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ISSN: 1396-3503
2003:5

Print: Uni.Print, Aalborg University

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Paper presented at 6th Nordic Conference on Environmental Social Science (NESS) June 12-14, 2003, Turku/Åbo, Finland

May 2003

Introduction

This article presents an analysis of Herman E. Daly's paradigm of ecological economics from a linguistic-rhetorical perspective.

As background for the analyses of Daly's paradigm, I will begin by sketching a long line in the philosophy of economics supporting my argument to regard Daly's theory as a kind of revival of an Aristotelian paradigm in the economy (Kern 1983). I will thereafter present the linguistic and rhetorical turn in the social sciences in recent years. In Daly's theory, it is apparent that a paradigm shift is connected with a change in some deep metaphors in the economic sciences. Changing the perception of the world requires the conveying of new and different images of that world (metaphors). And science also has a rhetorical function. Scientific imagery can be perceived as actions convincing us about what the world looks like.

From the "Aristotelian" to the "Newtonian" paradigm in economics

Adam Smith, the founding father of the modern economic sciences, was a professor in moral science. Smith regarded economics as a sphere in intimate connection with ethical and political problems. The connection with the Aristotelian tradition is visible in Smith's theory, where considerations of an economic nature are inextricably connected to those concerning the creation of the good society.

For Aristotle, man was a part of a community. The individual could not realise him/herself outside of the context of society. The highest goal was the development of virtue within the good society. Furthermore, society could only exist if it was self-sufficient and with the existence of some sort of sense of justice, allowing everyone women and slaves excepted to experience equal opportunity for development within the community.

Aristotle distinguished between two forms of economics: A good, natural form, wherein economics provided the means for attaining higher, non-economic purposes. Economics should serve the highest purpose, the creation of the good society.

"So one type of art of acquiring property is by nature a part of the art of household-management, in that either there must be available, or it must itself contrive that there is available, a supply of those things which go to make up a store of goods that are essential for life and useful for the association of state or household. And it looks as if true wealth consists of these things. For self-sufficiency in this kind of property, for purposes of a good life, is not limitless So then, that there is by nature a certain kind of skill in property-acquisition for household-managers and statesmen, and the reason why, is clear" (Aristotle 1995: 12(1256b 26-39).

However, economics could also assume another, unnatural form, wherein economics was a purpose unto itself.

"But there is another type of skill in acquisition, which people call "skill in acquiring goods" par excellence; and it is just to call it that. Because of it, there is thought to be no limit to wealth or property: many people suppose that it is one and the same as the kind we spoke of, because of their closeness. But it is neither the same as the one we mentioned, nor far from it: one of them is natural, the other is not, but comes more from a certain kind of experience and skill" (Aristotle 1995: 12 (1256B40- 1257a5).

And later. "The skill of acquiring goods is, then, as we have said of two kinds. One is to do with trade, the other with household management. The latter is necessary and commended, but the kind to do with changing-round is justly censured, since it is not in accordance with nature, but is from each other. Hence the technique of charging petty interest is very reasonably hated, for the acquisition comes from the coinage itself, not from the purpose for which coinage was provide. For coinage came into being for the sake of changing-round, whereas interest increase the amount of the thing itself. That is where it got its name from: for what resembles a parent is precisely the

offspring, and interest is born as coinage from coinage. And so, of all ways of acquiring goods, this one is actually the most contrary to nature" (Aristotle 1995: 16 (1258a38-b8).

This was the distinction used by the Hungarian-born American economic historian Karl Polanyi (1986-1964) in his famous definition of economics, the formal and the substantial:

"The first meaning, the formal, springs from the logical character of the means-ends relationship, as in economizing or economical; from this meaning springs the scarcity definition of economic. The second the substantive meaning, points to the elemental fact that human beings, like all other living things, cannot exist for any length of time without a physical environment that sustains them; This is the origin of the substantive definition of economic. The two meanings, the formal and the substantive, have nothing in common" (Polanyi 1977: 19).

Polanyi considered Aristotle as the central person in the history of economic science on behalf of this Aristotelian distinction between economics as a means and end unto itself:

"He will be seen as attacking the problem of man's livelihood with a radicalism of which no later writer on the subject was capable none has ever penetrated deeper into the material organization of man's life" (Polanyi 1957:66).

This connection and tension regarding the concept of economics has been lost over the last 100 years. The economy has increasingly been understood as an end unto itself, and in science the formal concept of economics has been the dominant one.

Economics, understood as the means of material production, was removed from society and nature in connection with the development of capitalist society and the specialisation of sciences. Nature and society were seen as fixed, external factors, "other things being equal," and the work in the economic sciences was concentrated on the development of models to understand and explain the economic allocation and growth in a society. It could happen, because men and nature in praxis

were increasingly commodified, contributing to the loss of the sense of the unique qualities of man and nature, which could be destroyed. Paradoxically, the field of vision was reduced while the sense of limitations was lost.

Subsequent to the breakthrough of the natural sciences in conjunction with the industrial revolution, physics stood as the prototype of science. Physics also served as the model for the economic sciences. Mathematics was not merely regarded to be the basis for physics, but for the other sciences as well. This was the background for the American economist Walter A. Weisskopf's (1979) apposite metaphor, when he referred to the classical and neo-classical economy as the "Newtonian" paradigm. This was the same model as the classical physics model for the system of the planet or for movements of a clock. The economy was construed to be a closed system, the dynamics of which were independent factors coming from without, and the system was self-regulated, moving in the direction of equilibrium.

In retrospect, the independence of economics, both in reality and theory, can be seen as a necessary liberation from restrictive and religious norms and as necessary for economic growth and the legitimacy of a new capitalist form of production. The main problem in the industrialised part of the world is no longer the abolition of general poverty and creation of further growth; rather, it has become a matter of transforming the growth in a more distributive and ecological manner, making it more socially and ecologically sustainable at both the national and international levels. This is the main message in the Brundtland report (1987), where the integration of economy and ecology - both in theory and in the political discussion process - is one of the elements in the strategy for creating sustainable development.

II: The linguistic turn in the social sciences.

The American philosopher Richard Rorty writes about three big turns in the humanistic sciences in the 20th Century (Simon 1990), which can be regarded in relation to a change in the understanding

of the role of language in society, whereby there has been a development from the idea of viewing language as a picture of reality. Firstly, Rorty writes about a "linguistic turn", i.e. that you move from considering language to be a picture of the world to considering it as an object unto itself. Secondly, he talks about an "interpretative turn", i.e. that a linguistic interpretation itself can also be considered to be an action. And thirdly, Rorty talks about a "rhetorical turn", i.e. that in all linguistic expressions there is some element of persuasion and that science can also be seen as an attempt at persuasion, as a form of rhetoric. Scientific theory, similar to any other text, represents an attempt at convincing the reader, listener, etc. of a point of view.

Rhetoric is normally understood as the science of oratory and can be defined more broadly as the art of linguistic expression, as practical argumentation.

The metaphorical nature of language.

All knowledge is metaphorical. We look at the world through patterns of pictures, and we understand objects and situations by transferring patterns of pictures from one domain to another domain. Something first attains its meaning and importance through the making of difference, and our outlook through language is always created from a specific position.

The importance of metaphors for language and science has been mapped in recent years by linguists George Lakoff and Mark Johnson (1980 and Lakoff 1987 and 1996) in the cognitive linguistic discipline. They have demonstrated how our language, everyday life and politics are penetrated with metaphors, and that we structure our experience on the basis of some fundamental pattern of pictures.

Through the creation of metaphors from language, we are all consciously or unconsciously producing and reproducing specific social realities. Scientific and political disagreement can often be traced back to opposing utilisation and stress of linguistic metaphors.

The worlds of scientific concepts very often consist of what the American technology philosopher Donald A. Schön has labelled "sleeping metaphors" (Schön 1963:79). Scientific work consists of, among other things, a consciousness-raising process about the unconscious metaphors you are marked by and the new metaphors you can create. By becoming aware of the unconscious metaphors you instinctively think and live in, you realise the unconscious limits of language for your outlook. This is what the ecological economists have done.

Different type of metaphors

Economists Arjo Klamer and Thomas C. Leonard (1994) have made a useful distinction between different types of metaphors. A normal type is what they call pedagogical metaphors: "Effective pedagogical metaphors typically provide mental images (<in our mind's eye>) with which the audience can visualize an otherwise complicated concept" (Ibid.:31). Pedagogical metaphors are often visualised and created mental pictures. One example is the circular flow-diagram that is used to illustrate coherence in the economic system, or the physical picture of the galaxies perceived as dots on a balloon, which is blown up.

Heuristic metaphors are another type of metaphors. They "serve to catalyse our thinking, helping to approach a phenomenon in a novel way" (Ibid.:32). Contrary to the pedagogical metaphor, the heuristic metaphor is merely the beginning to a number of questions and is often an opportunity for a whole new point of view and a theory for an area. Klamer and Leonard mention the concept "human capital" as an example of a heuristic economic metaphor and "work as a power struggle" as a heuristic sociological metaphor.

Finally, they operate with constitutive metaphors, "those necessary conceptual schemes through which we interpret a world that is either unknowable (the strong position, per Nietzche) or at least unknown" (Ibid.:39). Stephen Pepper's (1942) four world theses are mentioned organism, mechanism, formalism and contextualism where the mechanistic concept of the economy as a machine is an example. The constitutive metaphors can also be called "root metaphors".

The rhetorical tetrad

The American economist Donald N. McClosky (1986, 1990, 1994), the pioneer of the rhetorical point of view in economics, has constructed a more general model for different types of rhetorical tools. According to McClosky, all sciences use these tools when trying to prove their claims. McClosky illustrates four different means by which to reason and argue in a rhetorical tetrad:

The rhetorical tetrad: the four devices:

Fact from induction	Story from understanding	Closeness, Particularity
		< Axis of particularity <
Logic from deduction	Metaphor from adduction	similarity, generality
impersonal < < Axis of impersonality < < personal		

McCloskey 1994: 62.

The model shows the basic elements in the linguistic influence. The influence of a text (speech) on a reader (listener) can occur both through reference and use of: 1. Facts. 2. Logic. 3. Story and 4. Metaphor, and will often transpire through a combination of all these elements.

McCloskey explains his tetrad in the following manner:

"The four divide in various ways. Fact and logic are usually taken to be impersonal, which is to say uncontroversial; story and metaphor are taken to be personal. The division reflects the rhetorical situation, not God's truth. Many facts are more personal than some metaphors. Along the other axis, logic and metaphor appeal to similarity, fact and story to closeness, mere contiguity. A logic or metaphor will apply if one accepts the similarity of, say, ordinary reasoning to first-order predicate logic or of wolves to men. "Men are wolves", asserts a similarity between the realm of men and the

realm of wolves. By contrast, facts and stories depend on association, not similarity. We speak of a story "hanging together", which is to say that its episodes are naturally close to each other" (Ibid:62-63).

McCloskey asserts that an unhappy modernistic dichotomy between science and culture exists, whereby the positivist science, which builds on fact and logic, is contrasted with the humanities, which are founded in stories and metaphors. Some "poor" scientists have been made. "A scientist with half of the culture is half a scientist" (Ibid: 63).

For McCloskey, all sciences must work with all four devices in the rhetorical tetrad for creating holistic knowledge.
"Fragments of the tetrad are not enough for full thinking. The allegedly scientific half of the tetrad, the fact and logic, falls short of an adequate economic science, or even a science of rocks and stars. The allegedly humanistic half falls short of an adequate art of economics, or even a criticism of form and colour" (Ibid:63).

According to McCloskey, good science is characterized by the check and balance of the four devices: "One part of the tetrad checks the other's rank immoderation. The combination yields truth for science and wisdom for policy" (1990:4).

McCloskey's message in relation to the economic sciences, is that economics has been primarily marked by modernistic thoughts, i.e. only facts and logic have been accepted. However, the world of economics is also founded in metaphors and stories. He therefore set himself to the task of calling attention to the metaphorical and narrative dimensions in the economic mindset, which are necessary for bringing "economics back into the conversation of mankind" (1990:73).

According to McCloskey, science must be perceived as an ongoing conversation, where we are constantly trying to convince one other about new results and points of view. "Good science is Good

Conversation" (1986:27). Rhetoric must therefore be seen as an aspect of the social conversation. "Rhetoric is a theory of democratic pluralism and of general education in a free society" (1994:385).

III: A rediscovery of the Aristotelian understanding of economics: Herman E. Daly's story about creating sustainability in a stationary state

Daly's story about the crises of the economic sciences

The basic feature of the new paradigm can been seen in Daly's first scientific article in 1968 ("On Economics as a Life Science") and his first book about steady state economy from 1973 ("Toward a Steady State Economy"). The paradigm was developed in further books and articles in the following years. In a book authored together with theologian John B Cobb Jr. in 1990 ("For The Common Good"), and in his latest book in 1996 ("Beyond Growth"), he has given his paradigm a more theoretical dimension through a comprehensive critique of the dominant neo-classical growth paradigm, as well as developing a theory about a sustainable economy for development in his most recent book.

For Daly, all science has meaning for the way we actually conduct enquiries and act. It serves to construct points of view, lenses and legitimates our actions. Science is an important part of social problem-solving (Daly 1991:148).

Science always exists in a process of abstraction, whereby specific metaphors emphasise specific aspects of reality. Daly describes it in this manner: "To explain empirical phenomena, it was necessary to develop models that simplified reality in order to bring out fundamental features (Ibid: 26). The question is, "whether the abstractions are helpful and whether they direct attention and energy in the best ways as the shape policy and practice" (Ibid: 113). Different metaphors point to different problems.

Daly's theoretical programme is that the abstractions should be made according to what he refers to as, "the need of the real world" (Ibid: 20). Abstraction and creating metaphors can never be omitted. You can only choose better metaphors and be aware that they never give us the correct picture of the reality. "This will not put an end to abstractions, since all thought abstracts, but it will provide a basis for selecting better abstractions and for keeping the elements abstracted from constantly in view" (Ibid:20). The problem with the present metaphors and fundamental concepts in economics is that they cause us to overlook the essential things in reality, both the problems and possible solutions to our problems.

We are in a situation where the facts have developed in a "wild" (Ibid:1) manner in relation to the "unthinking economic dogma", as Daly writes. The reports about the ozone layer, climate change and biodiversity mean that the economists must radically alter their lenses, so that they can gain contact with reality.

Daly supports Victor Furkiss' description of the world situation: "Present-day society is locked into four positive feedback loops which need to be broken: economic growth which feeds on itself, population growth which feeds on itself, technological change which feeds on itself, and a pattern of income inequality which seems to be self-sustaining and which tends to spur growth in the other three areas. Ecological humanism must create an economy in which economic and population growth is halted, technology is controlled, and gross inequalities of income are done away with" (Ibid: 21).

The story of how to mistake the map and reality: The fallacy of misplaced concreteness.

On the theoretical level, Daly's analysis sketches the following picture of the crises of the economic sciences. It is situated in the same unhappy situation as a cross-country runner, who had lost his way and now has greater trust in a map than that which he sees in reality.

From the British philosopher Alfred North Whitehead (1861-1947), Daly has found the concept, "fallacy of misplaced concreteness." This fallacy consists of mistaking the abstraction of reality for reality itself, the map of reality for reality itself. Many scientists have difficulties in distinguishing between the abstractions of the reality and reality in itself. They happen to ascribe greater value to the abstraction than to reality itself.

Daly expresses this in the following: "The abstractions that are universally accepted are taken as the reality" (Ibid: 34). He continues, "Those facts not correlated to the theories have been largely ignored" (Ibid:31).

The most widespread and basic form for misplaced concreteness in society in general and in the economic sciences in specific are what has been referred to as "money fetishism" (Ibid: 37-38).

It consists of taking the qualities of the exchange values, the money, using it instead in terms of the concrete use value, i.e. the commodities themselves. What is supposed to be valid for the circulation of exchange values is also supposed to be valid for the change in the physical use values. It is taken for granted that if money can flow in a circular cycle, the physical commodities can do so in an effortless manner. You believe that if the money can grow with compound interest, so can actual value and physical growth also grow in the same way. Finally, you believe that the map of the reality is the only real reality, and not only one type (among may types) of maps of the reality. Ultimately it can end with you compulsively trying to arrange the reality according to a specific map of the reality. A lot of economists and politicians seem to display such beliefs and patterns of behaviour.

A great part of the economic sciences wants to be instrument for the construction of a specific political world instead of being engaged in developing new maps of reality, capable of revealing the variety of reality and be part of solving problems in new ways.

Daly calls this "primacy of deduction" (Ibid: 38), whereby there is a tendency to, "prize theory over facts and to reinterpret fact to fit theory."

Daly essentially regards this to be a form of idolatry. "We continue to mistake the symbol for the reality symbolized. Even after the symbol has become a gross misrepresentation of reality we continue to serve it" (Daly 1996: 218). A significant dimension of the scientific world has been engaged in promoting money fetishism and power worship. Daly writes, "the dominance of neoclassical theory, the great achievement of the discipline, has had a deleterious effect, working against true understanding of the human situation and misdirecting human efforts" (Daly 1990:129).

One reason for the misplaced concreteness is "disciplinolatry", which is the dominating "religion" in the universities and is caused by the disciplinary organising of knowledge. It results in an exaggerated abstraction. Daly is very critical in relation to the universities: "the more successful and exclusive are disciplinary goals, the less the contribution of the discipline to true understanding" (Ibid: 125). There are only few aspects, which the discipline studies separately, and the disciplines forget the rest, which they had abstracted from. The alternative is the development of a holistic thinking, "in service of community" (Ibid: 121). The aforementioned "wild facts" are going across the demarcations of the disciplines, which is why Daly's project is "to think through the discipline of economics as well as beyond it into biology, history, philosophy, physics, and theology," (Ibid: 2) and from this point, to reconstruct the theory.

According to Daly we are constantly living in a danger of falling for the misplaced concreteness. This can be minimised by: 1. Always to refer back to the concrete. 2. And always remember to take all of Aristotle's four categories of causes into consideration, especially the final one. And this is what Daly attempts to do.

The root-metaphors in the former understanding of economics and in the new ecological economics

One element of Daly's work with the development of a new paradigm for a steady state economy has been the generation of awareness and criticism of the stories and metaphors in the dominating schools of the economic sciences.

From "chrematistics" to "oikonomia"

Economics have their origins in the Greek word for household, oikos, meaning to keep house with resources. For Aristotle economy was part of social life and was woven together with ethics and politics in creating the good society.

In his reconstruction of the science of economics, Daly employs Aristotle's distinction between "oikonomia" and "chremastitics". Chremastitics concern "the branch of political economy relating to the manipulation of property and wealth as to maximize short-term monetary exchange value to the owner." On the other side, "oikonmia" is "the management of the household so as to increase its use value to all members of the household over the long run" (Daly 1990:138).

This is an example of two metaphors that Daly has picked up from the history of economic theory and is employing towards the construction of a new type of steady state economy. He describes the clash with the growth economy as a type of recreation of the Aristotelian paradigm, a "shift in prospect from chrematistics to oikonomia" (Ibid: 146). The one deals with exchange value in the short run, the other with use value in the long run. The one, "abstracts the market from the community and seeks its unlimited growth" (Ibid: 158), while the other considers the market in the light of the needs of society.

However, Daly does not only get his inspiration from the old Greek economic thinking, but from the Bible as well. He is of the general opinion that one should be cautious using the religion and the Bible to legitimate economic principles. However, one principle is valid for all economics, "the

principle of limited inequality:" "Thou shalt not allow unlimited inequality in the distribution of private property" (Daly 1996: 206). The old biblical principle expresses a philosophy of sufficiency.

It is Daly's opinion that the institutionalisation of such a principle is required in the modern economy. The modern debate about equality has been unfortunately polarised. The one wing has fought for perfect equality, while the other wing has fought for the right to unlimited inequality. There is a need for a compromise concerning limited inequality. In this regard, Daly is engaged in the justice of distribution, and he proposes specifically in the USA that the maximum income be not allowed to exceed 10 times the minimum income.

Many in contemporary society forget that the concept of a growth economy is exceptional in a historical context, and the steady state condition is the norm. "Historically the steady state is the normal condition; growth is an aberration" (Daly 1996:215).

From "machine" metaphor to "organism" metaphor

After the breakthrough of the natural sciences in connection with the industrial revolution, physics came to stand as the scientific prototype. This was also the case for the economic sciences, where mechanics and mathematics were considered both to be a model and as a basic instrument. The national economy was considered to be a big "machine of society". Briefly and symbolically, the well-renowned English economist W. Stanley Jevons (1835-82) referred to the economy in terms of "the mechanics of utility and self-interest."

The new mechanic root metaphor for the economy had both advantages and disadvantages. Daly does not one-sidedly dwell on the negative sides, considering also the liberating effect of the new model in the social situation in which he stood at that time: "Economics contributed to freeing individuals from hierarchical authority, as well as to providing more abundant goods and services" (Daly 1990: 6). Daly also has an eye for the liberating effect of the market society in a specific historical context.

In modern society, plagued with great environmental problems as it is, the machine metaphor is inexpedient if the economic science shall be used for analysing and solving the basic social problems. As opposed to the machine metaphor, Daly uses an "organism metaphor or a life metaphor" (Daly 1968). For him, the similarity between biology and economics is important and great. It is useful to compare the economic process with the regeneration and the decomposition of matter in the metabolic process, as well as a steady state and an evolutionary aspect in the biology and the economics. An increase of throughput of matter and energy can never be a goal in itself, as the finite physical output of the economic process is waste, and there is no rationality to maximise.

The difference between money and real economy: A circular stream of exchange value and a linear stream of matter/energy

For Daly, it is basic to distinguish between a money economy (consisting of exchange value) and a real economy (consisting of use value), breaking up the narrow "machine metaphor" that is caused by ignoring the real economy and only looking at the money economy. The economic process is a double process. It consists of a circular stream of exchange values, which are coupled on a linear psychical stream of matter-energy, which is circular. Both of these processes are connected to one another, but can be reduced to each other. The two concepts for economics (use- and exchange value) are both abstractions from the same reality and tell different things.

If you regard economics as a question of the circulation of money and ignore the physical-ecological aspect, you ignore specific things and problems. If you involve the physical-ecological aspect, other questions arise.

The economic process as a physical-economic process can be described as a process, where matter/energy change state from a condition of low entropy to a condition of higher entropy. What happens in the economic process is that the quantity of free energy is transformed from a quantity of less free, bound energy, meaning that the entropy can be increased. The entropy consideration means that scarcity must be imagined in a new way in the economics. In the established economics,

you only operate with a relative concept of scarcity, where the entropy point of view provides opportunity for an absolute concept of scarcity.

If the physical side is prioritised, you become aware of the physical limits for the economy. Contrarily, if the physical side is not emphasised, you are not seeing the limits for the scale of the economy and are looking at the GNP as a measurement of wealth. Additionally, if you see physical limits for growth, you are also aware of the distribution problems in connection with the economic process, whereas the distribution problem is less important in the event that you believe in limitless growth.

From an empty world economy to a full world economy: Between "cowboy" and "spaceman" economies: "The bull in a china shop-economy"

Daly set up two basic models (metaphors) for understanding economy: 1. On the one side "an empty world economy", where input and output to and from the economy are unlimited, and where the economy is a box, which hangs in the unlimited space. 2. On the other side, a "full world economy", where input and output is limited to an increasing degree by exhausting and the pollution of a reduced environment, a model wherein the economy is seen as a part of a system, which is limited by a finite eco-system, a box, which is situated in a bigger box.

Daly uses Kenneth Boulding's pictures of a "cowboy" and "spaceman" economics and works with the creation of a picture: "We are not cowboys because the existing scale of the economy is far from negligible compared to the environment. But neither are we spacemen, because most of the matter/energy transformations of the ecosystem are not subject to human control either by prices or by central planning."

Daly thinks that we are placed in a situation "Between the cowboy and spaceman economics is a whole range of larger and smaller "bull in the china-shop economics" where scale is a major concern" (Daly 1996:58).

From market economics to an economics for the community

In Daly's opinion, one of the great problems is the lack of awareness about what a market is, and what a market is for. Market is without doubt the most efficient institution to allocate the resources through competition and profit. However, market is always a historically-politically constructed institution. Furthermore, it has become necessary to design the market in a new way, so it is better suited to solve the urgent environmental and social problems.

If the market operates without deliberate, politically created frames, some weakness with the market will be obvious with a tendency to suspend itself. The market will create externalities, it has a tendency to create monopolies, and it tends to destroy the societal moral. According to Daly, the market is a good instrument to solve the allocation problem only because it produces the necessary information and the necessary initiative. However, the market cannot solve what Daly refers to as the scale problem, which is connecting the size of the entire economy in relation to the ecological system, or dealing with the distribution problem to secure a just distribution. As with the scale problem, this is a political problem.

For Daly, it is central that, "The market is not the end of society and is not the right instrument through which the ends of society should be set" (Daly 1990: 14). Daly will not merely distinguish between capitalistic and socialistic economies, but talk about a third model, which he sees between the two systems. This model he characterize as an "economy for the community" in contrast to a pure market economy.

Daly's conception of an economy for the community, does not embody a denial of the market, as many Marxists have suggested. To the contrary, he writes that, "the market can continue to play an extremely important role within a context that sees the purpose of the economy as the service of community" (Ibid: 19). Society shall not serve the market, but the market shall serve the political goals of society.

It happens that, "community is precisely the feature of reality that has been most consistently abstracted from in modern economics." Daly's goal is to construct a new metaphor, a new model for this part of the reality. He therefore talks about trying to "reinstate the critical aspect of reality" (Ibid: 43).

Stated in other words, one can say that Daly's mission is to deconstruct the concept of the market and reconstruct it in a new context. He does not throw it away; rather, he gives it another frame to function in. It is the creative theorist, who is able to analytically separate the concepts, thereafter uniting them and constructing a new system of concepts.

With the emergence of industrialism and capitalism, a departure from the former social structures occurs. The new economic ideas, which were formed, were also an element in the construction of a new social reality. Daly describes this reduction process with reference to Karl Polanyi's (1957) analysis, "Land was abstracted from the totality of the natural world and treated as an exchangeable commodity. Work time or labour was abstracted out of life and treated as a commodity to be valued and exchanged according to supply and demand. Capital was abstracted out of the social inheritance, no longer to be treated as a collective patrimony or heirloom but as an exchangeable source of unlearned income to individuals" (Ibid: 61).

The steady state economy paradigm seen in relation to the growth economy paradigm

Economy is not a goal in itself for Daly; rather, it is merely an instrument for realising the social community. Therefore the concept of economy for the community.

Where established economics are engaged in the development of a model building on exchange values, Daly's model for a steady state economy is a model for the real economy, a concept about the physical world.

There are some specific basic assumptions (metaphors) in the established growth economy about nature and mankind. Nature is merely perceived as raw materials and considered to be a factor of production rather than as a value in itself a living organism with its own balances, circulation and purpose.

Simultaneously, they have a picture of mankind, according to which man can also be understood as a factor of production and as a consumer, one-dimensionally guided by material utility with unlimited material needs.

These two basic assumptions infer that the concept of nature provides opportunity for unlimited growth, and the concept of mankind implies that economic growth is desirable.

Opposite, Daly set some basic alternative assumptions: 1. On account of the law of entropy there is not only a relative scarcity, but also an absolute scarcity of natural resources, which can not be overcome by technological means. 2. The human being has limited absolute needs and unlimited relative needs and is seen as a collectively living being, which is multidimensional with contrasts and is connected with the nature.

"Homo Economicus" or "Person in the community"

Instead of the traditional economic picture of man as "homo economicus", Daly forwarded an alternative model or picture, "person in community". He wrote that, "human beings are fundamentally social" (Ibid:164).

The danger with Daly's model, and "Homo Economicus" in particular, is that the picture "is a radical abstraction from social reality" (Ibid:161). It is not the entire reality. It "inevitability begins to function as a norm to which reality is made to conform by the very policies derived from the model" (Ibid:162). Economists are using their model-instruments in such a way. They are not merely instruments to gain knowledge about reality. By using the models, they also try to be co-

producers of a reality after the premises of the model. They try to transform the human being into "homo economicus".

This constructivist view on economic theory is central to Daly's analysis, "the individualistic model of economic theory leads to advocating policies that weaken existing patterns of social relationships" (Ibid: 163). "Economics based on Homo Economicus as self-interest individual commends policies that inevitably disrupt existing social relationships" (Ibid: 164).

Daly is aware that the model or metaphor ("person-in-community" is also an abstraction. It fails to cover the whole reality. It has overlooked "the political animal", "the will to power" (Ibid:182), as well as "the will to sacrifice" (Ibid:186). Moreover, the strong human tendency "to divide the world into us and them" (Ibdid:188), where "feelings for one community becomes enmity toward others." "The will to power, the will to sacrifice, and other characteristics of human being abstracted from by the model of person-in-community are of utmost importance" (Ibid:189).

Society and community

Community and society normally belong to one another. Daly calls "community as one form of society" (Ibid.:171). However, a society can be so impersonal, that it lacks community. A society can only be considered to be a community if:

"1. There is extensive participation by its members in the decisions by which its life is governed. 2. The society as a whole takes responsibility for the members, and 3. This responsibility includes respect for the diverse individuality of these members" (Ibid: 172).

According to this definition there can be a totalitarian society, but not a totalitarian community. Community is here defined as a question of degrees, where the good community is defined as something, which simultaneously secures participation, collective responsibility and individual autonomy.

According to such an understanding of community, the goal is naturally that societies, "become more communal" and "Economics for community is economics that encourages these developments" (Ibid:172). Daly says that there must be a close connection between economy and politics. "A political community" cannot prosper, if there cannot be exercised a considerable control over the economic life. Therefore he says that political decentralization must be bound together with economic ties. He writes that, "our present legal system should become more decentralized in dealing with economic issues, but should maintain its present degree of centralization with respect to civil and human rights" (Ibid:175). Here he tries to combine liberal and communitarian views. The question about the fundamental rights must be an issue for the states, among them the question about a basic income.

The more explicit definition of steady state economics

Daly's concept of steady state economics is a physical concept. It is an economy with constant stocks of men, products created by people (physical wealth) maintaining a desired chosen level with the least possible flow of matter and energy for maintaining the chosen stock of men and products.

What happens with a normal economic growth-process is that you try to increase utility, both by increasing the flow and the stock. However, the attempt to maximise utility in a steady state economy should take place in the chosen stock, where technological development places you in a position to increase efficiency of maintenance through endeavours to minimise the flow.

Steady state economics require other institutional structures than is the case with growth economics for fulfilling the goals of sustainability, satisfaction of basic human needs and social justice. There must be established: 1. An institution for stabilising the stocks of capital. 2. An institution for stabilising the population. 3. An institution for distribution, which reduce the inequality.

Sustainability can only be achieved if political limits for the flow of matter and energy from nature into the economic system is fixed, allowing the capital stock to be stabilised. You must politically

decide on the level that the capital stocks in society should be in balance. This happens by establishing political quotas for the use of various natural resources. It is subsequently left to the market to allocate these quotas of matter and energy that have been determined by the political system.

Additionally, Daly also proposes an institution for population that can secure that the population can be stabilised via transferable birth licences.

Justice cannot be created by the market; instead, it must be created through the establishment of political norms for minimum incomes together with limits for maximum capital

"Distributional justice, ecological balance and population control are matters, that are too important to be left to be determined by the market, that is simply unable to take such conscious account of such costs because the costs are usually not obvious, are delayed, and do not fail mainly on the decision maker. They involve time horizons and interdependence horizons beyond those of rational individuals acting independently" (Daly 1977:89).

Connections between sustainability and social justice

For Daly, the three institutions stick together. The institution of quotas for resources cannot be imagined without a complementary institution for distribution. An institution for quotas for resources will in itself sharpen the conflict between labour and capital. Furthermore, an institution for distribution requires limitations on the population.

Generally, you can say that the increasing importance of the distribution problem is closely and logically connected with the attempts at finding a solution to the growth problem: "We can not renew from growth to a steady state situation without exactly limiting the inequality (Daly 1997:307). Considerations about a basic income must necessarily be connected with parallel notions

concerning a maximum income: "In a steady state economy the poor must be poorer, if the rich become richer not only relatively, but also absolutely" (Ibid:295).

Growth can be looked at as an attempt at hiding and failing to take the distribution problem seriously. Or you can also say that you try to come out of the distribution problem and the fight about distribution in an easy way through growth. If all are able to get a little more, then it does not matter that inequality continues to exist.

Daly's idea about a basic income is closely connected with his views on justice as another and higher goal than equality. Unlimited inequality is unacceptable. As such, society will loose its power of coherence. However, complete equality is not desirable either it would be tyrannical, failing to allow for the differences between men. Limited inequality is necessary and fair, and it is guaranteed by a basic income.

"The goal for an economics of the community is not equality, but limited inequality. Complete equality is the collectivist's denial of true differences in community. Unlimited inequality is the individualist's denial of interdependence and true solidarity in community" (Daly 1990:331).

It is also a mark indicating that the community economics is an attempt at creating a new economics between the liberal and socialist models. How should we understand Daly's three institutions? Daly says, that they are conservative: "these institutions build on the existing bases of price system and private property and are thus fundamentally conservative" (Daly 1977:51). But conversely you can also say, that with his politically fixed limits for scale and income, he sets new limits on the market, which has got some to see the stationary state as a plan-ecological system. Daly himself asserts that it is neither capitalistic nor socialistic, regarding it instead as a third model. Both capitalism and socialism have agreed about the importance of growth.

They are institutions that permit the creation of stability on the macro-level, at the same time opening for variability on the micro-level. By setting up limits and controls on the macro-level, a

space is created for indefiniteness, innovation and freedom for individuals on the micro-level. Here you can rightly say that steady state economics represents a dynamic economy, as the possibility for variation and innovation is actually greater than in a growth-economy. With growth, part of the change is purely quantitative, while the change in steady state economics is forced to be qualitative to a greater degree.

Daly also stresses the connection between institutional and attitudinal change. In itself, these three institutions can create a steady state economy. Change of attitudes are necessary (moral growth). "Institutional changes are necessary but insufficient. Moral growth is also necessary but insufficient. Both together are necessary and sufficient, but the institutional changes are relatively minor compared to the required change in values" (Daly 1977:75).

The universal effects of a paradigm shift

On the paradigmatic level, Daly's ecological economics represent a paradigm shift in relation to the neo-classical economics. Daly points out that a paradigm shift appears in changes in language and metaphors on the pre-analytical level. It entails changes in the basic images of men, society and nature.

Daly argues that economics is more than market-economics. He advances a new, tense and multi-dimensional concept of economics consisting of a series of dualisms. Economics has to do both with: 1. Market and moral. 2. Market and community and 3. Chrematistics and Oikonomia.

The fault with modern market economics is that it will not recognise some assumptions, basis and limits in relation to society and nature, and that there is a lack of a political community to establish these limits. The market has become a goal unto itself and the dominating sphere in the society rather than a limited means and merely one of many spheres.

The market mechanism in itself is a very good instrument. However, market economics must be embedded in an economics for community, a moral economics, a steady state economics or an economics of a sustainable development, which for Daly are all synonym concepts for a new type of economics which emphasises different aspects of this new economy. Daly doesn't propose a dissolution of the dualism and the tensions, but another valuation, granting a higher priority to moral, community and ecological sustainability in relation to the market.

Methodologically, this means a paradigm shift, i.e. that you acknowledge or see a new problem, which reverses your variables in the theoretical model. The acceptance of the concept "sustainability" means a shift of perspective from chrematistics to oikonomia (Daly 1990:167). It is to accentuate a new problem, which does not appear as a problem in the neo-classical theory. Methodologically it means that you totally reverse the factors in the economic model. In the neo-classical standard-model, some non physical qualitative factors (technology, preferences and the income distribution) are given, and you then see how the physical factors can be adapted to an equilibrium, which is stated by the non-physical parameters. In the sustainable development economics, it is the opposite. Here you ask how the non-physical variables (technology, preferences, distribution and lifestyle) can be brought in a valid and fair balance with the complex biophysical system. The physical quantitative amounts are the given, and the non-physical, qualitative life-pattern are the variables.

Methodologically, Daly's analysis illustrates what characterises a creative architect of a paradigm. The ability to use, develop and combine "old" metaphors from the history of a discipline and put them in a new context, to create new metaphors.

Thus Daly's steady state economic concept is created from elements from Aristotle's concept of "oikonomia", John Stuart Mill's idea about "stationary state", elements from Karl Marx and Karl Polanyi (commodifications-process), Thomas Malthus (theory of population), together with a combination of theoretical innovations by the economists Irving Fisher (the concept of income),

Kenneth Boulding (national account and stock-flow-model) as well as Nicholas Georgescu-Roegen (the meaning of thermodynamics).

At the same time, Daly is attached to the old understanding of economics as a moral science, and the new theoretical knowledge among a number economists about the understanding of the economy's connection to growth and nature (Kenneth Boulding (1910-93) and Nicholas Georgescu-Roegen (1906-94)).

The meaning of faith and basic values for the paradigm shift

The exceptional aspect of Daly's analysis is that he discusses the relationship between science and religion. For him, the necessary paradigm shift in the economy is closely connected with the change in outlook regarding some basic values. Thomas Kuhn also called attention to the meaning of faith for paradigm shifts, though not in a particularly religious manner.

For Daly, the relationship between science and religion must be reflected in a new manner. The scientific world is marked by what he calls a materialistic cosmology, which sees the life in cosmos as an absurd coincidence. Purpose and consciousness about value has come into the world of human beings without connection with rest of the world.

On the other side, Daly and Cobb Jr. subscribe to Whitehead's process-philosophy. They assert that there is a need for a bio-spherical vision. They try to establish a form of bio-spherical perspective, which on the one side is distant from an eco-sophical understanding, and on the other side from a pure anthropocentric understanding, i.e. an understanding that only sees mankind in the centre. They proclaim as teist (Good-centred) Christians and try by that means to combine teo-centrism with a biospheric perspective. At this point, the essential dividing line is not between man and nature and other animals, but between God and the Creation.

For Daly it means, that there is no need for formulating what he calls a more coherent cosmology. If it does not succeed, he does not believe it is possible to bring about the revolution that we require.

Daly assumes, that fundamentally emotionally, mankind is connected with the nature, and therefore can be mobilized to defend it. His simple question about it will succeed to prevent great ecological disasters: Can you imagine, that we as men will fight for something, which we are not connected with, and which we do not love? No. We will not fight for something that we do not love.

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