

A Holistic, Behavioural Economic Approach to Environmental and Biological Resource Problems?

Review of Mansur Mohammadian's "Bioeconomics, Biological Economics. Interdisciplinary Study of Biology, Economics and Education"

In "Bioeconomics, Biological Economics" Mansur Mohammadian advocates a holistic, interdisciplinary approach to economics that is grounded in biology. Mohammadian's book is strongest in stimulating thinking about whether and how economics can contribute to achieving goals such as sustainability.

Mohammadian criticizes the "capitalist competitive market model" (p. xvi) and conventional economic approaches which draw on this model. He suggests that a conventional economic approach is unrealistic, unethical, and ineffective for handling environmental and biological resource problems, such as the depletion of the ozone layer or the reduction of biodiversity. He is particularly critical of a "Natural Resource Economics" and an "Environmental Economics" (C.f. chapter 2). The key goal of the book is to advance the multidisciplinary approach of an "Ecological economics" into a "Bioeconomics". Mohammadian aims to develop Bioeconomics as a "rigorous scientific discipline" (p. xvi). In particular:

- i. Bioeconomics should discard the model of economic man, the "Homo Economicus" (p. xviii), which he views as unrealistic, being out of touch with "our biological roots" (p. xviii), and which he links to unethical conduct.
- ii. Bioeconomics should unify economics and biology and thus make "... our artificial socio-economic system more compatible with its real biological foundations ..." (p. xvii). It should be a truly interdisciplinary, holistic study of economics and biology.
- iii. Bioeconomics should entertain a distinctive methodology for interdisciplinary research (pp. xvi, xviii).

- iv. Bioeconomics should humanize economics by promoting altruistic behaviour, which Mohammadian considers a requirement for cooperation to emerge in human interactions, and for effectively handling environmental and biological resource problems (p. xviii). Mohammadian's favoured technique for practical intervention is education with the aim to make individuals more altruistic.

I do not doubt the laudability of Mohammadian's interest in environmental and biological resource problems. However, I find that most of Mohammadian's empirical and moral criticism of economics and the suggestion that it lacks practical effectiveness are unjustified. I question that economics could be and needed to be developed into a holistic, interdisciplinary behavioural study of human nature. It appears to me that Bioeconomics deepens methodical and conceptual misunderstandings about economics as they have plagued Behavioural Economics for some time. I am going to argue that conventional economics is better equipped to solve environmental and biological resource problems than Bioeconomics, specifically:

- a) that Mohammadian's assessment of economic ideas such as 'economic man', 'equilibrium', etc. as unrealistic is misdirected;
- b) that economics can enact goals such as sustainability more successfully than Bioeconomics;
- c) that Bioeconomics is not grounded in a sound methodology and philosophy of science;
- d) that Bioeconomics could not make higher moral claims about fostering social values than conventional economics.

Is Economics an Immoral Science?

Mohammadian suggests that conventional economics sidelines social values but that Bioeconomics could foster social values (C.f. chapters 1 and 3). He aims to develop Bioeconomics as a behavioural ethics, grounded in an "entropy theory of value" (p. 21).

If claims regarding low moral standards of economics and of the market economy it advises on could be upheld, alternative approaches to analysing and organizing economic activity may have to be favoured. However, already Adam Smith and Mandeville developed economics as an ethics: They applied ideas such as ‘economic man’, ‘competitive behaviour’, etc. in order to generate public good. Economics, conventionally understood, interlinks self-interest and social goals. Indeed, Smith understood economics as an *alternative* ethics to a behavioural ethics. Whereas economics conceptualises ‘public good’ in relation to ‘private vice’ (economic man), a behavioural ethics conceptualises ‘public good’ in relation to ‘private good’, such as altruistic behaviour. Thus, the morality imperatives of economics and a behavioural ethics differ but it would be an overstatement to claim that economics had no “morality imperative”. Mandeville explicitly formulated as a moral imperative for economics: “private vice, public good”, as did Adam Smith when linking “self-love” to the “wealth of nations”. By implying a trade-off between self-interest and social values, Mohammadian overlooks an ethical rationale of economics: “Smith’s free enterprise by competition propagated private vice rather than public virtue” (p. 23).

Smith was aware of a behavioural ethics, as detailed in the *Theory of Moral Sentiments*, but he doubted its effectiveness in the context of industrial society. Smith’s economics set out an ethics that tolerated merely self-interested, competitive behaviour. Thus, value pluralism and even value decay could not undermine the generation of public good. Related, economics does not (need to) directly intervene with human nature in order to generate public good. It only indirectly intervenes with human behaviour through the design of incentive structures.

On another point, Mohammadian claims that cooperation played no role in conventional economic thinking (C.f. chapter 6). Possibly this is the case in the polypolistic scenario of firm-firm competition, but even in this scenario a model of cooperation can be identified, namely when a buyer and a seller exchange capital (The achievement of social values is here implied, too). The New Institutional Economics has detailed this approach to analysing cooperation. What Mohammadian could rightly claim is that economics conventionally analyses cooperative behaviour (as well as competitive behaviour) *not* through a model of altruistic individual behaviour, but through the model of economic man.

Is Economics an Unrealistic Science?

Besides a “morality imperative”, Mohammadian claims a “reality imperative” as a differentiating feature of Bioeconomics as compared to conventional economics. He suggests that Bioeconomics is more realistic than a “Capitalist Equilibrium Economics” (p. 193) and that a “Bioeconomics is the Real Economics” (p. 200). He views economics as unrealistic and reductionist (C.f. chapters 3 and 6). An interdisciplinary, holistic Bioeconomics is meant to achieve realism

I would argue that any scientific discipline can only advance knowledge by means of ‘reductionism’: by applying certain pre-empirical, heuristic fictions which organize and instruct a problem dependent, focused analysis of certain aspects of reality only. This seems to be constitutive for scientific thinking, and it may explain why and how science could evolve out of philosophy during the 17th and 18th centuries. Philosophers of science as diverse in their orientation as Kant, Gödel, Popper, Lakatos or Wittgenstein, and methodologically informed economists would point out that any research program, scientific or philosophical, applied certain pre-empirical, heuristic fictions that are beyond questions of realism. In economic research, ideas like economic man or equilibrium, which Mohammadian criticizes as unrealistic, can be viewed as pre-empirical, heuristic fictions.

On the basis of a ‘reductionist’ understanding of science, the question of interdisciplinarity arises only when it comes to practical intervention (but not theory building that is left to disciplines). I would argue that Mohammadian’s understanding of holistic, interdisciplinary research, when projected to theory building, leads back to a pre-modern, philosophical approach, e.g. as favoured by Greek philosophy. Philosophers of the Enlightenment and scientist probably turned away from a holistic research tradition for good reasons.

If Mohammadian’s claim could be substantiated that realism was all-important when assessing a research program, he probably had to be rather critical regarding biology, too. The idea of equilibrium analysis plays a prominent role in the biological analysis of population dynamics. For example, biology analyses interactions among population levels of different species through an equilibrium model, although in reality an equilibrium in population levels is never reached. The application of an apparently unrealistic concept by biology may leave Mohammadian’s project in trouble to develop Bioeconomics on grounds of a “reality imperative”. Possibly for

reasons other than realism, biology, economics, and other sciences apply certain concepts that are beyond questions of realism and empiricism. Problem dependence, theoretical fruitfulness and analytical power may be such reasons.

Also, if one agreed with Mohammadian's suggestions that interdisciplinary, holistic research were better equipped to handle environmental and biological resource problems because of a claimed more realistic approach, one could ask why only integrate economics and biology? Why are other sciences, such as physics, chemistry, geology, political science, psychology, and sociology ignored? They can contribute to understanding and solving environmental and biological resource problems. If they were included in a holistic, interdisciplinary program, the realism of research could be considerably raised, but also the complexity of research is likely to rise to a level at which the generation of scientific knowledge is undermined. It seems that in one way or another, no scientific research program can overcome reductionism (and does not have to do so if one follows leading philosophers of science).

Is Economics Ineffective in Solving Environmental and Biological Resource Problems?

In order to solve environmental and biological resource problems, Mohammadian sets out an agenda for education and pedagogy (C.f. chapter 7). As much as I support Mohammadian's suggestion that more education in general, and environmental and interdisciplinary education in particular is needed, I disagree with him on the role and relevance of such a program for solving environmental and biological resource problems.

Especially, institutional economic research can question Mohammadian's suggestion that "biological values" (p. 42), such as sustainability, could not be incorporated into economic thinking (C.f. chapters 2, 4 and 5). Regarding the implementation of a goal like sustainability, economics proceeds differently from behavioural research (e.g. Bioeconomics). Whereas behavioural researchers favour the reform of human nature in order to encourage sustainable behaviour, economics intervenes with incentive structures in order to enact sustainability. The advantage of such an approach to practical intervention is that economics can successfully intervene with human behaviour even in competitive market processes which

potentially involve merely self-interested agents. For example, the large body of economic property rights research on environmental problems hints that economics can solve environmental and biological resource problems. On the other hand, Bioeconomics may not be more successful than a communist concept for organizing economic activity. When practically tested, Mohammadian's 'ecotopian' concept of the good society is likely to flounder for similar reasons as communism did.

I would argue that educational measures could only supplement an economic program for enacting goals like sustainability. In my view, economics had to take the lead role for solving environmental and biological resource problems – by means of non-behavioural intervention with incentive structures. The key issue for interdisciplinary research may be to organize collaboration among different disciplines for the purpose of practical intervention (but not for the purpose of theory building). As long as institutional structures remain in place which reward unsustainable behaviour, programs to make individuals or firms behave in an altruistic way are likely to be self-defeating. Gareth Hardin's elaborations on the "Tragedy of the Commons", which deals with problems of environmental destruction, are here instructive.

I also question that educational and pedagogic measures, as recommended by Mohammadian for Bioeconomics, reflected economic intervention techniques. In a conventional understanding of economics, practical intervention is geared towards incentive structures and capital structures, but not towards human nature. This distinguishes economics from sociology, anthropology and psychology, which all favour behavioural intervention in order to solve social problems. Indeed, I suspect that Mohammadian's project of Bioeconomics reflects a Biosociology / Biopsychology of consumption and environmental behaviour. The examination of his favoured practical intervention technique underlines this.

Mohammadian could have clarified the basic nature and purpose of economics in more detail. Even if he does not agree with Mandeville, Smith, Bentham, Marshall, Hayek, Friedman, Machlup, Stigler, Buchanan, or Becker who set out key methodical and conceptual features of the economic approach, he should be aware of their thinking and position and contrast Bioeconomics in relation hereto.

Mohammadian's discussion of economics also ignores Behavioural Economics, as it emerged from Herbert Simon's studies from the 1940s onwards. In many respects the Simonean project of Behavioural Economics shares similarities

with Bioeconomics as set out by Mohammadian, e.g. regarding criticism of the model of economic man as too unethical and also as too unrealistic, the suggestion that altruism should be incorporated in the portrayal of portraying human nature in economic research, or suggestions on pedagogy as intervention technique for resolving cooperation problems. The works of Amitai Etzioni come to mind here, too. They are similar to Mohammadian's Bioeconomics in terms of their intent to reform economics on moral and empirical grounds of holistically portraying human nature in economic thinking, including the modelling of moral character traits.

Dr. Sigmund Wagner-Tsukamoto,
Management Centre,
University of Leicester, UK.
E-mail: saw14@le.ac.uk