poor, miser, spendthrift, adventurer, nobility) of social interactants as a central point of social life (Simmel & Levine, 1971), (pp. 43-199). Unlike a solo-macroscopic analysis of Weber’s rationalisation and Marx’s capitalism, the beauty of Simmel’s work also lies in his multilevel lens of social inquiry: individual’s forms and types of interaction at micro level—pure sociology (bordered with social-psychology), socio-cultural aspects at intermedatory level—general sociology, men’s basic nature and their expected fate at broader level—philosophical sociology. In view of the multiple ‘forms’ and ‘contents’ of social interaction at different levels, in *The Problem of Sociology*, he writes that, “...the pure forms of sociation be identified, ordered systematically, explained psychologically, and studied from the standpoint of their historical development...” (Simmel & Levine, 1971) (p. 27). Thus, Simmel’s thesis informs us that pro-environmental societal transitions are subject to a ‘reciprocal influence’ of different forms and contents at different level of social settings where each component play a vital role for building an environmentally just global social system.

Pitirim Sorokin (1889-1968) in his *Social and Cultural Dynamics* further talks about the ‘forms’ and ‘contents’ in an even more interesting way. He discovers three central points, which he calls ‘supersystems’ of our societies, where he believes our social systems are revolving around: ideational (spirituality matters), sensate (logic matters, idealistic), and the latter both—a supersystem with the function of both material—sensate, and non-material—spirituality (Sorokin, 1957) (pp. 2-52). Here the current age or people of a particular area works as a physical ‘form’ (sensate) and mindset, priorities or ‘content’ is variable as per time or people of different localities. The social reality, he believes, is not linear, rather cyclic—materialism-idealism. We might conclude in a way that spirituality starts at the point where people fail to define or explain definite laws of the universe. Should we assume a potential turn in case we fail to address environmental issues? Being even more precise to social relations than Sorokin, Arnold Toynbee (1889-1975) finds societal transitions simply out of societal ‘challenges’ that humanity faces and its ‘response’ in reaction to it. These challenges and response, Toynbee believes, passes through four social processes: birth, growth, stagnation, and disintegration. These challenges stimulate people to reshape their social systems accordingly. The challenges might be man-nature or man-man (Toynbee, 1946).

Table 1. Classical perspectives on societal transitions

Theorists	Perspective	Change Patterns	Transition Processes
August Comte	Macro	Evolutionary	Theological, metaphysical, positivistic
Herbert Spencer	Macro	Evolutionary	Homogeneity, heterogeneity, multiformity
Emile Durkheim	Macro	Evolutionary	Social institutions—family, education, economy, religion, etc
Karl Marx & F. Engels	Macro, meso	Radical	Power struggle between rich and poor
Max Weber	Meso, micro	Evolutionary	Rationalisation—goals and achievements
George Simmel	Macro	Cyclical	Multilevel reciprocity of forms and types
Pitirim Sorokin	Macro	Cyclical	Materialism-Idealism
Arnold Toynbee	Macro	Cyclical	Birth, growth, stagnation, and disintegration
Thorstein Veblen	Micro, meso	Evolutionary	Technology development, private ownership
Gabriel Tarde	Micro	Evolutionary	Innovation, role models, social learning

These challenges however, a contemporary of Marx (Ford & McColloch, 2012), Thorstein B. Veblen (1857-1929) views as an endless effort to fulfill man's industrial needs. He finds technological developments and private ownership system as a key drive for societal change. More than a century ago, he views modern consumer societies in a battle field for trade purposes, and re-establishing peace based on the conditions lucrative to business people or technicians only (Plotkin, 2010). Furthermore, in his theory of Leisure Class, he is the first one who talks about 'conspicuous consumption,' elites, and their waste habits as means of showing one's status (Trigg, 2001; Veblen, 1899). He finds an endless desire in man's nature to make economic and technological progress and feels reversing back as an option for an environmentally just society. We can take his revert option for degrowth in economies and population (Garcia, 2012), in technology (Heikkurinen, 2018) and community-level energy demands (Seyfang & Haxeltine, 2012).

Last but not least, a classical sociologist, Gabriel Tarde, in his *Laws of Imitation*, in 1890, sheds light on the process of adopting social change. He finds cosmopolitan social settings as innovative niches for social change (Kinnunen, 1996; Tarde, 1903). His views suggest that we need to create good examples of people, cities, or countries—transforming consumption in one social or geographical setting—which will serve as a role model for innovating sustainable consumption in other social or geographical setting (Fischer & Newig, 2016; Sommer & Schad, 2014). His ideas paved the way for many social theories like Rogers' Diffusion of Innovations and Becker's Rational Choice Theory. Both are discussed in later parts.

If we critically analyse the above standpoints of different classical theorists, we can categorise these thoughts into three major theoretical perspectives on social change. These perspectives are described in the modern sociology.

Modern Sociologies on Societal Transitions: Theoretical Classifications (1940s to the emergence of "sustainability" term in 1987)

This part includes a categorical review of three major theoretical perspectives of sociology which explain the process of societal transitions as a function of various social processes at different levels: 1) structural functionalists—a macro level perspective that believes 'cooperation' among different social institutions, social structures, and systems as a whole, as a key to environmental justice, 2) conflict perspective—a medium ranged theories viewing 'competition' among different groups and classes as a key to environmental vulnerabilities, and 3) symbolic interactionists—a micro level perspective that views 'rationality' as a key to environmentally just societies. The core viewpoints of these modern social theories, their possible origins in the classical work, and their integration with recent environmental justice endeavors are illustrated here.

Structural Functionalists' Approach on Societal Transitions

The 'structure' here refers to the institutionalisation of social relations among different social entities and 'function' means the outcome of any collective (institutional) efforts out of those social units, leading us to reshaping our societies as per environmental needs. Structural functionalists' believe that a finite capacity of our planetary resources to serve our infinite needs require that we institutionalise our needs as per our budget for the environmental catastrophe. The mechanism they offer is 'cooperation' and 'evolution' without any major turbulence in the status quo. This approach (roots in Comte's 'evolutionary stages,' Durkheim's 'social institutions' and Weber's rationalisation) offers exactly what partly latest sustainability analysts are looking for—a systems approach to sustainability. The main questions functionalists' respond to are: how social systems are evolved? What basis these social systems are depending upon? How can we intervene into these social systems as per given directives of sustainability transitions? (Geels, 2010; O'Rourke & Lollo, 2015; M. Sahakian & Wilhite, 2014).

In 1950s, after two major wars, a huge chaos in the human history led many social theorists to flexing their muscles on traditional cultural values and opening up to modern lifestyles. These modernisation theorists saw societal transformation in getting rid of old customs, backward traditions, and moving towards ‘rational’ thinking, increased prosumption, modern family structures, economic development, etc. (Beck, Bonss, & Lau, 2003; Blowers, 1997; Cooke, 2013; G Spaargaren & Van Vliet, 2000). These modernisation theorists view societal transition simply from traditional to modern, variable the same way of western modernisation. Although the lens is still popular to measure socio-ecological transitions in urban areas (Xu & Wu, 2016) yet, modernisation theory (MT) got high prestige in 1960s and 1970s due to important developments in market economies, and industrialisation, and urbanisation worldwide (Burns, 2012). This rational thinking is then further advanced to ‘economic rationality’ and provides a standard converging point for all—western-pro mass production and consumption (Lankao, Nychka, & Tribbia, 2008). This linear path of evolutionary development—traditional to modern—unfortunately, not only worked for economic prosperity but also for environmental degradation. However, capitalists (structural functionalists) defend it in a way that economic modernisation is a system that would eventually lead to greening our industries, once a certain level of economic development is achieved—Kuznets curve (Kuznets, 1955). The theory suggests that environmental quality is a luxury good, concerning to affluent societies only, and those with technological innovation and economic development are able to curb environmental externalities. In their view, free markets, easing businesses, free trade zones is a key to ensure environmental sustainability. However, a recent report of IPCC has warned against this trajectory (IPCC, 2018).

Ecological modernisation theory (EMT) in 1980s (D R Fisher & Freudenburg, 2001), is an improved version of MT with somehow similar claim of modern theorists that societies move to environmental care in the late capitalism. The difference between MT and EMT is that of MDGs and SDGs—not only development but sustainable development. Ecological Modernisation theorists give equal importance to other institutional efforts in all walks of life (e.g., food, transportation, family, education, politics) and not only to economic institution (Ernst, Esche, & Erbslöh, 2016; Geels, 2012; Hofmann, 2019; Horne & Moloney, 2019; M. D. Sahakian, 2012; G Spaargaren, van Koppen, Janssen, Hendriksen, & Kolfshoten, 2013). They believe that institutional restructuring, new governmental regulations, investment in scientific research, green technologies, and new social movements, are ecological rationality indicators in the next step on economic rationality, which will eventually lead us to cleaner production systems and sustainability transitions—Spencer’s heterogenous multiformity (Mol, 2002). A practical example of what they believe is product service systems (PSS) in the contemporary era (Tukker, 2015). Thus, the key argument they made is that, we are in need to slightly modify our structure of market economies, economic growth, and global trade, without any radical works to renounce them (R York, Rosa, & Dietz, 2003). To test this convergence hypothesis, a recent study applies a statistical cluster analysis on country level GDP and GHG emissions. The results show that only a few countries (the ‘haves’ and ‘have somes’) with efficient technologies and strict air quality measures are able to eventually control carbon emission at the country, however, the global emissions are still on a linear path (Lankao et al., 2008). It shows that social, economic, and environmental disparities are likely to exist in a global context so EMT needs to go beyond resource efficiency (R York & Rosa, 2003). This point is further discussed in section 3.2, conflict perspective—world systems theories (WST).

Functionalists’ unidirectional idea of modernisation, structural adaptation, and evolution is criticised for its ethnocentric approach and further advanced with ‘multilinear’ evolutionary lens (multilateralism or multiformity) in the late twentieth century. The latter mentioned we can catego-

rise in two facets: general adaptation (homogeneity, MT, convergence, one earth) and specific adaptation (heterogeneity, diversity, divergence, innovation) (Lankao et al., 2008). In other words, societies can progress in diverse or innovative forms (Simmel's idea of 'forms' and 'content'), not necessarily to follow the patterns of industrial societies, and that 'modernisation' is something not necessarily 'good' (as per case of GHGs from industrial societies) rather a general social process replacing old fashions. Here, a question regarding 'innovative lifestyles' arise that, how functionalists' explain the process of eco-modernisation, diffusing from one social setting or country to another. Everett Rogers (1931-2004) explains the diffusion of social norms and adoption through certain social processes called: 1) innovation, 2) communication channels, 3) time, and 4) social systems in need (Rogers, 1995) (p. 11). He argues that, any innovative idea passes through certain social processes in a given society, where people approve or disapprove it for further prevalence. These groups of people, he claims, are available in every society, and include innovators 2.5% (people with new ideas), early adopters 13.5% (judicious people of our society), early majority 34% (rich people who can take risk of new ideas quickly), late majority 34% (followers), and laggards 16% (those who do not like any change). The stage of early adopters, he argues, is crucial for any innovative trait to move on for further prevalence in a society (Rogers, 1995; Sahin, 2006).

Another structural functionalist, Talcott Parsons (1902-1979), theorises the sustainability of a social system in a model—AGIL functions (Adaptation, Goal, Integration, Latency). He closes down the discussion of innovative social change from two diverse (inter-cultural) social systems to intra-systems analysis. Hence, he goes beyond a simple narrative of structural 'adaptation' (environmental demands), and includes 'goal-attainment' (mobilisation of resources), 'integration' (regulating subsystems), and 'latency' (maintaining local values) as four functional cores of a social system (Parsons, Shils, Naegle, & Pitts, 1961). He adds an 'intermediator level' in the simple dichotomous transition from traditional to modern—MT. He argues that 'language' is an important mediator from 'primitive to intermediate' level social change. And, 'institutionalising' social norms leads us (social systems) from 'intermediate to modern' level societal transitions. All in all, his analysis identifies four types of social processes (functions) in social change: 1) equilibrium (non-fundamental alterations), 2) structural change (fundamental alterations in a social system), 3) structural differentiation (alteration in all sub-systems), 4) evolution (process of development over time) (Lauer, 1977) (p. 79). These 'evolutionary universals,' he suggests, to examine in a mutually interdependent processes of social change. His AGIL approach is criticised for over-emphasising on social cooperation and overlooking sourcing of social change.

Functionalists' point of view is appreciated by most of capitalist people as they are in power and ease, and do not urge radical restructuring of social systems. These functionalists' thoughts, Robert K. Merton (1910-2003) notes, are dealing with macro-level analysis and direct drivers of structural functionalism only. To fulfill this gap and enhancing our understanding, he divides these functions into 'manifest' (known to) and 'latent' (unknown) categories. He further points out 'dysfunctions' (somehow similar to Parsons' sick role theory)—the characteristics of social life that challenge the existing social order (Merton, 1968, 2016). Merton justifies dysfunctions as legitimate ways of working-class people to achieve their material needs when a prevailing system does not provide fairly equal opportunity to gain dignity (feminist movement). He notes the problem is not much with dysfunctions, rather, it is 'social structure' that needs to ensure inclusive development. This point of view opens a new arena of understanding our social systems with a different lens—conflict perspective.

Conflict Theorists' Approach on Societal Transitions

Just opposite to what functionalists believe, and straight forwardly opposing the notions of cooperation and evolution for environmental justice, conflict perspective categorically negate the

ideology of functionalists, and propose radical systems changes—revolution for environmental justice. The main concerns they highlight are including persistent social inequality, western ethnocentrism, and the unjust exploitation of natural resources in capitalist economies, neo-liberal market relations, and unequal scale of prosumption in different societies (Dunlap & Brulle, 2015; Dana R. Fisher, 2009; Parks & Roberts, 2010; Stern, 2004). Their ideas reflect that peeking just outside the window of global institutional efforts (e.g. IPCC), rational and modern thinking (modernisation, ecological modernisation), and cooperative efforts of structural functionalists for keeping our planet at 1.5c—pre-industrial level in the end of twenty-first century, one can easily find contradictions between global commitments (Paris accord) and local efforts (country level endeavors) by reviewing few recent articles and reports (O'Rourke & Lollo, 2015; Redclift, Woodgate, & Mol, 2013; Stern, 2004; Zehr, 2015). A landmark report of WCED—Our Common Future—further notes that, global socio-economic inequalities are often a root cause of alienation in developing collective efforts for the environmental sustainability (Brundtland, 1987; Dana R. Fisher, 2009). United Nations Environmental Programme (2011) reports that the scale of efficient technologies is insufficient for mitigation and adaptation as per required rate, and therefore may not be that useful in minimising the environmental crisis (United Nations Environment Programme, 2011). Hence, a recent study (Richard York, 2012) tests the assumptions of what ecological modernisation theorists and others related claims that replacing fossil-fuels with clean energies will equally reduce GHGs, analysing the data of 132 countries over the past 50 years, and finds clear contradictions between these assumptions and real findings: each unit of non-fossil fuel consumption (alternative energy) displaces considerably less than one unit (less than a quarter) of fossil-fuels energy consumption. To effectively reduce carbon emissions, studies suggest eco-Marxist perspective (Gareau, 2008; Konak, 2008; Low, 2002) for 'reducing' or 'regressing' (rather than making it more efficient) energy consumption from individual, to household, to systems level.

Neo-Marxists, continuing the tradition of Marx ideology, emphasise three ideas: 1) the 'treadmill of production' theory continues condemnation of the exploitative practices of the owners of the 'means of production' that conflict theorists blame for social ills including unsustainable living standards. 2) Persistent conflict between labour, capital and the power elite are newly interpreted in an era of globalisation and neo-liberal economies. 3) 'dependency theory' and 'world systems theory' apply many of the ideas at an international and global scale to explain the face of social change in core as opposed to peripheral nations. Neo-Marxists believe that sustainability issues are ingrained in market-led mass production and consumption, causing GHGs all over the world. They argue the greed for economic growth and environmental apathy of developed nations are main environmental challenges, and we need to pay attention to social equity and climate justice to make our planet a hospitable place to live for the future generations. The details of the aforesaid three theories and their main theorists are given below.

Allan Schnaiberg (1939-2009), in his treadmill of production theory (TPT) (Schnaiberg, 1997; Schnaiberg, Pellow, & Weinberg, 2002) reveals that, although what functionalists (EMT) believe—efficiency in production through technological advancement and easing businesses to rapidly approach the level of Kuznets curve—does make sense, yet, increasing population and prosumer demand (developing nations) would never decelerate the pace of our prosumer patterns, at least by 2100 as per IPCC 1.5c goal. An empirical analysis of different countries suggests that simply making our production systems efficient is not that beneficial without transforming the context—social change (Richard York, 2012). A profit-oriented base and pace that capitalist societies have adopted, is going to undermine the sustainability of this planet by disrupting the natural planetary boundaries—metabolic rift, the classical idea of Marx (Bellamy Foster, 1999; Foster, 2014). The theory has

its roots in Marx's theory of class systems and Veblen's theory of leisure class—one's resources determine social status. Thus, TPT finds a never ending thrust of increased consumption in modern prosumer societies and suggests radical changes in three functional groups including labors (working for better lifestyles), capital (GDP pressure, loans taken by poor nations), and the state/elites (vested interest of developed nations), which are leading to an endless production and consumption.

Andre Gunder Frank (1929-2005) is best known for his work on 'dependency theory' (DT) in response to conventional traditional-modern social change—MT (Frank, 2018). The theory counters the notion of unilinear evolutionary process of change explained by functionalists. The counter argument, DT made, is that poor countries are not older versions of so-called developed countries, rather every country has its own unique path of societal transformation as per local values, however, if developed economies let them do so. The theory constructs that the developed or powerful countries through aid, investment, or market relations take benefit of poor countries' 'peripheral' status, and tie them to carbon-intensive developments by institutionalising their resources in favour of 'core' countries through carrots or sticks—path dependency. A recent study validates the stance of DT by concluding that consumer demand is intentionally fabricated by investors in the world capitalist markets (Foster, 2014). Therefore, what sustainability efforts require from developing countries in terms of 'leapfrogging' into the future (Tukker, 2005) heavily depends on developed nations to let developing nations do so by making them 'debt free' (loans taken by poor nations) in response to the 'environmental debt'—exploitation of our common resource—planetary boundaries.

World systems theory (WST) (Wallerstein, 1983) broadens the stance of DT by adding that wealthier or core nations not only disproportionately access to resources of peripheral nations but also to externalise the environmental cost onto peripheral or semi-peripheral countries whose territories serve as dumping sites of rich countries (Givens, Huang, & Jorgenson, 2019; Parks & Roberts, 2010). A practical example of it, among many others, is a long-running dispute between Canada and Philippines over a multi-thousand tons of 'trash' which Canada exported to Philippines in 2013 and 2014. It has worsen diplomatic ties of both countries lowest in the history, and Canada eventually takes its trash back to Vancouver (Bautista, 2019). A similar stance is taken by 'ecologically unequal exchange' theories which contend that 'extractive peripheries' of the developing nations, which provide raw materials to the core, fail to take benefits, whereas core nations develop on the shoulders of developing or underdeveloped people (Jorgenson, 2016; Rice, 2009; Smith, Lopes, & Carrejo, 2011). A longitudinal study tests ten years data of 69 developing countries over 2000 and 2010, and suggests how economic recessions or variations in the United States impacts CO₂ emission in the developing countries due to systems of international trade and ecologically unequal exchange (Huang, 2018). Thus, an unjust utilisation of our common resources and waste practices require to ensure some practicalities on Basel Convention—an international treaty that prevents (developed world) dumping waste to the developing world (UNEP & Basel Convention, 2014).

A common issue with both functionalist and conflict perspective, symbolic interactionists note (details in next part), is their interest in addressing the macro level societal transformation largely, and meso level transitions partly. However, sociologists use a short distance lens to closely observe the small scale transitions in our social systems.

Symbolic Interactionists' Approach on Societal Transitions

Symbolic Interactionists (SI) contrast sharply with both functionalist and conflict theorists' viewpoint about environmental justice by arguing that the existence of large-scale social structures is unjustified without considering the role of actors and creative personalities for pro-environmental societal transitions—bottom up approach. Can we ignore the role of 'individuals' when history tells us how role models shaping our lifestyles? (e.g. community mobilisation activities for waste management at grassroots level and technological innovations for sustainability endeavors). Can we ig-

nore the role of cutting edge technologies transforming our social landscape? Interactionists believe the process of pro-environmental social change is inherent in the role of ‘actors’ in different social settings who shape prosumer activities through a process of ‘reciprocal communication’ (Daub, 2010; Wittmayer et al., 2016). The reciprocity here means that how people interact with each other to create a value (symbolic pattern of interaction) and how in return these values shape our prosumer activities. A recent study cites that 72% of worlds’ GHG emissions come from household level consumer activities and 15 billion gigatons CO₂ emission can be saved simple by avoiding meat or forgoing air travel by 2060 (Dubois et al., 2019). Similarly, another study uses SI perspective to measure leisure constraints of visually and physically disabled individuals in Ghana. The study reveals that inaccessibility to physical environment, immoral attitude of society, inadequate assistance from family, and exclusion of disabled people in governmental social programmes, are the leisure constraints faced by the disabled people (Adam, Boakye, & Kumi-Kyereme, 2017). Thus, SI believes the process of social change for sustainability should fairly start at home. SI covers all these viewpoints that closely observe the patterns of prosumer behavior among different social groups at micro level.

George Herbert Mead (1863-1931) invents the idea of ‘symbolic interactionism’ who believes that human beings interact in the context that we shape through a symbolic language. He writes that individual’s self is not biologically given as functionalists claim or economically determined as revolutionists perceive rather socially constructed through reciprocal interaction in a society (Mead, 1972). For instance, a baby grown up in a family where parents like to eat meat is more likely to advance eating habits that way. However, a baby grown up in Indian family is less likely to eat meat as it is culturally prohibited, and the per capita meat consumption is one of the lowest in India. Similarly, a community where waste disposing carts are available (symbols) for segregating waste is more likely to dispose of waste accordingly. Thus, all stages of life, we look for clues (symbolic language, material, or beliefs) to behave appropriately in a symbolic world we shape—social reflexivity for sustainability (Boström, Lidskog, & Ugglä, 2017). Another example in the context of climate change, China’s reaffirmation along with many other countries to mitigating climate change in the Paris Accord ‘symbolises’ commitments in the ecological civilisation in China and many other countries, however, US withdrawal might have different implications globally (Tollefson, 2017). This interaction, SI believes, symbolises a trickle-down effect on consumers and business people in their respective communities, which has implications for sustainability transitions.

Gary Stanley Becker (1930-2014), invents the ‘rational choice theory’ which argues that people make choices based on their own preferences or decision making by aggregating cost and benefit of their behaviour (Becker, 2002). According to this theory, the aggregation of one’s behaviour is based on its interaction with family members, peer groups, or colleagues, or whosoever that individual interacts with for reciprocity. The theory also takes individual states as independent entity to make choices through voluntary cooperation. With this lens, a recent study notes that mitigation in climate change is possible through facilitating reliable and transparent data, monitoring individual state contribution for the environmental health, providing assistance in implementing international environmental agendas, and introducing sanctions for non-compliance can positively sum in sustainability transitions (Parks & Roberts, 2010).

A widely used ‘rational actor model’, rooted in rational choice theory, is widely used by economists for explaining consumer behavior. The approach views that consumer’s buying behaviour is simply based on merits of affordability, quality, fashion etc. The modern consumer societies are brand conscious as producers tag symbolise a particular class with higher chances of greetings in

one's own social circle. The process of reciprocity is beautifully explained in the 'looking glass self'—a concept introduced by Charles Horton Cooley—where he describes individual's self-growth (e.g., individual's act of grooming hair) is guided by interpersonal interaction with society (people in one's social circle) where society performs the role of a mirror—1) action (individual), 2) reaction (society), 3) correction (individual) (Cooley, 2019). The process of social learning, Albert Bandura posits, is a product of three components 1) observation, 2) imitation, 3) modeling (Bandura, 1969). Can the observational patterns change with systems change?

Table 2. Modern Perspectives on societal transitions

Approach	Key Theories and Theorists	Transition Processes
Functionalists (Evolutionary, Macro Analysis)	Modernisation Theory (MT) (Beck et al., 2003; Lankao et al., 2008; Parsons et al., 1961)	Economic rationality, market economy, industry, transition from local culture to western urban life
	Ecological Modernisation Theory (EMT) (D R Fisher & Freudenburg, 2001; Mol, 2002; G Spaargaren & Van Vliet, 2000)	Post-growth environmental rationality, green social movements, adoption of green technology, resource efficiency
	AGIL Model—Talcott Parsons (Parsons et al., 1961)	Adaptation, Goal, Integration, Latency
	Diffusion of Innovation (DOI)—Everett Rogers (Rogers, 1995)	Innovation, communication, social systems in need, and time
	Structural Differentiation—Robert K. Merton (Merton, 2016)	The interaction of manifest functions, latent functions, and dysfunctions
Conflict Theorists (Revolution, Macro Analysis)	Neo-Marxism—Allan Schnaiberg—Treadmill of Production (Schnaiberg, 1997)	Radical changes in the ongoing functioning (authority) of 'labour, capital, and state/elites'
	Neo-Marxism—Andre Gunder Frank—Dependency Theories (Frank, 2018)	Divergent development paths and minimising the exploitative role of core in peripheral and semi-peripheral countries
	Neo-Marxism—World-Systems Theories—Immanuel Wallerstein (Parks & Roberts, 2010; Wallerstein, 1983)	Equitable trade, resource utilisation, and diplomatic relations among all countries
	Neo-Marxism—Unequal Exchange—(Jorgenson, 2016; Rice, 2009)	Social equity, climate justice—observing terms of Basel Convention
Interactionists (Micro-level Analysis)	Symbolic Interactionism—George H. Mead (Mead, 1972)	Individuals' socialisation and role models of green practices, reciprocity of individual-society
	Rational Choice Theory—Gary Stanley Becker (Becker, 2002)	Individual's decision making, aggregation of 'cost' and 'benefit' of green behaviour,
	Looking Glass Self—Charles Horton Cooley (Cooley, 2019)	Self-Identity based on other's opinions—action (individual), reaction (society), correction (individual)
	Actor System Dialects (ASD) (Burns, 2012; BURNS, 2006)	Technological innovation, policy initiatives, new institutional entities

Actor system dialects (ASD) theory emerges in the 1970s with a premise that both individuals and prevailing systems function in a reciprocal way to transform each other's properties towards for pro-environmental behaviours (BURNS, 2006; Farrugia, 2015). The theory proposes three components to improve the environmental health: 1) technological innovation, 2) policy initiatives, 3) new institutional entities (Burns, 2012). A crucial behavioural facet in ASD is 'attitude-behaviour' gap. People may pretend to go green, but they do little to realise it practically. Sociologists examine the matter (attitude-behavior gap) in different social settings and found that the problem lies in unfavorable structural settings. For example, although people like to use electric cars yet, the availability of fewer charging stations in a city makes it harder to realise it practically. (He et al., 2016) Similarly, the lack of public transit stations or the absence of sufficient trash cans or recycling bins in a city can potentially increase the environmental stress even if someone wishes to go green. The attitude-behavioural psycho-social processes for pro-environmental societal transitions, Castro (Castro, 2012) explains in five premises: 1) Innovation is not a unitary phenomenon, rather multi-dimensional—different people take environmental issues differently, 2) international treaties transform local practices gradually—system dynamics and local actors, 3) the reception of any innovative (e.g., climate change initiatives recently) direction needs local conceptual tools—carrots or sticks, 4) formulating a typology of legal innovation, 5) comprehension of peoples' response for furthering strategies for environmental health.

Thus, sociology enlightens our paths to pro-environmental endeavors by interpreting consumer choices at micro level as well. Although the prevailing social structures substantially minimise the ability of individual consumer to make free choices yet, a recent study concludes 7.4 percent yearly reduction in CO₂ emission from household energy and transport just by non-regulatory or voluntary interventions by households, which can reduce approximately 20 percent of total CO₂ emission in the US (T. Dietz, Gardner, Gilligan, Stern, & Vandenberg, 2009). The issue with micro level sustainability interventions is the issue of plasticity. Individual based green initiatives have very low plasticity—the speed of change (R York et al., 2003). For examples, a mindful person who learns to dispose of any used item in a sustainable way may not be able to see any immediate outcome soothing the environment if others are not following the same. Similarly, a person who plants a tree, may not be able to enjoy the shadow of that tree in the near future. The complexity of future uncertainty and fear of climate change, even going green in one part of the world (interdependence) is great challenge for post-modern sociologists to stimulate collective action for sustainability transitions.

Post-Modern Sociologies on Societal Transitions (1987 To 2019)

This section identifies the recent areas of sociological work on environmentally just societies. It also traces the genealogy of these areas in prior sociological works.

Complexity in our diverse global social systems is a great challenge for the post-modern sociologists to clearly itemise each and every process to pro-environmental behaviours (Sjöström, Eilks, & Zuin, 2016). Giddens notes that post-modern societies are in a constant flux and we can conceptualise some fragments of social reality reference. However, some sociologists also take it (complexity) as opportunity to address sustainability issues. Tainter writes that, "...because most of the time complexity works. It is a basic problem-solving tool." (Tainter, 2006) (p. 90). He illustrates that responding to complex sustainability challenges such as climate change, societies response by innovative technologies (e.g., solar-based energy systems), creating new institutions (e.g., IPCC), adding more bureaucracies or specialists (environment departments), cross-system regulations (Kyoto protocol), etc., which sometimes even increase complexity (Huesemann & Huesemann, 2008) yet ends with three possible outcomes: 1) collapse—rapid simplification by loss of established socio-

political and economic complexity, 2) resilience—the ability of a social system to adapt, and 3) energy subsidies (Tainter, 2006). To understand social complexity in the post-growth societies, it is useful to differentiate in social landscapes at different levels—individuals, groups, communities, or societies. The process of social change in these domains, post-modern literature reveals, at least two main sociological fields actively dealing with sustainability issues: 1) Environmental Sociology, 2) Consumer Sociology. (see figure 2)

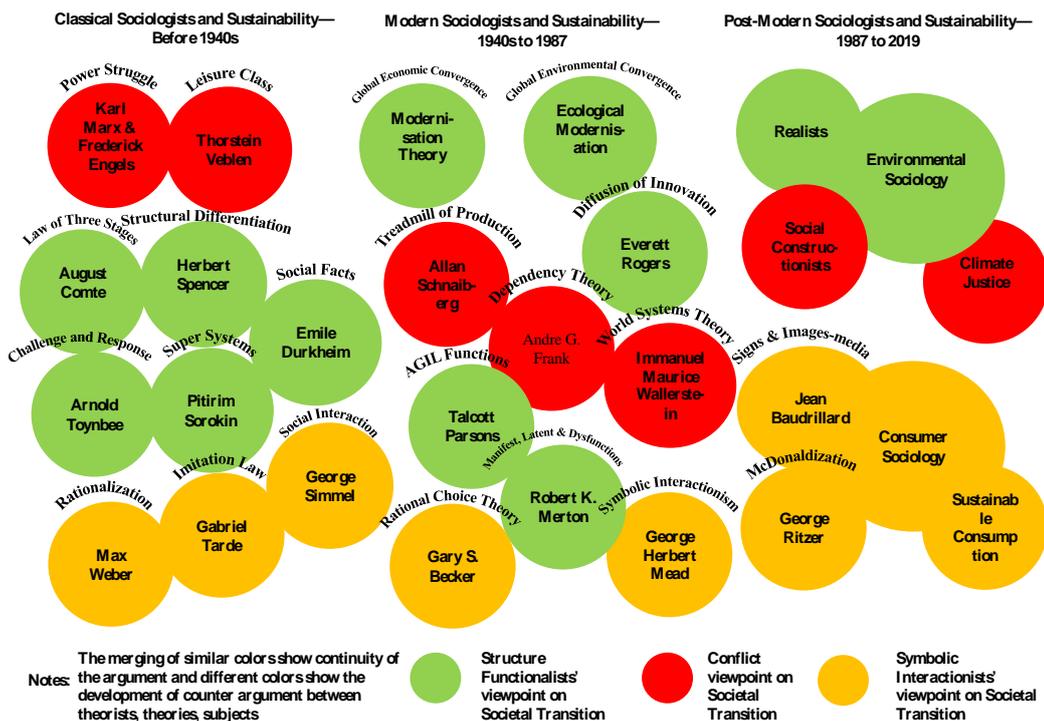


Figure 2. Genealogy of post-modern sociologies for pro-environmental societal transitions

Environmental sociology emerged in the early 1990s (Pellow & Nyseth Brehm, 2013). Since then, there is a division of intellectual standpoints among sociologists for sustainability endeavors. One side of this is ‘social constructionists,’ who deal with environmental issues solely looking into history of social relations by identifying the ‘cultural’ patterns of social change, climate change, and sustainability with a bottom-up participatory approach (Hulme, 2010). Social constructionists do not touch other disciplines (e.g., pure sciences or any divergent areas) to answer the interactive patterns of socio-environmental relations, rather they believe on the agency of ‘humans’ for a constructive change for sustainability. The possible scenario in this case might be regressing the base source use gradually (resource) or giving up consuming fossil fuels at all. In contrast, ‘environmental realists’ prefer state-led programs and giving space to other disciplines or approaches as well (e.g., pure scientific findings on biospheres and if so, socio-environmental, socio-technical, socio-ecological, socio-geographical—these areas also touch epistemological fragments beyond ‘social’). Realists generally accept the finding from other disciplines and tend to address sustainability issues—mobilising people and resources—with a top-down approach (Anthony. Giddens, 2009; Longo, Clark, Shriver, & Clausen, 2016). They believe in both ‘efficiency’ (resource efficiency, technology, ecological modernisation) and ‘effectiveness’ (base change, giving up resources, and actor’s role proportionately). These constructivist-realist viewpoints are briefed here.

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Social-constructivist—Ulrich Beck (1944-2015) in his ‘risk society’ writes that, “...physical risks are always created and effected in social systems...” (Beck, 1992) (p. 4). His views pose constructivists’ approach by suggesting that institutions (it might be relating to climate change institutions) can ‘adapt procedures’ to ‘repair credibility’ in case of any externalities due to any technological or social or environmental processes (Beck, 1992). He views ‘reflexivity’ and ‘bottom-up’ public response—socialisation and participatory action in response to any complexity (climate change) in the ‘new modernity’ (post-modernity) era (Saravanamuthu, 2017). The former action, in Pierre Bourdieu’s view of ‘habitus’ and ‘reflexivity’ is a dialectical process between social genesis (patterns of perception or behavior) and social structures (social groups or social classes) shaping and continuously reshaping existing norms of energy consumption (Bourdieu, 1989). In contrast to Bourdieu’s standpoint, Anthony Giddens argues that consumer patterns are (e.g., food, energy, transport) largely individualised (personal reflexivity) rather than observing class identity in the late modern (post-modern) era (A Giddens, 1991). However, in his recent speech, Giddens’ stance slips with realists’ point of view by emphasising political action (top-down) for mitigating climate change. He stresses four components to improve environmental health: 1) urgent attention on climate change, 2) bilateral and regional accords—not only UN, 3) challenge the power of fossil fuel companies, 4) global activism (Anthony Giddens, 2015). Constructivists’ viewpoint reflects WST’s stance on transnational production systems and environmentally unequal exchange (Parks & Roberts, 2010).

Environmental realists—stress the urgent action for mitigating climate change, which they believe, is possible through trans-national regulatory mechanisms provided by international bodies and state interventions as market initiatives (what constructivists believe) such as ‘carbon trading’ has proved to be a ‘commodity’ inversely giving pollution rights to business firms in the name of sustainability (Dunlap & Catton, 1994; Liverman, 2009; R York & Dunlap, 2012). Despite the constructivists’ stance generates some critical questions to consider about the credibility of scientific findings showing incredible rise in the global warming and devastating impacts on humans survival, non-regulatory population increase and affluence (social factors) have shown prime threats to sustainability (T. Dietz & Rosa, 1997; Thomas Dietz & Rosa, 1994; Rosa, York, & Dietz, 2004; Richard York et al., 2003). They believe in defining principles of resource distribution and opportunities across societies for sustainability transitions (León, González, Araña, & de León, 2014). The reviewing of recent literature shows at least four principles for developing environmentally just social systems. These principles show mixed stance of constructivists and realists approach: 1) recognising cultural differences, 2) distribution or redistribution of resources to equate power relations, 3) realising adaptation ‘capabilities’ 4) community participation (Gbortsu, 2018; Gudridge & Rawls, 2001). Realists views are somehow comparable with classical functionalists’ viewpoint by stressing collective efforts and structural arrangements for social change and sustainability.

In contrast to the Environmental Sociologists (structural, capital talks), Consumer Sociology comparatively seems targeting core issues directly—food, energy, transportation, industry etc. transforming prosumer behavior from individual to group, to community, to large scale systems changes (O’Rourke & Lollo, 2015). Consumer Sociology emerged variably the same period as of Environmental Sociology in 1990s (Warde, 2015). This is largely a micro and meso level subfield of sociology, which borders with Environmental Sociology, when it talks about systems transitions for sustainability. The field pays more attention to consumer culture, behavioural economics, sharing economy, conspicuous and inconspicuous patterns of production and consumption across societies. Jean Baudrillard (1929-2007), a cultural theorist, asserted that social life is influenced by signs and images that electronic and social media produces in the post-modern societies. Much of social life is

shaped by TV channels, newspapers, magazines, and online social networking. This type of interaction, Baudrillard argues, has created a fake and chaotic world around us (Baudrillard, 1998). The persuasion of signs and images, (Bator & Cialdini, 2000) applies ‘persuasion theory’ (Higgins & Walker, 2012) methods to identify effective communication processes for generating pro-environmental behaviours by public campaigns. They find the identification of optimal audience first, careful drafting of messages considering local norms, spreading messages with effective presentation styles, and testing pilot responses can improve public service announcements.

Table 3. Post-modern sociologies on pro-environmental societal transitions

Areas	Scale	Major Perspectives/Theorists	Transition Processes
Environmental Sociology	Macro, Meso	Social constructionists (Beck, 1992; Bourdieu, 1989; Anthony Giddens, 2015)	Bottom-up participatory approach to cultural transformation
		Environmental Realists (Dunlap & Catton, 1994; R York et al., 2003)	Top-down central approach to cultural and environment transition
Consumer Sociology	Micro, Meso	Consumer Culture, Sustainable Production and Consumption (Baudrillard, 1998; Bauman, 2001; Ritzer, 2008)	Signs, images, social media, social networking—McDonalidization

In contrast to persuasion, a prominent figure of consumer sociology, (Bauman, 2001) posits , the new forms of consumerism are based on personal desire, (Gidden’s individualism in the new modernity) posing structural instability, which seems to sustain new forms of social life. Bauman’s consumer-centered lifestyle, George Ritzer in ‘the mcdonalization of society’ (Ritzer, 2008) refers, is motivated by the principles rationalisation—efficiency (specialisation), predictability (no surprises), calculability (quantity, not quality), replacing humans by technology (artificial intelligence), and controlling over uncertainty. He finds that once a society starts following these principles of rationalisation, irrationality starts—negative effects, and those irrationalities, he suggests to control over by controlling over the principles of rationalisation. However, if we recall some fragments of the treadmill of production theory. It encourages endless production till the last gallon of oil which would cost an irreversible damage to our planetary boundaries.

Discussion

As we noticed, sociologists have a history of works for dealing with societal transition processes which has implications for dealing with climate change issues. It shows that sociologists are engaged in dealing with environmental issues, directly or indirectly, since the establishment of sociology term in the early nineteenth century. Sociologists provide three main sociological perspectives for deal with pro-environmental societal transitions: structure functionalists perspective, conflict perspective, and symbolic interactionists’ perspective. They provide a range of social, economic, religious, and political, and environmental research/policy mechanisms from micro, to medium, to macro level institutional frameworks for transforming our global social systems. This study informs that change is constant in each and every society and sociologists’ task is to observe the forms and contents of social structures and steering the direction of societal transitions towards a sustainable end. The direction of each society, as Toynbee said, is defined by the types of needs and social challenges they face. These challenges are different across time, place, and people. Therefore, the nature of climate change adaptative initiatives should be different across countries according to the

specific circumstances/needs of an individual country. Spencer's concept of 'structural differentiation' further reveals that the definition of 'environmental health' is different for different people as the definition of need (underdeveloped world) is different from the definition of ease (developed world). So, the sociology of 'change' is different for different types of social structures to combat climate change. When it comes to country-wide or person's central transformations, Symbolic interactionists' perspective seems suitable for more individualised societies with high per capita carbon emission. However, it does not mean that what Comte said—theology, meta-physiology, positivism (structural functionalism)—in the early nineteenth century is no more functional in the early twenty-first century. There are still many who are living in the nineteenth century (least-developed countries) and those who are living in the twenty-first century (developed world) know well how to manipulate the development path of underprivileged people for their own interests. Marx was well-informed with this manipulation—power struggle—at times when we were less dependent on each other, in terms of global warming (CO₂ in core) and climate effects (casualties in the periphery) (Holder et al., 2017). It could be less to talk about climate justice if we could address inequality, deprivation, and serve humanity with principles of equity from the onset of global development. Marx was talking about fair 'distribution' and we are talking about fair 're-distribution.' Time has changed, yet, the issues are same even in the global north (Slocum, 2018)—social inequality/disparity. Our market-led social structures could not even succeed to accommodate many even in the developed world (homelessness, rough sleepers). However, sociology is a public domain and it changes its forms to serve across time/place and sociologists still have solutions to serve the humanity with a revised version of principles to ensure the sustainability of this planet. This study reveals at least two major sub-fields of sociology in the post-modern era, environmental sociology and consumer sociology, engaged in identifying the principles of climate change adaptation. These two domains seem establishing the fact that although divergent production and consumption patterns are evident in different social settings, yet, a large scale global view reveals a linear direction of the global social landscape. Societies are converging. So, if we are expecting Kuznets curve—green growth in the late capitalism in the developing world (EMT), it would be too late to respond which has severe environmental implications—irreversible damage (IPCC, 2018). It is against the recent directive of IPCC—radical change (conflict perspective). They report that the sustainability of our planetary boundaries is increasingly getting out of 'social' domain (global response) to act, as the environmental vulnerabilities are at the door-step. However, it is still largely dependent on 'social,' as we do have flexibility to minimise its adverse effects through a broad environmental justice action in a short run (Xue, Walnum, Aall, & Næss, 2017). To dealing with these issues in a globally institutionalised world, what IPCC and other sustainability endeavors expect—radical societal transitions or revolution for sustainability—is largely dependent on the developed world due to capacity issues in the developing world (Acosta-Michlik & Espaldon, 2008; Chandan, 2015; Rock, Murphy, Rasiah, van Seters, & Managi, 2009). Therefore, a revolution for climate justice means, not only to act radically in the developed world, but also to radically 'enable' the developing world to leapfrog into the future—green growth. For instance, a radical change, what IPCC is looking for, might be to provide institutional rights to poor nations to get loan waivers (if any) from high per capita CO₂ emitter countries—redistribution of resources for climate change adaptation. And, to bind core CO₂ emitters to facilitate peripheral and semi-peripheral nations with tools and techniques to ensure green growth in the developing world. These cooperative social processes and institutional efforts can potentially stimulate a radical global response for climate change adaptation.

Conclusions

We are vulnerable to an irreversible damage of our planet which is largely due to our own societal structures and patterned lifestyles, leading us to carbon-intensive development paths and sustainability crisis worldwide. We need to sustain our eco-systems by transforming our social systems. Therefore, this paper revisits the work of classical, modern, and post-modern sociologists, which directly or indirectly, addresses the complexity of societal change processes to steering our societies towards a sustainable direction. The classical work of sociologists provides us golden insights about the evolution of human societies all over the world. Modern sociology classifies the theoretical reflections of macro, micro, and medium ranged theories to conceptualise possible patterns and mechanisms of environmental justice action. Lastly, post-modern sociologists inform us the recent areas of sociological research for dealing with climate change. Given the suggestions of structural functionalists (market-based approach), though the advancement of technological innovations do have potential for ‘environmentally efficient’ societies to some extent. Yet, as per TPT, we have to crack the structural stubbornness (conflict perspective) to avoid persistent dependency on resource efficiency (technology) and moving for ‘environmentally just’ global social systems (Hermwille, Obergassel, Ott, & Beuermann, 2017; O’Rourke & Lollo, 2015). A global level systematic change is largely dependent on institutional frameworks for equitable global development. The highest a country is emitting carbon per capita, the heaviest the cost that individual country should have to be responsible for the energy efficient infrastructural developments in semi-peripheral and peripheral countries, without compromising the capacity of resilience of our planetary boundaries. This article provides a general picture of potential transition processes in our global social systems. It concludes that technical measures (resource efficiency) can only serve as a ‘puncture-protection-tape’ on tyre, which would eventually lead us to replacing the tyre as a whole—social change. In the next step, a conceptual framework of precise social change factors and climate actions or operational mechanisms from each developed, developing, and least-developed parties of Paris Agreement, can further enhance our understanding about global transition processes for climate change adaptation and sustainability transitions worldwide.

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