

Living with limits – and the reality of achieving change

(Submitted under theme 4: Power, politics, institutions and the reality of achieving change)

The conceptualisation of biophysical limits within ecological economics builds strongly on insights from thermodynamics elaborated in Georgescu-Roegen's bio-economics and in his main work in this respect *The Entropy Law and the Economic Process* (1971). Also Herman Daly's *Steady State Economics* (1977) has been an important source of inspiration for many ecological economists, in particular his concept of *scale* and the claim that the scale of the economy needs to be limited. More recently however, the idea of "living within limits" has gained attention and effort has been put into identifying and quantifying these limits. At the same time, within ecological economics, work by Kerschner (2010) and O'Neill (2012) have attempted to link the model of steady state economics with degrowth, suggesting that degrowth is the process and the steady state economy the goal. In this exercise it is mainly the aspect of economic scale which is of importance.

This paper investigates what I call the "quantitative turn" in ecological economics, i.e. the belief that quantified limits or thresholds will act as an "agent of change" to help get us from A to B (O'Neill 2012, Asdal 2011a). For example Donella Meadows claimed that "we measure what we care about and (...) we care about what we measure... [C]hanging indicators can be one of the most powerful and at the same time one of the easiest ways of *system changes*" (Meadows 1998: viii, 5). Quantifying thresholds is difficult to defend on epistemological grounds (e.g. planetary boundaries), hence the reason that it is still done is linked to the strong belief in the persuasive power of a number.

In the environmental field the reliance on numbers as - supposedly - objective information and decision support, is strong. One explanation for this might be that environmental problems are closely linked to the natural sciences which in turn are associated with the quantitative paradigm. In particular pollution problems are often problems of scale, load or ratios, and hence in themselves of a quantitative character. Another explanation could be that "hard" science and quantification played an important role in getting environmental issues onto the political agenda in the first place. However, the exact *role of the numbers* in this process is far from clear, as politics, interests, motives and negotiation also played central roles in this process (Asdal, 2011a). Here, we can learn a lot from studies in technology and science or from sociology of quantification. One main conclusion from these studies is that numbers and categories (necessary for quantification) do not only represent and describe phenomena, but they are also constitutive, which means that they have material and social effects.

One such consequence is the processes of 'economisation' described in particular by Michel Callon. A main conclusion from his studies is that economics and economics-inspired disciplines *shape* the (political) economy (e.g. Çalışkan and Callon, 2009). One of the explanations for this is that measurement categories are not neutral. If they fit the economic logic and can be used for optimal models, then this will inevitably have consequences. For

example in the environmental area, quantified thresholds combined with an (neo-classical) economic logic sometimes means recommendations to pollute *more* (rather than less) for efficiency reasons (Asdal 2011b).

In addition to the confusion about the performance and the actual social consequences of numbers, engaging in the “living within limits” discourse is challenging because of the discourse already established around the concepts of limits. This established limits discourse has tended to appeal to authoritarianism and scientific expertise, making use of metaphors relating to crisis and survival. Further, human population is usually portrayed as one aggregate entity with no agency but merely acted upon, “an aggregate to be monitored through statistics and controlled by government policy” (Dryzek, 2013). The recent planetary boundaries framework (Rockström et al. 2009) fits clearly into this kind of discourse.

The way we frame the problem, guides the possible answers and solutions envisioned to the problem – to a large extent at least. There is therefore a strong link between the problem framing and the social consequences. The representation of the ecological crisis in terms of limits or planetary boundaries only, is a problem because “environmental problems cannot be *reduced* to their environmental component, (..) they are linked to both political and social realities that play a crucial role in creating and sustaining them” (Newell 2008: 522, my emphasis). This criticism applies to ecological economics as well, where environmental problems to a large extent has been framed as mainly a matter of scale.

The simplified problem framing in terms of quantification plays to those who want to treat the ecological crisis as a techno-managerial issue without discussing the social relations. However, to not talk about the element of overuse of resources and sinks, does not make sense either. So the alternative discourse must both include a framing of the environmental problem *and* an account of the social reality which cause it, for example the capital driven appropriation of nature and its unequal effects. To uphold the basic ontological assumption of environmental limits, we need to move from a narrow concept of quantified biophysical limits to a conception of limits as a relation between the natural environment and human society (Benton, 1989). A problem diagnosis which includes the analysis of the underlying cause will also open up for very different discussions about where the solutions or possible futures lie. Hence the need to engage in social and political theory.

As a continuation of such analysis, and in envisioning alternatives, we need more contemplation on *qualitatively* different socio-cultural and economic organisation (including relations of production and consumption). This would be an important step ahead from the inheritance from Daly’s steady state economics which typically deal only with the quantitative aspects of production and consumption. With a *qualitative turn* focus would be less on quantitative input and output, and more on absolute principles or rights, such as Georgescu-Roegen’s principle of organic agriculture or human rights (e.g. to water and food). Implementation of principles eliminate much of the need for “measuring to manage”.

Coming back to a central questions discussed earlier about creating change, we need to engage in debates and theories of social change. For numbers to “wake up” the public and

then create change there must be few limiting structures to overcome. However, there is little conceptualisation of basic features of social reality within ecological economics, such as structure-agency relationships etc. Further, as Brand and Wissen (2013) points out, the puzzle is why we don't act when we know. This indicates a need for more research on the social and structural *obstacles to and possibilities for change*.

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