**How should human impacts on the Earth system challenge normative responses to neo-classical economic theory & neoliberal capitalism in global environmental politics?**

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**Executive summary**

This essay problematizes how neo-classical economic theory has informed normative practices in global environmental politics. In essence, this paper identifies three premises of neo-classical economic theory that problematize its capacity to respond to climate change and its ethical, economic and political dimensions. These three premises are: the misconception of Nature in economic theory, the macro- economic emphasis placed on technology and market based solution to overcome environmental problems and finally the erroneous accounting of environmental factors in economic models. As a result of this imperfect foundation, any responses that result from this framework run the risk of being inadequate. Thus, it is imperative that economist go back to the drawing board and instead of trying to re-conceptualize the crisis so that it fits our current economic system we must develop a new framework. This paper forwards ecological economics as a strong contender for an economic theory that recognizes Nature’s intrinsic value to humans and allocated resources in a way that we can live in harmony with Nature.

*Biological and physical systems underlie all economic activity and form constraints to which the human economy must adapt. – Davidson (2000)*

The ever-increasing impact of human activities on the Earth System is a reality pivotal to the Anthropocene (Oldfield et al, 2014), the geological epoch in which mankind is a driving force changing the Earth’s natural systems (Crutzen, 2002). The Anthropocene’s narrative objects to the understanding of Nature as a “pure, singular, stable domain removed from and defined in relation to urban, industrial society”, an understanding that has been central to western environmental thought and neo-classical economics (Lorimer, 2012). Additionally, it pushes us to acknowledge the connection of Nature and Society (Hornborg, 2015). This work aims to explore how neo-classical economic theory (NEcon from here after) and subsequently the normative practice it informs, neoliberal capitalism, provides in many cases inadequate resources to understand and addresses anthropogenic environmental degradation and global warming.

In particular, there are three underlying ideas of NEcon which this paper identifies as being problematized by human impacts: the misconception of Nature in economic theory, the macro-economic emphasis placed on technology and market based solution to overcome environmental problems and finally the erroneous accounting of environmental factors in economic models. The three have contributed to generate a framework that defends the illusion of dominion and sovereignty over nature as well as imprisoning us in a paradigm of order and control. Consequently, this examination suggest that we must replace the NEcon order, that places economic growth and profits at its core, with one rooted in human and planetary security (Klein, 2018), in specific ecological economics.

The paper is structured with an initial examination of how understandings of human activities question the three selected principles of neoclassical economics. Considering this a discussion will follow of how our current awareness of human impacts should influence economic theory, identifying ecological economics as a contender of an economics for the Anthropocene.

The justification for focusing on NEcon is that it has been vital in informing capitalism. The latter being the first *global* economic system to use nature’s metabolism at such scale and pace, it has facilitated an unstable and appropriative relationship with nature. Evidence of this dynamic is presented by Wackernagel et al. (2002) who calculated that consumption increased from using 70% of the Earth’s regenerative capacity in 1961 to 120% in 1999. On top of that the WWF (2016) estimates that today it takes 1.6 Earth’s to provide the regenerative capacity to provide for our consumption. Clearly, we must question how we value and understand our relation with Nature.

The moral foundations of neo-classical economics lie in utilitarianism which assumes that economics agents are rational, they behave in a way to maximise their utility on the premises that if everyone acts in this manner the highest utility will result for all (Croci, 2005). This process is based on the premises that one’s actions are independent of others, that conflicts with systems theory’ rejection of the notion of an individual agent. As human beings, we live in a complex interlocking environment: “we are relational and permeable with respect to energy and matter” (Brown, 2012). This framework fails to account for the fact that we have a moral duty to maximise the utility of ‘others’, because neo-classical economics is not equipped to incorporate other living entities and nature in its framework. This idea is problematic since results in a ‘dereliction of duties’ (Klein,2018) and allows us to forget that mankind is inseparable connected with the biosphere and we must consider the laws of nature (Vernadsky, 1945). In this way, we see nature as an economic input to achieve higher utility so its value is reduced to its economic productivity (Elliot, 2016). When nature is reduced to an economic resource it undergoes a process of commodification and is therefore, subjected completely to market logic which the consequence of creating a separation of Nature and Society.

The Anthropocene forces us to consider Nature as ‘the materials structures and process that are *independent* of human activity and whose forces and causal power are the *necessary* conditions of every human practice and determine the forms it can take’ (Soper, 1995). In this way, we see how NEcon’s dualistic conception of nature and society is undermined and how these spheres are detached of their complexity and interconnectedness (Stubblefield, 2018). Surely, we need to integrate this definition into economic principles, in such way that Nature’s value is not constrained. Nature is not solely a resource readily available for our production but the scenario where we develop our economic activity. The economy is intended to be a mediating sphere between Nature and Society, designing mechanisms to quantify how much of nature we extract and what to supply. Interestingly Malm (2018) postulates that the ‘environmental destruction happens right at the interface between society and nature’ where this essay locates the economy. NEcon’s moral underpinnings affect its ability to transmit the right balance between these two spheres at a global scale.

Neoliberal capitalism is characterised by the desire for infinite and increasing economic growth. This circumstance poses two challenges: in first place, there is a logical incompatibility with economic growth and the preservation of environmental standards (Saurin, 2001): to fuel growth, we must use resources the extraction of which, beyond a point, is detrimental to ecosystems. Economists previously argued that growth is not the good we seek but instead it Is a transitionary stage that one day would be enough and would leave us a benign state (Mill 1848; Malthus 1798 amongst others).

Undoubtedly, we are not at a benign state, which leads us to the second challenge: how to address environmental degradation. NEcon resorts to the ‘invisible hand’ of the market to tackle this issue, eg; pricing emissions. Another mainstream response is to ‘embrace technology and accelerate its development’ (Stern, 2008). In other words, the further expansion of capitalism. Both responses insinuate that humans can ‘free’ themselves from nature through innovation and self-regulating market mechanism, but when one accepts that the economy is embedded in ecological limits (some which we still don’t know and can’t possibly measure their impacts) and we do not hold sovereignty over nature, the above responses are problematized.

Neoclassical economists have successfully convinced us to have faith in technology and economic growth, being a well-known proponent of this idea Nordhaus (1992) believes that technological change propelled by economic growth will allow the economy to surpass resource constraints and continue to grow. Nevertheless, empirical evidence based on past trends in technological improvement, shows that technological advances aren’t occurring at the necessary pace to avoid irreversible climate change (Demaria, 2018). For instance, carbon capture has gathered much attention, but we are far from developing the high technology for it (Minx & Nemet, 2018). Additionally, to fuel the growth that will stimulate the technological consumptions we must use more scarce resources that in fact results in a faster depletion. Interestingly, the Jevon’s paradox finds that as efficiency increases due to technological innovations it can become perverse and incentivise higher consumption (Kosoy et al, 2012). Pushing for Economic growth and technological innovation are viable solutions when resources are infinite and substitutable, sadly Nature isn’t. The characteristics of Nature hinders its assimilation into NEcon theory as an externality. Consequently, holding it to market mechanism is not effective.This is not to say that attempts of innovation should be dismissed, rather this argument proposes that these processes should be guided by the goal to live within our ecological limits. If we fail to accept this reality, then we fall into the fallacy of infinite prosperous growth that will free us from Nature.

The last normative issue of NEcon this paper reflects upon is the mechanism used to internalise and account for variables. Economist use the assumption *ceteris paribus,* “all other things being equal”, in their calculations and modelling. Ceteris paribus isolates the potential impact of the independent variable (environmental degradation) upon the dependant variable (the economy). Thus, economist calculate risk by assuming a set of relationships, stability and predictability, but climate uncertainties are not a measurable risk (Chakabarty, 2014).

Because NEcon doesn’t integrate the complexities of earths systems, which is subject to changes and tipping points, it lacks the methodology to treat dynamic patterns in a defined formal way. (Schellhuber et al, 1997). Economists have attempted to correct this, in this way Nordhaus makes space for some complexities in his DICE models. Nonetheless, in his models changes in the environment translate to changes in income, meaning that the underlying ethical choices are hidden behind calculations of loss and gain. The premises of this welfare economics are that one must aggregated welfare losses and gains and therefore the gains of some can cancel out the losses of others so we can clearly see the utilitarian influence. Unsurprisingly, this logic is problematic for those countries that are most vulnerable to environmental degradation. Furthermore, models such as Nordhaus’ one assume that is impossible to predict and calculate the impacts of climate change in the future and integrate these into the models. Consequently, decision makers are trapped into a false sensation of safety and control over Nature.

NEcon is confronted with its internal limits and the complex implications of anthropogenic environmental change undermine our capacity to respond along the lines of the modernist ‘management of the past’ emphasizing human mastery and control (Palsson et al 2013). Ecological sustainability is not compatible with our dominant economic rationality (Fuchs, 2006), so we need an economic theory that meets our needs within planetary boundaries (Farley, 2015). This paper identifies ecological economics (EE) as a viable alternative.

EE is a transdisciplinary field whose principal objective is to study how ecosystems and human activity interrelate and incorporate it in its normative vision (Scerri, 2012). Based on a trusteeship framework that emphasizes the obligations of people to discharge fiduciary duties, EE defends that we must leave the world as we found it (Brown, 1998), and defines sustainability as: “a normative notion about the way how humans should act towards nature” (Baumgärtner and Quaas, 2010). This section will investigate how EE responds to the three shortcomings previously highlighted of NEcon. Hence, demonstrating how economic theory **should** respond to human impacts on the Earth System.

In first place, EE has a very different moral foundation that NEcon. Peter Brown (2012) presents its foundation as based on three ideas: firstly, humans are members not masters of life’s commonwealth, and this recognition of our shared heritage and destiny pushes us to extend our moral community. Secondly, we are custodians of the Earth’s household and, finally, we have a responsibility to preserve and promote the low entropy sources on which the Earth depends upon. The idea of freeing ourselves or surpassing the limits of nature is so central to western tradition neoliberal economics that is struggling to formulate an ethic of respect and relationship with the non-human world. Ecological economics overcomes this due to its inclusive ethical foundations. (Brown, 2012)

It was previously argued that economic growth cannot be propelled indefinitely on a finite planet, sustainable growth is in fact a repackaging of the economic growth paradigm. Nonetheless, EE is intrinsically different and suggests that sustainable *development* is viable since we can ameliorate the quality of life without increasing resource use. Instead of fixating on growth ecological economists indicate the importance of limiting factors and changes in patterns of scarcity (Constanza et al, 1991). The macro-economy must be managed with a hierarchy of goals and a rational system of management identifies ecological and economic health as the highest goals. Economic growth can be promoted as a policy if it is consistent with long term global environmental sustainability. Technological change is also compatible with this framework if it guided by the correct principles and goals.

EE follows a more inclusive approach to accounting for ecosystems and natural capital. In essence, it relaxes the ceteris paribus assumption and proposes an integrated, multi scale and pluralistic approach to quantitative ecological modelling. Wassily Leontief (1941) was the first to construct a complex system analysis that allowed for the accounting of interdependencies, his input-output (I-O) analyses become a standard tool in economics. Later on Isard (1972) combined I-O analysis with ecological-economy systems. Dynamic simulation models are also a useful tool to understand human impacts on ecosystems and integrate the non-linear dynamics of ecosystems (Constanza et al 1991). Ecological economics uses the tools of conventional economics where it deems necessary and therefore doesn’t imply a complete abandonment of NEcon, but rather a re-grounding of the economy it in Earth System’s, a sort of reformulation.

If competitive markets worked well for a fossil fuel economy far from planetary boundaries (Farley, 2015), the same can’t be said for current ecological setting. Academic and political debates on environmental governance have pointed out the failings of neoliberal markets for adequately and sustainably dealing environmental degradation (Palson et al 2013). NEcon’s wrongful formulation of Nature is a major structural issue of this economic order, which taints other aspects of it, rendering it an incomplete tool. Ecological economic probably does not hold all the answers, but it is a step towards living in harmony with Nature.

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**Appendix 1**

This work was completed for the module GEOG30B7: Global Environmental Politics. We were asked to choose a topic of our choice and respond to the following questions:

**How should human impacts on the Earth system challenge normative responses to [insert topic] in global environmental politics?**

I consider that in order to properly implement the SDGs we must rectify our guiding economic principles. Economic theory is assimilated into political discourse and plays a crucial role in how we organise our economic and social systems. For this reason, it is vital that we ensure that our economic system is adequately equipped to deal with the climate crisis which is a large aspect of sustainability. This paper contributes by exposing flaws and encouraging a wider discussion on alternative economic ideologies which can positively influence the correct deployment of the SDGs.