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Ecological Economics in relation to a digital world

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Ecological Economics in relation to a digital world

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Abstract

The digital revolution has taken place in a social and institutional context dominated by specific conceptual and institutional perspectives. Neoclassical economics and neoliberalism has made monetary profits (in unlimited amounts) and economic growth in GDP-terms legitimate. Today we understand increasingly that sustainable development with the 17 UN sustainable development goals is a partly different idea of progress and ideological orientation.

At issue is now if ecological economics as a different conceptual framework is helpful in understanding and handling this new situation. In the paper elements of ecological economics – including a different definition of economics – are presented. Economics is defined as “multidimensional management of limited resources in a democratic society”. It is argued that value neutrality is an illusion and that values have to be dealt with openly.

The conceptual framework proposed can be applied to any industry, be it the oil industry or the digital industry. It is clear however that the latter industry raises issues of a partly different kind, such as surveillance, privacy and security. Pluralism in economics education and a reconsideration of laws regulating limited reliability corporations are among recommendations. The power positions of globally operating companies deserve increased attention.

1. Introduction

Digital technology is influencing the functioning of our economy and society at large in many ways. Life may be easier at the level of individuals, efficiency in some sense can be improved for businesses and other organizations and economies may grow in terms of GDP. Progress in society can be understood in terms of mainstream neoclassical economics with its specific value or ideological orientation.

Ecological economics is here broadly defined as “economics for sustainable development” where sustainable development is a challenge for all of us. Climate change, loss of biological diversity, pollution of air, land and water are all parts of sustainable development. But in 2015 United Nations sanctioned no less than 17 sustainable

development goals (SDGs) where also health, poverty, education, equality, justice and peace were included among indicators of progress in society.

Mainstream neoclassical economics can be used in attempts to understand and analyse the "digital economy". But there are more perspectives than one. As part of a philosophy of pluralism, I am arguing that different kinds of heterodox economics, such as ecological economics, can add to our understanding. And I am even arguing that the dominance – and indeed monopoly – of neoclassical economics in university education and research is part of the problems faced rather than any solution. I am however not saying that one paradigm should completely replace another. We should think in terms of "paradigm coexistence" (Söderbaum, 2000, p.29-30) rather than Kuhnian "paradigm-shift" (Kuhn, 1970). While paradigms coexist, there can however still be "shift in dominant paradigm".

2. Values and ideology in economics and other social sciences

There is a tendency in mainstream neoclassical economics to claim value-neutrality. Economics is believed to be close to natural sciences where the scholar is standing outside observing what goes on in the economy. It is believed that experiments can meaningfully be carried out to arrive at "evidence-based" results. There is a focus on markets and markets are understood in terms of supply and demand as mechanistic forces.

While reference to more than one perspective can add to our understanding, any ideas about value-neutrality have to be abandoned. Values and ideology are always with us as argued by Gunnar Myrdal:

> "Valuations are always with us. Disinterested research there has never been and can never be. Prior to answers there must be questions. There can be no view except from a viewpoint. In the questions raised and the viewpoint chosen, valuations are implied.
> Our valuations determine our approaches to a problem, the definition of our concepts, the choice of models, the selection of observations, the presentations of our conclusions – the whole pursuit of a study from beginning to end." (Myrdal, 1978, pp.778-779)

Rather than arguing that "our valuations determine our approaches" I would say that "our valuations influence our approaches" but otherwise I strongly support Myrdal's arguments about the many more or less conscious choices made by the scholar. Another social scientist, Tanja von Egan-Krieger (2014) who has examined mainstream economics as well as three heterodox schools (institutional economics, feministic economics and ecological economics) refers to "the illusion of value-neutrality" in her book.

Neoclassical economists such as the leading textbook writer, N. Gregory Mankiw sometimes make a distinction between "normative" and "descriptive" statements implying that the latter can be neutral in value terms (2011, p.32). But even descriptive statements are part of some viewpoint or worldview where choices about what to describe have been made.

3. Mainstream neoclassical economics as conceptual framework and ideology

In neoclassical theory actors interact mechanistically in markets for commodities, labour and financial capital. Individuals and firms are the main actors but there is also a possibility for elected politicians to influence the working of markets through taxation and other policy measures. This neoclassical paradigm as a whole is specific in ideological terms. Individuals as consumers maximize utility and focus on self-interest with little concern for other people and society at large. Business corporations are similarly assumed to maximize monetary profits referring to narrow interests of shareholders.

Competition will make markets efficient. A market transaction is assumed to be a concern for only two parties and to be good for both of them. Single negative externalities in the sense of impacts on third parties may occur but can easily be handled with the "polluter-pays-principle". K. William Kapp – perhaps the first environmental/ecological economist – questioned this simplification and argued that negative impacts on third parties is not a matter of single impacts and interested parties (Kapp, 1950). There are many "externalities" rather than one. Many business corporations systematically externalize negative impacts on society at large as a way of reducing their monetary costs and increase profits. Costs are shifted from the firm to specific others or society at large.

Neoclassical economists prefer mathematical presentations of their models. Only that which can be counted counts, it appears. The monetary dimension is at the heart of these models with prices in monetary terms, incomes for individuals, profits for firms and taxes for communities at the local and national levels. In relation to the multifaceted nature of the real world, this can be referred to as cases of "monetary reductionism".

Let us focus on the assumption that firms maximize monetary profits. This is admittedly an assumption but repeating this assumption and the analysis that follows in education and research certainly contributes to legitimize a focus on monetary profits at the expense of all other impacts and ideological orientations. This ideological focus in the economics discipline is presumably welcomed by many business leaders in different industries, the digital one included.

Investments in infrastructure such as roads, harbours, dams and other energy systems are often prepared with neoclassical Cost-Benefit Analysis (CBA). This analysis is built on a "trade-off philosophy" where all kinds of impacts can be traded against each other. This "trade" or exchange takes place in market terms and is specific in ideological terms. In relation to sustainable development the same trade-off philosophy has led to "compensation schemes" for CO_2 emissions and other environmental impacts. Individuals and organizations that contribute to CO_2 pollution can continue to do so if they purchase pollution rights in the sense of paying a sum of money for each unit of pollution to a company specializing in compensation business (by claiming to reduce actual pollution at some other place, often in developing countries where reducing pollution is said to be cheaper than at home). "Markets for pollution permits" is another example of policy proposals from neoclassical economists built on the trade-off philosophy. Such a market at the European Union level has failed according to those who want a strong climate policy. Again these schemes or mechanisms are probably welcome for actors who want to downplay the negative sides of their activities and delay action.

While neoclassical economists understand that some parts of Gross Domestic Product (GDP) hardly can be regarded as elements of progress in the society, GDP still plays a role in discourses about the development of national economies. There seems to be a need to

measure progress in one-dimensional terms. Again monetary reductionism is challenged by sustainable development.

My point here is not that neoclassical theory and analysis should be completely abandoned but that this theory and analysis is specific in ideological terms. And in a democracy, ideological orientation should be open to dialogue. The ideological orientation and analysis of neoclassical theory and method has certainly served many actors in the economy who through education and political pressure have been indoctrinated into a specific belief system. The problem now is that we are locked into this belief system with connected institutional framework in a situation where an increasing number of actors realize that competing ideological orientations have to be considered and are very much needed. In a democratic society the least we can do is to open the door for a dialogue with those who believe in other ideas about business, the economy and society at large.

In order to demonstrate and reveal the ideological elements in one paradigm, the best approach is perhaps to compare it with another paradigm. This is why we now turn to attempts to articulate ecological economics as an alternative.

4. Reconsidering economics and the economy

Textbooks in neoclassical economics define economics as "the study of how society manages its scarce resources" (Mankiw 2011, p.2). This management of resources is relevant both for the microlevel of individuals (households) and firms and for the macrolevel of communities, for example the national government. A conceptual framework for decision-making is proposed where analysis is carried out mainly in monetary market terms. The idea of scarcity then refers mainly to monetary or financial limits. Monetary costs and revenues (benefits) are identified, valued at market prices and aggregated to arrive at present values or other optimal solutions. In CBA attempts are made to assess impacts in actual market terms. Impacts referring to future periods are discounted (since actors are believed to value present impacts more than future impacts). It is easily understood that a concerned environmentalist thinking in terms of future generations, will find this whole process repugnant.

As a view more in line with the previous reasoning about ecological economics, economics is defined as: "Multidimensional management of limited resources in a democratic society" (Söderbaum, 2017, p.22) The imperatives of sustainable development with the 17 UN SDGs tell us that development needs to be understood in multidimensional terms and that non-monetary impacts should be considered in their own right rather than being transformed to a monetary dimension. To claim value-neutrality for prices of each impact in such a transformation process is not possible. The trade-off philosophy of neoclassical analysis is simply rejected.

Another reason to reject the trade-off philosophy has to do with the phenomenon of inertia in different non-monetary dimensions. Actually, all kinds of non-monetary dimensions can be analysed in terms of possible inertia in the forms of irreversibility, lock-in effect, path dependence, commitment etc. (Söderbaum 1973, Brown et al., 2017). As I see it, the dominance of the "trade-off philosophy" in governance has been a barrier to constructive climate policy. Similarly, irreversibility is an issue for the mining of minerals used in the digital industry or for other purposes. Such limits in non-monetary terms need to be carefully considered.

Nicholas Gergescu-Roegan is one of the early ecological economists. In his book from 1971 “Entropy Law and the Economic Process” he focused on energy issues and pointed to the irreversible degradation of natural resources that follows from economic processes like production and consumption. This study of physical natural resources is of interest although one sometimes gets the feeling of being faced with a new conceptual and ideological dogmatism in energy terms comparable to monetary Cost-Benefit Analysis. According to the alternative definition of economics here suggested, relevant phenomena of inertia are not limited to physical processes but potentially refer to all kinds of dimensions. Cognitive and emotional commitments of specific actors are one example. Such commitments may play a positive or negative role in relation to specific ideas of progress of a particular actor.

Why reference to a democratic society in the alternative definition of economics? In a democratic society there are more voices than one, more ideological orientations than one and more political parties than one. Economics is always “political economics” and assessment of projects at the level of government or society is always a matter of ideological orientation. Instead of neoclassical analysis of a technocratic kind, the purpose becomes rather one of “illuminating” an issue or decision situation in a many-sided way. To this we will return.

Neoclassical economists tend to perceive the organization of society in terms of division of labour. University departments of economics focus on markets and financial issues while other disciplines may deal with issues of ecosystems, psychology, ethics etc. Ecological economists (among others) point to the dangers of such reductionism and division of responsibilities. For ecological economists ecosystems are fundamental parts of the economy and should not be dealt with as “externalities” (Costanza ed. , 1991).) All kinds of impacts expected to follow from the implementation of a project are here considered as “economic” impacts. Ecological impacts are economic impacts (of a non-monetary kind) and social impacts are similarly economic impacts. An understanding of the economy can therefore not be limited to money and markets with connected institutional arrangements.

5. Elements of a conceptual orientation for ecological economics

When searching for an alternative conceptual framework or paradigm to that of neoclassical theory and method, one strategy is to start from concepts that are essential parts of neoclassical theory and then ask questions of the following kind:

- What is the alternative to the neoclassical view of human beings?
- What is the alternative to the neoclassical view of organizations?
- What is the alternative to the neoclassical view of decision-making?
- What is the alternative to the neoclassical view of markets?
- What is the alternative to the neoclassical view of assessment of projects at the community level?

In this way elements of an alternative theoretical perspective to neoclassical theory and method (that can add to the understanding offered by neoclassical theory) will

possibly emerge. As a first step, however, I will point to the role of “ideology” and “ideological orientation” as part of the alternative perspective.

5.1.“Ideology” and “ideological orientation” as key concepts

According to Myrdal cited earlier values are always with us. Economics, whether neoclassical or institutional, is always “political economics”. In political dialogue, ideology plays a role. Representatives of political parties (and other actors) often refer to their ideologies when turning to us as citizens for support with their ideas and proposals for action. As citizens (and in other roles) we respond in one way or other by accepting or rejecting the arguments. This in turn suggests that also we as citizens refer to something that can be referred to as ideology.

Not many economists refer to ideology in their writings but Douglass North is one:

> By ideology I mean the subjective perceptions (models, theories) all people possess to explain the world around them. Whether at the microlevel of individual relationships or at the macrolevel of organized ideologies providing integrated explanations of the past and the present, such as communism or religions, the *theories* individuals construct are *colored* by normative views of how the world should be organized (emphasis in original) (North, 1990, p.23)

Another respected economist and philosopher, Joan Robinson, who uses the concept ideology is Joan Robinson. She points to the relations between dominant economic doctrines and dominant political ideas or ideologies, suggesting that not only politicians but also economists influence politics in what can be considered as conservative or radical directions:

> We must go around to find the roots of our own beliefs. In the general mass of notions and sentiments that make up an ideology those concerned with economic life play a large part, and economics itself (that is the subject as it is taught in universities and evening classes and pronounced upon in leading articles) has always been a vehicle for the ruling ideology of each period as well as partly a method for scientific investigation (Robinson, 1962, p.1)

In my judgment the ideological orientation of neoclassical economics is close to neoliberalism as political ideology. Just as neoclassical theory is dominant in economics, a kind of market fundamentalism plays a leading role in politics. The present situation in Sweden is a good example of similarity between the ideology built into neoclassical economics and the ideology of the present coalition of political parties in governance.

Ideology is a contested concept (Connolly, 1993) in the sense that it can be understood in more ways than one. Here it is explained as a means-ends relationship. It is about where you are (present position), where you want to go (desired future positions) and how to get there (strategy). Rather than referring to ideology, one can use the word “worldview”. An ideology can even be formulated as a “narrative” i.e. as a story about the present situation and desired development patterns.

5.2. Political Economic Person and Political Economic Organization assumptions

What is the alternative to the neoclassical view of the individual, i.e. the assumptions of Economic Man (or Homo Oeconomicus)? This person is related to markets of different kinds in a mechanistic way and pursuing self-interest rather than being concerned about other people in the present generation or in future generations.

As an alternative, a Political Economic Person (PEP) is assumed, i.e. an actor and political being guided by her/his ideological orientation. This ideological orientation of the individual is something to be investigated rather than taken as given. It can be narrow of broad, short-sighted or include concern for future generations. The individual is encouraged to participate in a democratic society. Participation can take place both as part of market and non-market relationships.

A human being is furthermore understood in socio-psychological terms. She/he is part of a social and cultural context where concepts such as perception, cognition, identity, role, relationship, motive, habit, conflict, dissonance are potentially relevant in analysis. Reference to learning theory can be appropriate in understanding changes in behaviour at the level of individuals.

The alternative to neoclassical profit-maximizing firm is similarly a Political-Economic Organization. A PEO is an actor guided by its ideological orientation or mission. Some organizations (much like neoclassical firms) may focus on monetary profits while other organizations are rather of the non-profit kind. There are foundations for example. In United Kingdom there is an institution called “Community Interest Company” in the sense of social enterprises that want to use any profit for the public good. In a democratic society there are of course many ideas of a “public good”, “public interest” or “common good”.

Mission, relationship, trust, cooperation are potentially relevant concepts when studying single organizations and organizations in networks. Ethics becomes an issue for organizations with concepts such as “fair trade” and “Corporate Social Responsibility”. Network theory has played a role (among other models of organizations) for some time in business management literature (Håkansson ed., 1982, Ford ed., 1990)

5.3. Decision-making as a matching process

Should decision-making be thought of in terms of quantifying impacts in monetary terms and finding optimal solutions? In our present economy such a strategy certainly has its merits. For a business corporation to survive it needs to control money flows and something similar is true of individuals with their incomes and expenses.

But as economists we should perhaps look upon monetary analysis as partial analysis and not as a study of all that matters. Non-monetary impacts with inertia in different forms, uncertainty and other complexities should also be considered. In many decision situations, the main effort in illuminating impacts should perhaps refer to ecological, social and other non-monetary consequences. How do alternatives differ with respect to CO_2 pollution? Do alternatives differ concerning impacts on equality in social dimensions? Is health an issue?

Impacts can certainly sometimes be quantified in non-monetary dimensions. But one should also open the door for impacts described in verbal terms or as images. When buying a flat or house, the monetary cost for a certain number of square meters is not all that matters. Structural aspects of the flat, its colours, its surroundings in terms of availability of shops, cafés etc. are probably also important for the potential buyer.

The decision itself can be looked upon as a "matching" process between the ideological orientation of an actor as PEP on the one hand and the impact profile in multidimensional terms of each alternative considered on the other hand. In some situations it is easy to find a good fit between ideological orientation and one of the alternatives considered; in other situations no alternative may appear acceptable.

Rather than referring to a "matching" process, we can think in terms of "appropriateness" in the sense that an actor is searching for an alternative that is judged appropriate in relation to desires and resources being part of her position and ideological orientation. Since our interest here is on a digital economy, "pattern recognition" also appears as a useful term. On the one hand we have the decision-maker with her/his desired pattern of outcomes, on the other hand alternatives with their expected patterns of impact.

It should be observed that the idea of matching is still relevant in situations where the ideological orientation of a decision-maker, as well as expected impact profiles of specific alternatives, are fragmented and uncertain

5.4. Markets where trust, cooperation and networks play a role

Are neoclassical explanations in terms of supply and demand enough to understand markets? Should individuals as actors privately or as actors in firms (or other organizations) be understood in mechanistic terms, much like molecules or billiard balls (Clark, 2002, p.6-8), or do we need alternative or complementary explanations?

It is here suggested that market actors alternatively can be understood in terms of PEP- and PEO-assumptions where decisions about market transactions are perceived in terms of matching ideological orientation and expected impact profile. An actor's relationships with other actors in terms of trust and networks become important. Suppliers and customers may engage in a social relation where actor A bothers about the impacts of a trade relationship on actor B and vice versa. They can furthermore act together and be part of a network that competes with another network of business or non-business actors.

PEP and PEO-assumptions also opens the door for ideological and ethical considerations in other respects such as certification schemes (that claim compatibility with sustainability), "fair trade" schemes and Corporate Social Responsibility (CSR). It is possible that even cognitive commitments to neoclassical theory and neoliberalism become open to dialogue.

5.5. Assessment of public projects. From CBA to Positional Analysis

When preparing investments in infrastructure, such as roads or energy systems, neoclassical textbooks still recommend Cost-Benefit Analysis (CBA) of a particular kind. This is an analysis of costs and benefits in monetary terms built on a market ideology close to the one of the GDP-concept and ideas of progress in terms of "economic growth".

Again our alternative conception of evaluation of investment projects goes back to the definition of economics as "multidimensional management of limited resources in a democratic society" and the PEP- and PEO-assumptions with decisions in terms of "matching". Analysis in a democratic society needs to be more open in relation to different ideological orientations of a particular society.

The purpose of Positional Analysis (PA) is to "illuminate" an issue in a many-sided way with respect to:

- Alternatives of choice
- Impacts
- Ideological orientations

In a decision situation at the public level many interests are typically covered and the actors involved or concerned represent more ideological orientations than one. There may be single case of consensus but conflict of interest is the normal case.

The existence of more than one relevant ideological orientation suggests that analysis ends with "conditional conclusions". Ideological orientation EG (as in economic growth), leads to a specific ranking of alternatives while ideological orientation SD (as in sustainable development), may suggest a different ranking of alternatives.

Attempts to clarify ideological orientations will sometimes lead to dialogue and reconsideration of positions among decision makers for example in a political assembly. It can also increase the chances of minority views of being taken seriously into account.

PA is described and discussed at other places (Brown et al., 2017). Only the name of the approach will here be further commented upon. "Position" refers to the state, stock or status of an object of description at a point in time. Impacts can be monetary or non-monetary in kind and they can refer to periods of time as flows or points in time as positions (Table 1).

Table 1. A classification of impacts in economic analysis.

	Flows	Positions
Monetary	'a'	'b'
Non-monetary	'c'	'd'

While not denying the importance of monetary or financial impacts, PA points in the direction of upgrading non-monetary impacts, and changes in positional terms in particular. Instead of the "trade-off" philosophy in monetary terms of CBA, we need to focus on issues of inertia in various non-monetary dimensions. Are impacts of road construction at a particular place easily reversible or not? Do alternatives differ with respect to irreversible CO_2 pollution? A decision today is related to future decisions in a multiple stage process which can be illustrated in the form of decision-trees of a particular kind (Söderbaum in Brown, et al., 2017 p.33-36, Söderbaum, 2018, p. 35-40).

It should finally be made clear that choosing PA rather than CBA is not only a matter of science or technicalities. It is an ideological option. For nations that claim to work for sustainable development by respecting the 17 SDGs or in other ways, the choice should be easy. Many-sidedness in terms of ideological orientations, alternatives and impacts – and thereby compatibility with democracy – should speak for PA.

6. **Will ecological economics be helpful in understanding and dealing with digital challenges?**

The expansion of the digital industry with different forms of digital services is influencing many of our activities and life in general. Life has become easier in some ways but the expansion nationally and globally has not been without problems. The expansion of the digital economy has happened in a period where neoclassical economics and neoliberalism has been dominant in many countries. An institutional framework encouraging business expansion and economic growth has been in place and business corporations have grasped the opportunities. Profit-maximization with limited concern for other values has been perceived as legitimate.

For many decades sustainable development has emerged as an issue with the UN SDGs and other manifestations. Focus on business profits and economic growth is increasingly questioned. We need to broaden our perspectives. Computers may be helpful for example in making marketing efforts of business corporations more efficient. Information is stored about the preferences of specific consumers. But SD tells us that sales cannot expand for ever. Rather the mining of rare materials and the levels of CO_2 and other pollutants should be reduced. This suggests that marketing textbooks in business management education need to be rewritten, a process that at best is in its initial stages.

We are getting closer to a "surveillance society" threatening privacy. Security issues at different levels have to be seriously considered. Democracy can be influenced positively and negatively. Intervention in democratic processes from illegitimate sources is a possibility. When studying specific industries, such as the digital industry or the oil industry, ecological economics as outlined in this paper can hopefully be of help. And some of the problems identified concerning the digital industry are shared with other industries.

Democracy has been suggested as an essential part of society and even as a component in defining economics. We should not be afraid of asking questions and raising issues even when they go against majority opinion. My conclusions are as follows:

- Economics plays an essential role in governing our societies. The monopoly of neoclassical economics has become a barrier not only for competing perspectives in economics but also for attempts to deal with the challenge of sustainable development
- University Departments of Economics and of Business Management have to become pluralistic in the sense that different paradigms and ideological orientations are represented.
- The joint stock company or the Limited Liability Corporation was constructed for specific purposes at a time where the context differed considerably from the present situation. The one-dimensional pursuit of profits (in the interest of shareholders) appears today to be incompatible with SD as a multidimensional idea of progress. The joint stock company may therefore be miss-constructed in relation to present needs. New ways of institutionally and legally framing organizations need to be considered.

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