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Ecological Modernisation and its Discontents

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This working paper sketches the relations between Ecological Modernisation and the main lines of critique which have been moved against it. The paper offers a summary of Ecological Modernisation, its origin and overall trajectory, while touching upon the various counterarguments which ecological sociologists and other scholars have formulated in the past decades, from three different directions: political ecology, eco-Marxism (or post-Marxism), and constructivism/post-modernism.

1. What is Ecological Modernisation and Why Does It Matter?

Defining Ecological Modernisation (henceforth: EM) is not an entirely straightforward task. Over the course of the past three decades, different authors have provided slightly but significantly different definitions. One of EM's most prominent exponents, Arthur P.J. Mol, explicitly refers to EM as a “theory”, defining “[t]he notion of ecological modernization [...] as the social scientific interpretation of environmental reform processes at multiple scales in the contemporary world. [...] ecological modernization studies reflect on how various institutions and social actors attempt to integrate environmental concerns into their everyday functioning, development, and relations with others and the natural world”. (Mol *et al.* 2014:15). The term “theory” is deployed by other authors, but it does not go uncontested. Susan Baker labels EM as a “theory of social change, exploring attempts in late industrial society to respond to the negative environmental consequences of modernity” (Baker, 2007: 299), and Namzul Hasan states that “[t]he EM theory refers to a group of optimistic theories based on the idea that economic growth can continue while ensuring environmental protection via long-term changes in the structure of production and consumption” (Hasan, 2018: 260). However, other authors cannot see a sufficient level of engagement with epistemological questions, as well as of internal coherence and cogency to call it a theory. For instance, Jean Philippe Sapinski has argued that, “even though [EM] is

portrayed as a sociological theory and engages into debates with other theories of society-environment relations, [it] is best understood as a utopian narrative located within the particular cosmology characteristic of Western culture since the enlightenment” (Sapinski, 2017: 3). On a different level of analysis, Martin Jänicke, another key author of EM, has explicitly labelled EM as a “environmental policy approach” in a recent publication (Jänicke, 2020: 13), and even Mol, in a 1995 publication, asserted in a more humble fashion that “EM has essentially been an environmental science and environmental policy concept which has subsequently been buttressed with a number of citations to social-theoretical literatures, some of which are quite contradictory” (Mol, 1995: 64).

Retaining Jänicke’s definition as an “approach”, for the sake of this working paper EM can be defined as an approach in the social sciences, cutting across different disciplines, to the question of the relations between human societies and the natural environments. It is based on the idea that modern industrial societies can and must come to terms with the ecological crises that modern industrialisation has caused by using the same tools which gave birth to and have fostered industrial modernisation since the beginning: more rationalisation, more scientific-technological innovation, more industrialisation, more economic growth.

EM rests on the premise that the rationality inherent to the modern industrial society is fundamentally a force for progress, which has to be retained in its basic structure, but in order to address and solve environmental crises, it ought to be integrated with measures that deal with such crises. According to Baker (2007: 299), there are four main themes cutting across the EM literature: a) a synergy between economic growth and environmental protection is possible; b) governments need to include and integrate environmental policy elements in other areas of their activity; c) new policy instruments are needed in order to promote ecological modernisation; d) the modernisation or “superindustrialization” process occurs “through sector-specific activity, particularly in the industrial sector, where it involves the invention, innovation and diffusion of new technologies and techniques of operating industrial processes”.

EM originated from a group of scholars linked to the *Wissenschaftszentrum Berlin* (WZB Berlin Social Science Center) in the early 1980s. Its founder is considered the German sociologist Joseph Huber (Huber 1982; 1985; 1991), and it was successively developed by the work of the already mentioned Martin Jänicke, Volker von Prittwitz, Udo Simonis, Klaus Zimmerman (all of them from Germany), Maarten Hajer, Arthur P.J. Mol, Gert Spaargaren (from the Netherlands), Albert Weale, Maurie Cohen, and Joseph Murphy (from the United Kingdom) (cf. Mol and Sonnenfeld, 2000: 4). It arose in a milieu dominated by the “limits to growth” argument (cf. Meadows et al., 1972), namely by the general idea that infinite economic growth on a limited planet is simply not possible. Such position emerged out of scientific discussions concerning the consequences of industrialisation and mass consumerism in the Western world already in the 1950s and 1960s, when environmental degradation became impossible to overlook or ignore. Environmental concerns were soon articulated as a radical critique of the capitalistic

system, or even more, as a radical critique of the modern world in its entirety, particularly focusing on the problem of population explosion, toxicisation of the environment, loss of biodiversity, resource depletion. EM is seen historically as a response, reaction, or countermovement to the predominant deindustrialisation (de-modernisation) argument of that era (Mol and Spaargaren, 2000: 19; cf. Spaargaren and Mol, 1992; Mol, 1995), even if it did not try to spearhead frontal attacks against ecological radicalism. Rather, it started off as a practitioner-oriented niche, which only through its great success and adoption by policymakers and private actors has turned into a more sociologically established position, even if, as it shall be illustrated below, EM's sociological-theoretical position remains in many respects fragmented and underdeveloped. The point remains however, that EM can be seen as a "optimistic" and "modernist" approach to the environmental crisis caused by industrialisation, as opposed to a fundamentally pessimistic stance which dominated the scene from the onset of ecological discussions to the 1980s (Machin, 2019: 210). Indeed, one of the key perspectives that Mol and Sonnenfeld (2000: 5) identify as a common thread in the variety of the EM academic contribution is that of "moving beyond apocalyptic orientations", by transforming the way in which the nature of environmental damage is to be seen, namely, not a permanent feature of industrialisation, but as (solvable) "challenges for social, technical and economic reform".

Successful strategies and tactics to win those challenges require a number of transformations or re-conceptualisations. Firstly, instead of considering science and technology solely or predominantly as the source or cause of environmental problems, their positive contributions to those problems need to be underscored, not only by considering them as capable of fixing the damage, but rather, by "preventive socio-technological approaches incorporating environmental considerations from the design stage". Secondly, markets and their economic agents should be considered as "carriers of ecological restructuring and reform". Thirdly, a new style of governance should emerge: "decentralised, flexible, and consensual", less hierarchical, and with more space for "non-state actors to assume traditional administrative, regulatory, managerial, corporate, and mediating functions of the nation-states". Fourthly, an upfront involvement of social movements is needed. Fifthly and finally, there is a shift in "discursive practices" and in predominant ideology: an outright neglect of environmental issues is no longer acceptable, but also the view that economic and environmental interests are necessarily opposite. (Mol and Sonnenfeld, 2000: 6-7)

Current scholarship (Hasan, 2018: 260; Warner, 2010: 540-542; Eckersley, 2004) distinguishes various chronological phases of EM, as well as a "weak" and a "strong" EM, following a seminal taxonomy by Peter Christoff (Christoff, 1996). Initially, until the early 1990s, EM was mostly animated by a theoretically underdeveloped, hands-on, problem-solving approach to specific environmental issues in Germany and other Northern European countries. The "weakness" of this first wave consisted in its relative narrowness, its limited geographic scope, and little attention paid to the social and political components of the solutions it envisaged, which were almost exclusively coming from technological innovation and improvement. The second wave, or "strong" EM, developed from the 1990s into a more

sophisticated set of arguments. Thanks to the work of Mol, Spaargaren and others, EM escaped the relatively parochial discussions of Northern Europe, and became known to the global public of environmental sociologists, particularly in North America. It also started to put forth a more complex argument concerning the social and political ramifications of its initial idea: not only the solution of environmental problems lies in scientific-technological innovation, but, on the one hand, the weight of policy reforms, regulations, economic incentives is augmented, and on the other, a more sophisticated theoretical frame is built, one in which the “ultimate purpose and character of the modernisation process” (Eckersley, 2004: 109) is actively questioned, while the ability of complex industrial systems and of modern society of a whole to engage in transformative change becomes of “quality of the modernisation process itself” (Warner, 2010: 540). The work of Jänicke (1990), for example, has developed from a theoretical concern for “state failures”, and of environmental damage as a particular subset of that class, whereby therefore environmental damage cannot only be addressed as a nuisance or transitional phase of development, but it requires self-reflexivity from the part of the state to become aware of the limits of an earlier modernist approach. Only by identifying the limits of that approach it is possible to transcend them, so that one can move beyond the boundaries of the present predicament, this being the core mechanism of self-reflexivity.

EM therefore tends to emphasise *process* over *structure*, and to develop a functionalist explanation of change highly influenced by Schumpeterian ideas on the importance of cycles and the role of innovation. In particular, change is made possible by successive waves of crises, which are in turn the result of internal dynamics of industrialisation processes, which tend to create large, rigid, and inefficient structures (Jänicke, 1990: 41-44). Such structures, according to Jänicke, become unable to accurately price the products they provide, until such a rigid system breaks down with the introduction of innovation, both in technology and in policy architecture. Environmental protection finds its way in the industrialisation process by means of these waves or cycles. While in a period of crisis, such as the 1970s, conflict dominates, the solution of the crisis is instead associated with the formation of political consensus (Warner, 2010: 543).

This kind of reflection on the role of crises in industrialisation led EM scholars to establish a link to Ulrich Beck’s famous *risk society* theory (Beck, 1992). Risk society refers to the theoretical view according to which modern capitalistic societies have shifted from industrial to post-industrial, from materialistic to post-materialistic, as they are now chiefly preoccupied not (or not only) with the task of fighting scarcity by expanding production, but also and especially with the task of limiting the potentially catastrophic damage that industrialisation itself has caused. Fear becomes therefore the most important trait of the post-industrial era, and risk-management as well as the balancing of risks, the main activity of policymakers. On a higher level of abstraction, Beck’s theory emphasised self-reflexivity as the trait of an era in which the rationality of industrialisation is more and more inward-looking, as it tries to remedy the

problems it has generated. As it shall be explained later on however, the link between EM and risk society is far from unproblematic, and the respective conceptions of self-reflexivity are, at a closer scrutiny, quite different.

Following a more robust (but not unproblematic) theoretical reconstruction in its second wave, EM expanded its influence quite rapidly, establishing itself, in a handful of years, as one of the dominant approaches to environmental policy and the underlying eco-sociological debates, especially in the European Union and in Japan (Machin, 2019: 210; Warner 2010: 540; Baker, 2007: 297). It can be argued that its success can also be related to its timeliness, as it fit the broader optimistic *Zeitgeist* of the 1990s, as well as its fundamentally pro-market, pro-business (some may say “neoliberal”) orientation.

The EU Commission has been particularly open to the intellectual perspectives elaborated by EM intellectuals. According to Machin (2019) the successive EPAs (Environmental Action Programme), namely the most important official EU documents concerning the European assessment of environmental problems and of the actions that need to be undertaken, currently its seventh issue (published in 2018; the first one was published in 1973), have progressively incorporated concepts and wordings unmistakably coming from EM’s framework.

EM’s success amongst policymakers, however, went far beyond the European horizon, as it has influenced the now globally established concept of sustainability and sustainable development. In the 1980s, the *Brundtland Commission* (or WCED - World Commission on Environment and Development) supervised an extensive study of the environmental crisis caused by industrialisation processes, and famously theorised a definition of sustainable development as the kind of development that meets “the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 8). Sustainable development was initially envisaged, according to a number of scholars, as possible only by addressing the inequalities which were already all too evident by the late 1970s-early 1980s, and especially the growing wealth gap between the global North and the South. The remedy of those inequalities was therefore conceptualised as inherent to the deepest logic of sustainability, which should consequently encompass an ethical, political, and social dimension of change. *Our Common Future* is credited with the establishment of a break in environmental policy at global level, as it departed from previous documents (for instance, the *Report of the United National Conference on the Human Environment* of 1973) which were influenced by neo-Malthusian positions and by the limits to growth argument. The Brundtland Commission embraced some of the key ideas of EM, or, as some scholars have argued, there is “overlap” between the two, even if sustainable development can still be theoretically distinguished by EM (Langhelle, 2000). Already in 1995, Mol was able to affirm that “EM is a new, and in many ways an improved, synonym for sustainable development”, and that EM was “more useful than sustainable development as a macro or overarching framework for thinking about the environmental problems of metropolitan transformative industry in the North” (Mol, 1995: 63; cf. “Ecological

modernisation is a new, and in many ways improved, synonym for sustainable development”, Buttel, 2000: 63). Sustainable development is now routinely conceptualised in ways which appear rooted in the EM discourse, particularly when it comes to the UN *2030 Agenda for Sustainable Development*, better known as *Sustainable Development Goals* or SDGs (Weber and Weber, 2020).

2. The Discontents of Ecological Modernisation

Given its past and current prominence as an approach to environmental policy, its ideological roots as well as ramifications, EM has understandably been met by numerous criticisms. For the sake of this working paper, the “discontents of EM” will be classified into three broader categories, namely political ecology, ecological Marxism, and constructivism, following Mol and Sonnenfeld (2000: 5), although such classification is only dictated by practical reasons, as there is a large overlap between the three groups, and certain arguments are mobilised by scholars belonging to different traditions.

Political Ecology

The first group of anti-EM positions is constituted by those scholars who operate within the boundaries of environmental sociological stances such as neo-Malthusianism, but especially the *New Ecological Paradigm* (NEP) and its derivatives, or come from the disciplinary realm of human ecology. Critiques of EM developed by this group of scholars point to both empirical failures and theoretical shortcomings of EM.

In terms of empirical failures, it is argued that the continuing focus on economic expansion (GDP growth), which is highly correlated to increasing consumption, is fundamentally incompatible with the long-term preservation of the ecological foundations upon which the very existence of the current technological civilisation is resting, and even the human species. The ever-increasing, unmitigated stress on the natural environment is seen as capable of inducing a global collapse of natural ecosystems, with catastrophic effects on human societies (Daly and Farley, 2010; Ehrlich and Ehrlich, 2013). In a more targeted attack on some of the key arguments of EM, a number of scholars take issue with the idea that policy reforms with the systematic integration of environmental concerns, technological-scientific innovation, as well as optimisation and efficientisation, are able to balance the environmental damage caused by further industrialisation and demographic expansion. EM is overlooking this problem as it routinely employs a case-study methodological approach, often qualitative as opposed to quantitative, while the correct measurement of large-scale trends would require a different and more quantitative methodology (Ewing, 2017: 130; York *et al.*, 2010).

In terms of theoretical shortcomings, according to human ecology scholars, EM is a sophisticated

and subtle way to reformulate the well-known position of human exceptionalism or, according to which the place of the human species is a qualitatively different one from that of “the rest” and that therefore the relations between the environment and human societies cannot simply be conceptualised as a “human ecology” which works with the same concepts and methods of ecological science. Already at the end of the 1970s, this “paradigm of human exceptionalism” or HEP was thoroughly described by William Catton and Riley Dunlap, considered among the founders of the NEP (Catton and Dunlap, 1978; 1980) In other words, political ecology scholars point to an excess of optimism and reliance on the human intellect and its ability to overcome the crises that the very (modern, rational, scientific) intellect has generated, an optimism which can be ultimately based on something fundamentally irrational, namely the (undemonstrated) *belief* that humans being are exceptional in the context of this universe, while scientific evidence seems to be indicating the exact opposite. One may also argue that human exceptionalism is the secularised version of theological, particularly monotheistic and Christian, conception of the human’s place in the world. Such belief is then at the basis of modernity’s recurring approach to nature as a “standing reserve” of resources for human usage, an approach that EM seems to have retained (Baker, 2007: 303).

Ecological Marxism (and post-Marxism)

A second group of scholars who have advanced a critique of EM belong to Marxist (or post-Marxist) sociology and political theory. For Marxists, EM lacks self-reflexivity and ends up developing an ideological legitimization of industrial capitalism, its social and political order, instead of questioning it. EM has paid little attention to questions of environmental justice, and underplays the structural elements which will continuously re-propose environmental crises, not matter how much technological and scientific effort may be deployed to solve them. (Foster, 2012; Warner, 2010). Furthermore, EM functionalist analysis “can tend towards an overly deterministic understanding of state/economy relations” (Eckersley, 2004: 60), and it “ascribe[s] too much importance to the material effects of industrial reforms as intrinsic motors of change, and allow[s] little role for social forces, social conflict, or, for that matter, for the contingency of historical agency” (Warner, 2010: 543). Indeed, conflict seems to be largely absent in the context of EM’s diagnoses and prescriptions, in line with the “reassuring” nature of this sociological position, which may rest on “oversimplified assumptions about the role of the state in inducing ecological transformation” (Baker, 2007: 300-301).

The debate between Marxist and EM scholars has long revolved around the *treadmill of production* theory, first envisaged by Allan Schnaiberg in his 1980 book *The Environment: From Surplus to Scarcity* (Schnaiberg, 1980; Foster, 2005). This theory is rather complex and cannot be adequately summarised here, but at its core is the idea that the conflicts between different political-economic actors (the state, the capital, and organised labour) push them to look for a solution in an economic expansion, which results

however in new sources of conflict, in turn prompting a new expansion drive, and so on. The treadmill of production is at the root of environmental degradation, as the extraction of natural resources and the production of waste is practically unstoppable within the kind of monopolistic capitalism which Schnaiberg was analysing, and which is claimed to have continued to expand up until the present (see for instance Zehr, 2015). A further pioneering Marxist theory of the relation between capitalism and the environment has been envisaged along similar lines by James O'Connor with his *second contradiction of capitalism*. This is again a rather complex argument, but in its essence, it explains how capitalistic production causes environmental degradation, which in turns causes higher costs of production (capitalism is forced by its own dynamic of restless growth to use lower quality resources, geographically hard to reach, requiring a greater organisational effort, etc.), which in turn demand an expansion of the production, and so forth (O'Connor, 1998). More recently, John Bellamy Foster has launched the concept of *metabolic rift*, which was already envisaged by Karl Marx in his early writing about the relation between nature and the society, i.e. the social metabolism that sustains the material existence of human societies, in particular, at that time, the problem of soil erosion in intensive agriculture. According to Foster, a metabolic rift occurs when capitalistic production, which depends on the availability of a certain natural resource, depletes the very resource on which it depends, thus inducing a crisis of the production system (Foster, 2012; Foster *et al.*, 2010). An example of metabolic rift is the so called “carbon rift”: capitalistic production relies on the natural environment’s ability to absorb the CO₂ emissions generated by production processes, but the depletion of that resource generates a crisis of capitalism in terms of disruption of the relations between the society and the natural environment (Clark and York, 2005).

While not exclusive to the Marxist position, but in connection to the treadmill of production argument, EM’s perhaps most famous empirical claim, namely that of the *decoupling* of economic growth and natural resource consumption, has been questioned by mobilising the *Jevons Paradox*, thus criticising EM’s main point of the positive role of scientific and technological innovation to overcome ecological crisis. The Jevons Paradox is a paradox observed by the English economist William Stanley Jevons in the mid-nineteenth century concerning the relation between efficient coal use and its total consumption. Jevons noted indeed that every improvement in the efficient use of coal did not translate in a lesser total coal consumption, but paradoxically, in a larger consumption. More in general, the more available a certain resource becomes (and/or the cheaper it becomes), the more uses will be developed by its consumers, thus expanding the total consumption. More efficient use of electricity leads to more electrification, more efficient motor vehicles lead to mass motorisation, more efficient computers lead to mass use of computers in all aspects of the society, more efficient airplanes and cheaper tickets lead to an expansion of the global aviation industry that has surpassed any imagination. In a famous example, the technological innovations which were supposed to give birth to the “paperless office” have in reality allowed ubiquitous printing and consequently an enormous increase in paper consumption (York, 2006).

The apparent diminution of resource consumption in certain areas of the world, most notably in Northern Europe where most EM scholars produce their theoretical and empirical work, seems to be largely offset by the expansion of consumption at global level, resulting in an overall increase, in line with the treadmill of production theory, and the Jevons Paradox. More in general, numerous scholars, and especially those applying the *World System Theory* (WST), a theoretical approach originally developed by Immanuel Wallerstein (Wallerstein, 2004), argue that EM is failing to capture the international dimension of ecological damage and its distribution patterns. WST provides a Marxist sociological account of the historical evolution of the economic and political world since the onset of colonialism in the fifteenth century, and famously introduced the concepts of core and periphery. The world's states, or national economic-political units, form a hierarchy which reproduces on a global scale the hierarchy that exists, according to the Marxist position, between different census classes within each society, especially the relation between the dominant, capitalistic, bourgeois class, and the working class. In the world there are therefore core states, those which dominate the global economic and political system, and peripheral states, whose conditions are shaped by the capitalistic imperatives and goals of the core.

WST's critique of EM has highlighted and empirically researched the continuous geographic reallocation by core states to the periphery of polluting, dangerous, harmful activities, thus in the end arguing that much of the apparent environmental improvement achieved by seemingly virtuous countries in the global North is in reality, for at least a large part, an illusion created by outsourcing of production and by the creation of globalised production chains (Ewing, 2017). A more economics-based explanation of the same historical dynamics has been elaborated by the theory of *ecologically unequal exchange* (Givens *et al.*, 2019).

On a different front, Susan Baker has put forth a rather interesting argument trying to revisit the above-mentioned overlap between EM and sustainable development, a revisitation which is centred on a more politicised reading of the North-South relations. Such relations were at the core of the original idea of sustainable development as elaborated by the Brundtland commission, but have been "sidestepped in the ecological modernisation strategy". More in detail, Baker argues that, while "ecological modernisation places almost exclusive emphasis on technology and economic entrepreneurs as determinants of social change [...] Social change, especially for Brundtland, is a process involving a wider set of actors, and the promotion of sustainable development involves engagement with a deeper set of principles. These include the normative principles of inter- and intra- generational equity", and specifically "Brundtland's formulation of sustainable development not only requires changes at the technological and institutional levels, but also demands more fundamental social, economic, cultural and lifestyle changes, particularly in the high consumption societies of the West, built upon acceptance of ultimate limits to growth" (Baker, 2007: 303-304).

It appears that, in Baker's interpretation of sustainable development as distinct from EM, not only global

policy should be embracing a more explicitly redistributive dimension, but also a restraint in consumption. In particular, it may be argued that sustainability cannot be achieved without significant reduction in consumption of natural resources, which may translate in the overall stabilisation or downsizing of the wealthiest economies of the global North. In this interpretation, sustainable development appears to be significantly closer to those position within environmental and green politics which argue for some kind of deindustrialisation or degrowth.

Constructivism and Post-Modernism

A third group of scholars who have developed a critique of EM could be variously labelled as post-modernist and/or constructivists. It must be noted that there is considerable overlap between constructivists/post-modernists and the previously discussed political ecological scholarship. The issues envisaged in EM by these authors mostly revolved around epistemological questions, as well as questions of conceptual viability and coherence. Already in the formative phase of EM and in the 1990s, EM was attacked on the ground that it was built on a philosophically realist conceptualisation of relations between nature and the society, falling prey to a modernist, and therefore obsolete, line of thought, one which continued to pursue Enlightenment and progress-oriented “grand narratives”. Such line of thought appears to be mired, according to some constructivist and post-modernist writers, in an insufficient self-reflexivity (Yearley, 1991; Dunlap and Catton 1994; Hannigan, 1995; Blühorn, 2000; Buttel, 2000).

To these criticisms, Mol and Spaargaren already responded by accepting that the articulation of a philosophically and sociologically up-to-date account of the nature-society relations is a complex task, which cannot be “taken for granted any longer but has to be reflexively organised” (Mol and Spaargaren, 2000: 25). On the other hand, however, they claimed that this was already happening within EM, and that EM was indeed already envisaging a complex picture of the nature-society relation, precisely in response to the static and reified conceptions of nature coming from certain political ecology authors. Mol and Spaargaren argued therefore that

the notion of ‘environment’ should be taken seriously and not left un- or undertheorised by social scientists by first constructing a city-wall as a border between social systems and their ‘outside natural environments’ and then arguing that ‘social facts should be explained by using social facts and factors alone’. What is conceived of as ‘social’ - for example, that what happens inside the city-wall - cannot be explained without reference to the natural, without taking into account the relationships with the outer-world. In fact, this has become one of the central notions in all contributions to the ecological and reflexive modernisation perspectives. (Mol and Spaargaren, 2000: 26-27)

Ultimately, EM seems to accept, on a theoretical level, that the foundational concepts that populate the ecological sociology debates are “socially constructed”, and that the “naturalness of history is mirrored by the historicity of nature” (Mol and Spaargaren, 2000: 26): “nature” can only be understood through the lenses of the socially defined conditions which enable its conceptualisation.

EM’s attempts at gaining more theoretical credential through the enhancement of its self-reflexivity have largely meant the elaboration, as anticipated above, of links with Ulrich Beck’s risk society. Unfortunately though, critics have pointed out crucial differences between Beck’s theory and the fundamental tenets of EM. Even if both can be considered as theories of change, the account of change they articulate is quite divergent and probably incompatible. For Beck, change is not the result of cycles and recurrent crises, but it is a byproduct of what used to be called, in modernist parlance, progress. In a risk society, change is always observable as it is mediated by social processes and social actors, to which EM has paid very limited attention. As Warner argues,

Functional accounts of change and socio-political accounts of change are in conflict, and are rarely, if ever, in dialogue. The functional view of change is in direct contrast with Beck’s [...] For social theorists, change is motivated and mediated by social processes that are more contingent on learning, dialogue and agency. It is not at all clear that the ‘first strand’ functionalist view of change and the ‘second strand strong agency’ view of change are reconcilable. At any rate, given EM’s marked reformism, it is also not clear exactly how the transition can be made from functional to more agency-based forms of change. What kinds of change, for example, might be involved in promoting a stronger role for ecological democracy? (Warner, 2010: 545)

Hasan remarks that the basic diagnosis of a transformation of the role of technology in modern industrial society and the timing in which the two theories appeared seem to be “the only similarity between them”. EM remains solidly anchored in an optimistic view of modernisation and industrialisation, while Beck’s theory “takes a very sceptical and even negative stand regarding the possible contribution of science and technology to mastering contemporary ecological problems” (Hasan, 2018: 263). Despite EM’s authors efforts to produce a more upfront engagement with self-reflexivity and a critical idea of modernity, EM’s image remains that of an “eco-modernist understanding of environmental problems”, one which “favours responses based on current institutional structures, sensitive to economic goals and favourable to technological development” (Kargas, 2019: 63).

3. Concluding Remarks or Where is EM Going from Here?

While EM has resisted (sometimes ignored) most of the criticisms moved against it, some of them may lead to a serious re-thinking of EM's core positions (in the best case), or the EM's gradual overhaul, as the ground appears to be shifting in favour of more pessimistic accounts of environmental damage and hence of a rapidly worsening crisis of industrial modernity. Indeed, in the second half of the 2010s numerous scientific contributions have appeared stating that the global environmental crisis is worsening at an accelerated rate. The ecological crisis can no longer be seen as a linear process, but the notions of thresholds, tipping points, and *planetary boundaries* in the disturbance of complex (planetary) ecosystem is become widespread and commonly accepted. Such thresholds or boundaries indicate levels of environmental damage, which, if surpassed, may trigger a series of self-reinforcing mechanisms or feedback loops, capable of inducing an undesirable and irreversible socio-ecological change. Furthermore, the emergence of the concept of *Anthropocene* in recent years has reinforced the feeling that modernist conceptualisations of the relations between nature and human societies needs a radical re-thinking (Rockström *et al.* 2009; Steffen and Rockström, 2018). In other words, “[t]he pace of global environmental change is out of sync with the pace of institutional reform advocated by EM” (Warner, 2010: 533). Particularly with regard to climate change, the climatologic community appears increasingly pessimistic about the current trajectory of CO₂ accumulation in the atmosphere, and its likely consequences for the future of the planet as a whole, including human societies. Media pressure has consequently escalated, in symbiosis with political phenomena like the *Extinction Rebellion* and Greta Thunberg's sensibilisation campaign.

On the paper, this may be EM's finest hour, if climate change mitigation could be achieved by means of technological innovation (including geo-engineering), and more aggressive policies by public as well as private actors, according to the core tenets of EM. This time however, the magnitude and intensity of the effort required to achieve zero carbon emissions by 2050 seem to go beyond any reformist and modernist approach. Even if there are numerous instances trying to depict the various green deals as an economic opportunity, it is quite clear that the costs of such a transition would be immense, and that a significant reduction in economic opportunities as well as a more frugal lifestyle may be an inevitable factor in the equation (IEA, 2020; Brand, 2019; Barry and Eckersley, 2005).

As already happened in France in late 2018 with the explosion of the “yellow vests” movement, more aggressive environmental policies may lead to conflict. As highlighted in this paper, the dimension of conflict has been undertheorised by EM, even if extensive research exists on the matter (for example, see Scartozzi, 2020). More in general, this can be read as EM's overall tendency towards the *depoliticisation* of environmental questions. This depoliticisation is probably not an accident, but more an intrinsic “neglect or even the denial of the fundamentally symbolic nature of power” (Baker, 2007: 313). In a recent work, Ingolfur Blühdorn has tried to approach the issue by addressing the question of why the

transition towards a veritable ecological or green state seems to be elusive, building on the idea of a “glass ceiling” elaborated by Daniel Hausknost (Hausknost, 2017). Hausknost reconstructs the history of the environmental state (largely developed along the lines of EM), arguing that

[w]hile the environmental state has been focusing on greening the ‘supply side’ of capitalism by seeking more environmentally efficient ways of expanding output, the green state would need to tackle the demand side to reduce the flows of energy and matter that are being processed and consumed [...] This would most probably involve interfering with deeply engrained notions of consumer sovereignty, choice, lifestyles and identities, and constitute ‘a challenge that no state or society has adequately even begun to address’ (Hausknost, 2017: 20)

The glass ceiling is therefore the inability of the state to “interfere with the freedom, choice, consumer behaviour, and lifestyles of self-determined individuals”, and it is not located at the level of that state, but at the level of “the interests, norms, and value preferences that make democratic majorities support or reject transformative agendas” (Blühdorn 2020: 40). Blühdorn advances the thesis that such inability of the state to proceed towards a veritable ecological state is in itself part of the broader dysfunctionality of democracy or yet another manifestation of the legitimization crisis of democracy, a concept already advanced by Jürgen Habermas and critical sociology between the 1960s and 1970s.

The solution of the question of depoliticisation seems to be an imperative for the future of EM as a viable theoretical platform for environmental policymaking, given the heightened potential for political conflict as a consequence of worsening environmental crisis. Jänicke (2020) suggests that EM may not be able to operate as an overarching theory of change in the context of shifting paradigms, a sign that, after fifty years, the pessimists of the limits to growth argument may be winning the debate.

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