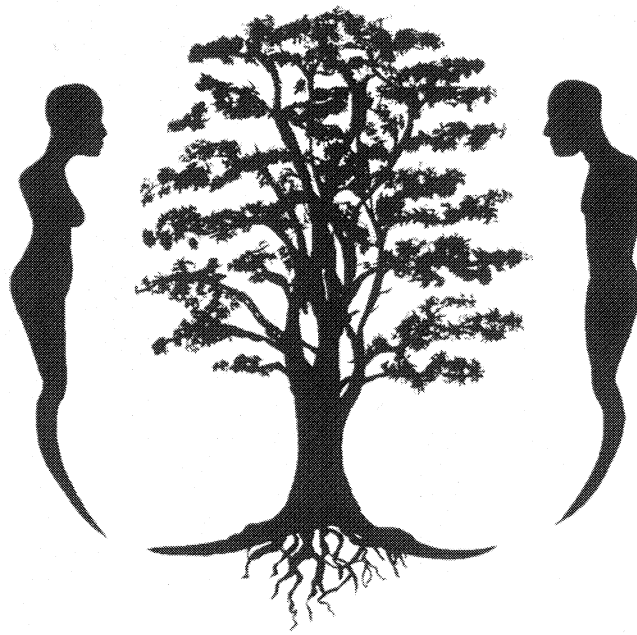
ENVIRONMENT, EMBODIMENT AND GENDER



Edited by Ane Faugstad Aarø and Johannes Servan

The Research group for Phenomenology and Existentialism,
Department of Philosophy, University of Bergen

This book is published with the support of The Centre for Ecological Economics and Ethics at Bodø Graduate School of Business, Norway.

Material in this volume has been previously published in Parabola Magazine (volume 31, number 1, 2006) and in *Sartre on the Body,* edited by Katherine J. Morris (Palgrave Macmillan 2010), and reprinted here by permission from the authors and publishers. The essays are "The Invisibles" by David Abram, and "Notes from a quartet" by Monika Langer. The latter appears in *Sartre on the Body* as "Sartre in the Company of Merleau-Ponty, Foucault and Duden."

ISBN 978-82-997597-5-5

Printed in Norway
Layout, setting and front page design by Andreas Servan
Printing: Allkopi, Bergen, Norway

Circulation Economics – An Ecological Image of Man Based upon an Organic Worldview

STIG INGEBRIGTSEN & OVE JAKOBSEN

Introduction

To cope with the main challenges we are facing today, overexploitation of resources (at a global level), unfair distribution of wealth (nationally and globally), food safety, and inefficient use of resources, we argue that it is necessary to make fundamental changes in economic theory and practice. It is necessary to establish new forms of interaction, taking into account and respecting the multitude of values. We therefore discuss a necessary change in worldview, from a mechanic to an organic worldview. In addition we focus on the concept image of man, a change from economic man to ecological man. Ecological man seeks sufficient happiness for the greatest number of people in contrast to economic man who seeks personal gain. With this change we need to elevate the level of analysis from the traditional micro level to the meso level. This means focusing on dynamic networks of actors in the market and not on the individual actor. To sum up, it is difficult to discuss and solve problems connected to environmental and social responsibility without making fundamental changes in the existing paradigm of economics.

According to economist Paul Ormerod it is a problem that economists normally suffer from a kind of metaphysical blindness, assuming that economics is a science of absolute and invariable truths, without any presuppositions. He argues that some economists go as far as to claim that economic laws are as free from metaphysics or values as the law of gravitation. In other words, since economic laws are compared with classical physics we can conclude that economics is based upon a mechanical worldview. Ormerod asserts that "conventional economics offers a very misleading view of how the world actually operates, and

needs to be replaced" (Ormerod cited in Pearce 2001, p. 5).

Joseph Pearce, the author of the book *Small is still beautiful*, goes a step further and argues that the failure to address metaphysical questions has led to many of the central errors of conventional economics. Therefore, economics needs an internal metaphysical critique. Instead of focusing on classical physics, quantitative measures, and products, economists should discuss metaphysics, qualitative values, and processes (Pearce 2001). In our opinion the critique from Ormerod and Pearce are both valid and relevant for understanding the symptoms of the failure of mainstream economics. By "mainstream" we mean the presupposition within a certain branch of theory, methodology and worldview that imposes a degree of conformity, by which the boundaries of the economic discipline is determined.

In this article we focus on changes at the ontological level, i.e. instead of discussing how to reduce CO_2 emissions, or how large amounts of money the governments should spend to handle financial crises, we will pay attention to the worldview and image of man characterizing mainstream economics. In our opinion both the climate change and the financial crises are symptoms of a deeper level of conflict between economy, nature and society. The American economist Kenneth Boulding argues that "economics has rested too long in an essentially Newtonian paradigm of mechanical equilibrium and mechanical dynamics" (Boulding 1981, p.17) and in relation to the image of man the Rumanian/American economist Nicolas Georgescu-Roegen states that the economic process "is dependent on the activity of human individuals" (Georgescu-Roegen 1966, p. 97). "Without the concepts of purposive activity and enjoyment of life we cannot be in the economic world" (Georgescu-Roegen 1966, p. 98).

Since the mechanism of mainstream economics leads to unsolved problems, it is necessary to develop a new economic system in harmony with nature and society, inspired by an organic worldview and an ecological image of man. In order to ensure economic sustainability, it is necessary to establish interaction between humans and nature based on nature's basic processes, and respect for nature's inherent value. When the term human being is used, we do not just think of man as an economic operator, but more generally of humans as complete and integrated persons, both individually and collectively.

Alfred North Whitehead's philosophy of organism confronts the established mechanical worldview which describes the whole of nature (included culture) as big machines. He explained the success of

the mechanical worldview by referring to the separation between "the physical world" and "the life world." This dualism is deeply rooted in European philosophy from the beginning of the seventeenth century. Whitehead argued that the separation between body and mind still characterizes most sciences in the modern world; "The notion of the mechanical explanation of all the processes of nature hardened into a dogma of science" during the 20th century (Whitehead 1967a, p. 60). Quite in contrast to the mechanical worldview Whitehead holds that the world has to be understood in terms of an organism, characterized by interrelatedness and processes of change.

One important consequence of these changes in worldview and image of man is that the market cannot be reduced to mere parts in a mechanical system, governed by law and scientific rationality. Instead the market consists of interconnected partners integrated in a living natural and cultural system. A more complex and dynamic framework takes into consideration that economic behavior is both multi-faceted and context dependent. For example, it is obvious that contextual factors including collective beliefs in ethical norms and pro-social orientation of economic behavior will contribute to avoiding some of the fallacies in mainstream economics.

Organic thinking is based on the concept of culture as a collective phenomenon, not as the sum of individuals. Economy resembles a living organism, which means that its order, structure, and function are not imposed by the environment but are established by the humans in the system itself. As a consequence of this comprehension, economics can no longer be studied solely in terms of causal models that describe the interplay between isolated actors in the market.

Circulation economics is an economic model inspired by the principles found in the philosophy of organism. In the following paragraphs we will describe and discuss some of the main differences between circulation economics and mainstream economics along the following dimensions: mechanical worldview vs. organic worldview, economic man vs. ecological man, linear value chains vs. circular value chains, competition vs. cooperation, and value monism vs. value pluralism.

From a mechanical to an organic worldview

The mechanical worldview is characterised by the idea that pieces of matter are isolated atoms, related to each other purely externally. One

consequence of the mechanical worldview is that the universe is thought of as determined by causal laws. Since, everything has a defined cause and gives rise to a defined effect, the future may – in principle – be predicted with absolute certainty. There is no capacity for creativity, spontaneity, self-movement, or novelty in the mechanical worldview. In this perspective, the market is nothing more than a mere mechanism based on the interplay between egocentric individuals seeking their own ends.

According to Georgescu-Roegen (1971) and the co-founders of ecological economics Herman Daly and John B. Cobb Jr. (1994), modern mainstream economics builds upon mechanical presuppositions. Inspired by the mechanical metaphor, players in the market are supposed to act independently of one another in order to optimise their self-interests. Market theory presupposes that economic players act autonomously in most market transactions. The tendency to model economic concepts and theories in accordance with the mechanical paradigm has become a severe handicap for the development of sustainable economics. According to Whitehead, an important precondition in the mechanical worldview is that the coordination in nature is regulated through external rules of connections. This is called *the doctrine of laws as imposed* (Whitehead, 1967b, p. 113).

In much the same way, the norms regulating the interplay between individuals in the market are based on mechanical solidarity. Durkheim uses the term "mechanical" to illustrate that the social molecules "lack any movement of their own, as do the molecules in inorganic bodies" (Durkheim, 1991, p. 84). This does not mean that the term "mechanical" indicates that the solidarity is produced by mechanical or artificial means. Instead mechanical solidarity represents an "analogy with the cohesion that links together elements of raw materials, in contrast to that which encompasses the unity of living organisms" (Durkheim, 1991, p. 84).

The mechanical worldview does not leave much room for ethics or, for that matter, aesthetics. If nature is valueless there is, on the one hand, no reason to feel deep respect and esteem of natural or artistic beauty. On the other hand, there is no reason to orient our practices around such values. In the field of economics it is obvious that ethics is often reduced to purely instrumental values. In much the same way as for aesthetics, ethics is regarded as a competitive tool to increase the market value of the firm or the product (Porter and van der Linde, 1995).

We argue that mainstream economics lacks a holistic, comprehensive view, and is limited by a narrow and specialized perspective which is

unable to grasp the idea of sustainability. As opposed to this perspective, circulation economics is based upon an organic worldview which asserts that "Greater wholes have qualities and character not present in any of their constituent wholes (parts), one must seek to understand the greater whole in order to understand its parts." The concept "holism" stems from Greek "holos", referring to a sense of understanding "in terms of integrated wholes whose properties cannot be reduced to those of smaller parts" (Capra 1982, p. 21). In accordance with this definition, Smuts, in 1926, argues that "everywhere we look in evolution we find a succession of higher order wholes; each whole becomes part of a higher-level whole" (Wilber 1983, p. 304).

The American physicist and systems theorist Fritjof Capra's (1982) interpretation of the organic worldview as the idea of living systems having a high degree of "nonlinear" inter-connectedness enjoys many similarities with Whitehead's philosophy of organism. Both agree that interconnectedness is non-linear in the sense that freedom is considered the claim for self-assertion. Spontaneity and originality of decision are the supreme expressions of individuality. In a civilized society the general end is that the variously coordinated groups should contribute to the complex pattern of community life presupposing that individual freedom within each group should be possible without the destruction of the ends of the whole society. In this perspective, the individual and the community create each other and require each other at the same time.

One important consequence of the organic worldview is that the market cannot be reduced to parts in a mechanical system, governed by law and scientific rationality. Instead, the market consists of interconnected partners integrated in a living natural and cultural system. A more complex and dynamic framework takes into consideration that economic behavior is both multi-faceted and context dependent. For example, it is obvious that contextual factors such as collective beliefs in ethical norms and pro-social orientation of economic behavior will contribute to avoiding some of the anomalies (problems of scale, equity and efficiency) in mainstream economics.

Within the organic perspective it is reasonable to replace mechanical solidarity with solidarity based on internal coordination and cooperation. According to Durkheim (1991), such a change will contribute to the development of what he referred to as organic solidarity. By this he meant that the recognition that everyone depends on everyone else, in the same way as the parts in an organism, will contribute to extended activities to find solutions in the best interest of the community. Organic thinking

is based on the concept of culture as a collective phenomenon, not as the sum of individuals. Economy is like a living organism, which means that its structure and function are not imposed by the environment, but are established by the system itself. Following this reasoning we can conclude that the doctrine of 'laws as immanent' (Whitehead, 1967b, p. 112) represents an important condition in the holistic and teleological perspective of the organic worldview.

According to Allan Savory, author of the book *Holistic Management*, an immediate consequence of the discussion is that no integrated entities – whether they be the market or ecosystems of local communities – "can be managed without looking inward to lesser wholes that combine to form it, and outward to the greater wholes of which it is a member" (Savory 1999, p. 17). Through holistic approaches, the objective is to understand problems in a manner conducive to the development of more integrated dynamic solutions than those possible within a more traditional atomistic framework of understanding.

The shift in perspective from a mechanical to an organic understanding of reality in the field of economics has a major bearing on a number of different economic phenomena. From an organic perspective, many of the problems facing us today appear to result from a limited frame of understanding. If we change to an organic worldview, we can easily realize that:

> the economy is merely one aspect of [...] a living system composed of human beings in continual interaction with one another and with their natural resources, most of which are, in turn, living organisms. (Capra 1982, p. 195)

An important consequence of the transition from mechanism to organism is that economic operations can no longer be reduced to a competition-based game between autonomous actors in a market. As in nature, where the individual parts influence one another mutually, it is particularly relevant to describe the interaction between the actors in the market through mutual dependence and cooperation.

From economic man to ecological man

Inspired by Adam Smith's theories, "the economic man" was created by John Stuart Mill in 1836 as a "hypothetical subject, whose narrow and

well-defined motives made him a useful abstraction in economic analysis" (Persky, 1995, pp. 222-223). The economic man is an expression used to explain and predict the behaviour of the rational economic agent, always trying to maximize his own self-interest. "The assumption of a rational, self-interested, and utility-maximizing individual is the model of humans underlying standard economic theory" (Siebenhüner 2000, p. 15). But it is relevant to question whether the economic man provides the best approximation to the behaviour of the actors in the market. The real issue is "whether there is a plurality of motivations or whether self-interest alone drives human beings" (Sen, 1987, p.19)

With reference to modern economies, the winner of the Nobel Memorial Prize in Economics 1998, Amartya Sen argued that there is neither evidence for the claim that self-interest maximization gives the best approximation to actual human behaviour, nor that it leads to optimum economic conditions. As Smith puts it, "man, according to the Stoics, ought to regard himself, not as something separated and detached, but as a citizen of the world, a member of the vast commonwealth of nature" and "to the interest of this great community, he ought at all times to be willing that his own interest should be sacrificed" (Sen, 1987, p. 22). The complex structure of "self-interested behaviour" has, according to Sen, three distinct features (Sen, 1987, p. 80);

- Self-centred welfare: A person's welfare depends only on his or her own consumption (and in particular it does not involve any sympathy or antipathy towards others).
- Self-welfare goals: A person's goal is to maximize his or her own welfare, and – given uncertainty – the probability weighted the expected value of that welfare (and in particular, it does not involve directly attaching importance to the welfare of others).
- Self-goal choice: Each act of choice of a person is immediately guided by pursuit of one's own goal (and in particular, it is not restrained or adapted by the recognition of mutual interdependence of respective successes, given other people's pursuit of their goals)

According to this line of reasoning, we postulate that "the economic man" represents an important precondition in mainstream economic models.

In developing homo ecologicus, the ecological economist Becker uses "recent discussions on virtue ethics" (Becker 2006, p. 20) as a central source of inspiration. He refers to Sandler and Cafaros' book

on *Environmental Virtue Ethics* and states that this thought "depicts a dimension of the human being which supplements the dimension of homo economicus and homo biologicus and provides a new philosophical basis of research for ecological economics" (Becker 2006, p. 20). The relationship between the human being and nature is described beyond economic self-interest and biological survival. Virtue ethics is one of the three major approaches in normative ethics, with the founding fathers being Plato and Aristotle. This approach emphasizes the virtues that constitute a moral personal character, in contrast to duties or rules (deontology) or consequences of actions (consequentialism).

A moral personal character is characterized by the ability to be aware of, to identify and to handle moral dilemmas in real life situations. Virtues can be seen as characteristics defining moral persons. In ancient times common virtues were loyalty, courage, moderation and justice. Virtue ethics persisted as the dominant approach in Western moral philosophy until at least the Enlightenment. In addition, a good and moral life - according to virtue ethics - is a life responsive to the demands of the world and this is also an important point in ecological economics.

In addition to this, Aristotle argued that the existence of virtues provides necessary but not sufficient conditions — external goods are also needed. Both can be seen as central elements in ecological economics. One important criticism of virtue ethics is that it is hard to define rules that provide guidance for practical action. The same criticism also hits the ethics of ecological economics.

From linear to circular value chains

In the perspective of linear economic value chains, environmental problems caused by exploiting natural resources (input) often appear separately from environmental problems connected to pollution and waste management (output). The reason is that these problems seldom occur simultaneously – neither in time nor space. An important aspect of circulation economics is that efficient utilization of resources presupposes a holistic and contextual view of resource and waste management.

Fig. 1 - Linear value chain

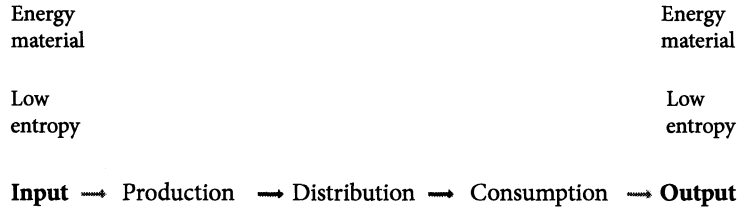


Figure 1 shows how resources flow through an "open-ended input/ output" economy, where the value chain starts with production and ends with consumption. In such a system there is a great chance that neither matter nor energy is optimally utilized. This often results in a large unexploited potential. According to Georgescu-Roegen (1971) the problem is that the level of entropy is almost identical in the resources on the input side and the waste on the output side (low entropy). The term entropy was introduced by the German physicist Rudolf Clausius in 1865. Entropy represents a combination of "energy" and "tropos" the Greek word for transformation, or evolution. Because this evolution is accompanied by increasing disorder, entropy can also be seen as a measure of disorder. Entropy is a measure of how useful energy is for human purposes. When input and output have nearly the same low entropy a great unexploited potential exists in the waste. The concept "waste" provides an illustrative indication of all forms of output being regarded as worthless. Georgescu-Roegen argues that waste was previously omitted from economic considerations, as waste by definition has no value (Georgescu-Roegen 1971).

To contribute to an efficient use of resources that meets vital human needs while being in accordance with the goal of sustainable development, the linear perspective on the value chain in economics has to be extended towards a circular perspective. A general goal is to introduce systems that lead to increased production combined with decreased extraction of raw material and amounts of waste. At present, we find ourselves at the beginning of the search for an assertive, integrated

theory and practice of environmental management (Ingebrigtsen and Jakobsen 2006, p. 581). An important task of circulation economics is to take care of natural and cultural resources in a manner that benefits the individuals, society and eco-systems in the long run. Circulation economics encompasses everything related to production, distribution, consumption and redistribution of goods and services.

This means that the most efficient solution to a problem facing one company can be found in cooperation with one or more actors in a different part of the circular value chain. Instead of describing the market as an aggregate of autonomous actors the market is described as interconnected eco-systems in which energy and matter circulate.

If systems are established that contributes to the inclusion of "waste" as an input factor in a new production process, the "waste" will change character and become a valuable "residue product" or a potential input factor for new production – replacing virgin raw material. Then waste has to be seen as a product that has real value and can be sold based on the need for different waste fractions of the waste. This demands that waste is sorted out in fractions that are needed and can be used in a new production process.

The transition from a linear model to a circular model (figure 2.) implies that the ends of the value chain are tied up through connective links. In this way it is possible to connect the goals for the reprocessing of waste with increased use of recycled materials in production of new commodities.

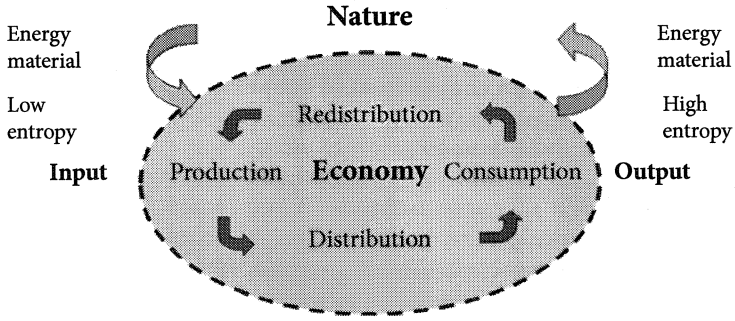
> The strategic solutions in circulation economics are based on an operational definition of the complete process of procuring raw materials, production, disposal and reprocessing as a unified whole. (Ingebrigtsen and Jakobsen 2006, p. 581)

This means that input and output activities are interconnected. Hopfenbeck (1993) named the connection between consumption and production "retro-distribution." The concept "redistribution" was chosen because redistribution in principle fulfills the same functions as distribution. The difference is that matter and the flows of energy move the opposite way.

We have chosen to use the metaphor "circle" to denote the interaction between the agents in the market, as there are several common features with circular connections between different entities in the eco-systems. In nature, resource-efficient solutions have been developed based

on the principle of matter and energy circulating in closed and open circles within, and between eco-systems. Resource efficiency is based on the different species having developed specialized qualities ensuring maximum utilization of the limited amounts of matter and energy available.

Fig. 2 - The circular value chain



The circular processes in circulation economics are inspired by the processes in eco-systems. CO_2 provides an illustrative example of a waste product from animals which constitutes an important nutrient for plants. Dependent on the perspective CO_2 can thus be both a waste agent and a nutrient. Another example is excrements from animals that are decomposed into fertilizer for plants and micro-organisms in the soil. Micro-organisms thus live from waste from plants and animals, while ensuring that the soil is supplied with nutrients which provide the basis for life for plants and animals.

It is however important to stress that recycling is not always the best solution. Recycling may be inefficient, both in economical and ecological terms. From an environmental point of view, it is not wise to use more energy or matter to keep the recycling process going than we gain from it. The best way to solve environmental problems connected with the

handling of waste is to generate less waste and it is also important to notice that "wear and tear" contributes to contamination and makes recycling impossible for practical purposes. But recycling is an important tool to reduce the amounts of waste on the trash piles and at the same time produce valuable matter for production. Hence, it is not unreasonable to claim that recycling contributes to reducing the pressure on eco-systems – both on the input and on the output side of the economy.

An alternative to recycling is incineration, through which the energy contents are extracted. But this process can only happen once. When the material is destroyed by fire it is lost forever. By recycling the material multiple instances of exploitation are conceivable. The real value of recycling emerges from the framework of an integrated system of material, energy and waste management.

From competition to cooperation

It has for a long time been common to use the concept «competition» to characterize the principles of interaction between various life forms co-existing within the same niche in an eco-system. It is, however, interesting to notice that it was the analyses of Adam Smith regarding the competitive market economy that inspired Darwin, not the other way around.

Darwin thought that nature was organized in such a way that only the most adaptable organisms survived and continued the species, while the weakest would disappear. Kropotkin, prior to the turn of the 19th century, retaliated verbally to Darwin's one-dimensional stress of competition and argued that "cooperation was as important for evolution as competition" (Hessen 2001, p. 323).

Professor of philosophy, and author of the book *Process Metaphysics* Nicholas Rescher states that "our cognitive capacities and faculties are part of the natural endowment we owe to biological evolution. But our cognitive methods, procedures, standards, and techniques are socio-culturally developed resources that evolve through rational selection in the process of cultural transmission through successive generations. Our cognitive hardware (mechanisms and capacities) develops through Darwinian natural selection, but our cognitive software (the methods and procedures by which we transact our cognitive business) develops in a Theilhardian process of rational selection that involves purposeful intelligence-guided variation and selection" (Rescher 1996, p. 100).

Marshall, the father of neoclassical economics, stressed the values of cooperation even if his image of man did not permit him to really believe in it and therefore recommended competition in conducting business affairs.

> If competition is contrasted with energetic co-operation in unselfish work for the public good, then even the best forms of competitions are relatively evil; while its harsher and meaner forms are hateful. And in a world in which all men were perfectly virtuous, competition would be out of place; but so also would be private property and every form of private right. Such is the Golden Age to which poets and dreamers may look forward. But in the responsible conduct of affairs, it is worse than folly to ignore the imperfections which still cling to human nature. (Marshall 1920, I.I.21)

An important point in circulation economics is that the perspective has to be elevated to the *meso* level (the industry level, not the individual actor or the individual firm). This means that solutions are not linked to the individual actor (firm), but to the interaction between the actors in specified (integrated) circular value chains. Solutions conducive to a positive effect for the cycle may thus be preferred, even if they do not generate a sufficient degree of profitability for the individual actor. Generally it is necessary to implement technological, administrative or structural measures to improve efficiency within the material cycle. By changing the focus from the micro to the meso level, it is possible to implement measures conducive to increased resource efficiency, thus ensuring profitability in other areas of the cycle than where the measures are implemented. By elevating the level of analysis from the micro to the meso level, the circulation model focuses on the connections between all the actors involved instead of studying the various actors separately.

In order to achieve maximum utilization of resources in material and energy cycles, a change is necessary at the structural level. It is particularly important to establish an arena where the actors involved can coordinate planning to achieve the best possible results. It is necessary to establish a framework for economic decision-making characterized by cooperative interaction. The new framework exceeds the traditional distinction between the market and commando (state) economy, as it represents a communicative rational interaction between independent actors at the meso level.

It is not the intention that communicative action should replace strategic action in all fields, and it is important to clarify in what areas actors should coordinate their activities and in which areas they should compete in order to achieve the best possible social, economic and ecological results. An important structural implication of the circular value chain is thus the establishment of a communicative arena where the actors involved exchange information in the fields required to reach effective, efficient and equity-based solutions.

The launching and discussion of "Partnerships for Sustainable Development" at the summit meeting on environment and development in Johannesburg in 2002, is an illustrating example of how such challenges can be coped with. The purpose of the partnership in UN is to implement sustainable development goals:

- integration of the social, economic and environmental dimensions of sustainable development in policy-making at international, regional and national levels
- wide-spread adoption of an integrated, cross-sectored and broadly participatory approach to sustainable development
- measurable progress in the implementation of the goals and targets of the Johannesburg Plan of Implementation. (http://www.un.org)

The partnership approach indicates that new models for cooperation are about to be established within fields where the priority between different values is necessary. The examples from "UN Department of Economic and Social Affairs" show that models of cooperation are not only interesting in local contexts, but are also relevant in relation to more global issues.

From value monism to value pluralism

To be involved means either to "contribute" or to be "affected" by the action. Through the cooperative process in a communicative arena the actors involved are made responsible for the joint effort to realize the aims of a sustainable development. Within a competitive market economy it is difficult or, perhaps even, impossible to handle problems concerning the interplay between economy, nature and culture. The reason is easy to grasp: the market is limited to dealing with cases in

which the alternatives can be compared on a one-dimensional economic scale, whereas integrated problems presuppose pluralistic values. In our opinion, it is necessary to develop new arenas based upon cooperation and communication between agents representing different value systems - in order to grasp the complex challenges facing modern society.

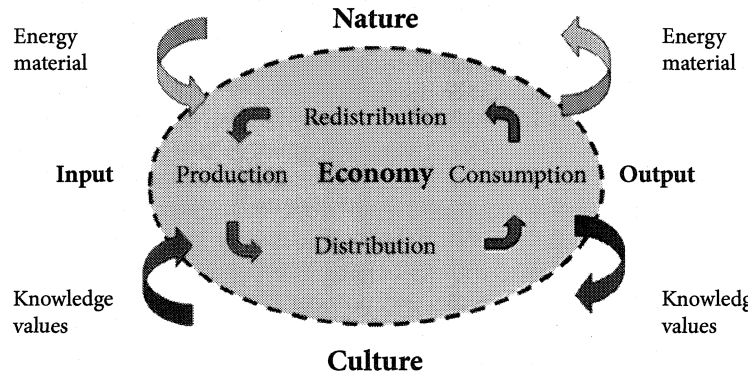
On the one hand, Richard Welford, professor of corporate environmental management, stresses the importance of integrating cultural values in economic behavior by urging that the tasks organizations set, "require adherence to sets of values held in common between people and with the organization" (Welford 1995, p. 116). On the other hand environmental values must have a fundamental standing in economics. In other words, since economic activity is always situated in an environmental and a social context, business organizations should also be involved in the development of new social and environmental standards of a more substantial nature.

To illuminate the differences in the interpretation of values between mainstream economics and circulation economics it is useful to draw a demarcation line between weak and strong sustainability. Weak sustainability requires that the overall stock of capital assets should remain constant over time. This means that as long as one asset grows, other assets can decrease without coming into conflict with the goal of sustainability, e.g. polluting the environment could be compensated by economic growth. Weak sustainability paves the way for; "trade-offs between different elements of environmental stock, and indeed between environmental and other capitals, i.e. the social and economic" (Zadek 2001, p. 119).

Strong sustainability entails that it is insufficient to protect the overall stock of capital because some sorts of environmental and social capital are non-substitutable. It is the integrated combination of factors, the irreversibility and uncertainty that counts in the definition of strong sustainability. Strong sustainability requires that manmade and natural capital each be maintained separately, since they are considered complementary. Weak sustainability requires that only the sum be maintained intact, since they are presumed to be substitutes (Daly 1999, p. 56). Zadek, following this line of argumentation, asserts that strong sustainability requires, "that actions that were consistent with sustainable development neither reduced nor did damage to the world's stock of environmental capital" (Zadek 2001, p. 119). According to the MacMillan Directionary of the Environment, Economic sustainability refers to development which "can continue indefinitely because it is

based on the exploitation of renewable resources and causes insufficient environmental damage for this to pose an eventual limit" (Allaby 1988, p. 374). Even though, in a global perspective, it is necessary to increase production of several vital goods and services, this does not necessarily have to mean debilitated sustainability.

Fig. 2 - The circular value chain



As for economic and ecological sustainability, cultural sustainability demonstrates to what extent social systems and the interaction between social systems are sustainable over a certain period of time. In order to gain an impression of what the concept social sustainability implies, it may be beneficial or useful to direct our thoughts in the direction of what the American moral philosopher John Rawls (1971) has referred to as "the just society". In this perspective, basic elements of a sustainable society will be based on freedom, justice and welfare. Social justice is related to the objective of a sustainable development to various dimensions, time and space. I.e. that equitable distribution can be viewed:

- Globally within and between nations and
- Nationally within and between generations.

An understanding based on mutual interaction between economy, nature and culture, distinguishes itself from models attributing a dominating position to one of the sectors (Figure 3). There are many examples that anomalies may occur if the value systems in one of the sectors run over the others. In the environmental movement there are examples of extreme schools arguing that nature should be superior to economics and culture (Luc Ferry 1996). The result of such an approach is that cultural and economic values are downscaled. There are also examples of systems based on cultural domination (different forms of fundamentalist management models) leading to major problems in the remaining sectors (Skirbekk 2002).

In this context the most immediate question arising is what will happen if the economy assumes such a dominating position that it replaces the other value systems. Many social philosophers (for example Habermas 1990, Taylor 1998 and Skirbekk 2002) have offered important contributions to the discussion regarding the consequences of the growing economism in the wake of globalization.

Concluding remarks

In this article we have presented and discussed some ideas concerning the solution of the striking paradox which becomes more and more typical worldwide; while the planet's resources are finite and absolute, our current economic system is based on everlasting growth. The ecosystems are circular in nature, meaning that nothing goes to waste, and all the component parts make up an interdependent system. This obvious knowledge is incompatible with mainstream economics, still presupposing the economy as a linear system which is based on growth. Mainstream economics is based on unsustainable preconditions and is not able to find solutions to the complex, interrelated economic problems, which will work in the long run. We must therefore analyse the problems we face from a new ontological and metaphysical perspective. In this article we have asked some fundamental questions concerning the metaphysical assumptions and concluded with consequences on the action level.

We have argued that circulation economics, based upon an organic worldview and a humanistic image of man, represent significant ideas for reaching the common goals of individual, social and environmental

well-being. In an organic perspective, all kinds of economic activity are interrelated and interconnected with nature and culture. The relationship between the ecological man and nature is "beyond (economic) self-interest and biological survival" (Becker, 2006, p. 20). From the perspective of the philosophy of organism, by saying that relations are more important than matter we introduce the idea that economics must be based on circular value chains. To establish circularity in economics we need a new function called redistribution to connect the ends of the traditional linear value chain (consumption and production). The tendency to single out profit as the only value in economics must be replaced by a multidimensional perspective in which economic, natural and cultural values are harmonised. Cooperative processes are necessary tools for harmonising the different agents' means and ends. To arrange this co-operation it is necessary to develop and institutionalize principles for cooperation characterised by the ability to replace today's excessive confidence that all problems can be solved in a competitive market.

In sum we argue that these changes enable, and require, a new understanding of many of the complex problems related to the interdisciplinary fields of economics, ecology and society. Since process and change are important hallmarks of the organic worldview, it is of great importance that economic systems are flexible. Circulation economics represents a dynamic solution to the problems, in that it does not remain fixed once and for all. Circulation economics represents a context for strategic planning implying that the individual company, in addition to surveying and analyzing what economic actors are affected, also has to take into account knowledge and values from the fields of nature and culture. In concrete terms this means that, on the one hand it is necessary to survey where energy/matter and knowledge/values stem from nature and culture, respectively, and on the other hand, to survey what can be traced back to nature and culture.

References

Allaby, Michael (1988): *The MacMillan Dictionary of the Environment.* London, MacMillan

Becker, C. (2006): "The human actor in ecological economics: philosophical approach and research perspectives." *Ecological Economics* 60, 17-23.

Boulding, Kenneth E. (1991): *What do we want to sustain? Environmentalism and*

human evaluations. In Robert Costanza Ecological Economics – The Science and Management of Sustainability. New York: Colombia University Press

Capra, Fritjof (1982): *The turning point – Science, society and the rising culture.* New York: Flamingo

Daly, Herman and Cobb jr., John B. (1994): "For the common good: Redirecting the economy toward community, the environment, and a sustainable future," Beacon Press

Daly, H. E., (1999): *Ecological economics and the ecology of economics: essays in criticism.* Northampton: Edward Elgar Publishing Limited.

Durkheim, Emile (1991): *The Division of Labour in Society,* London, MacMillan Press Ltd..

Georgescu-Roegen, Nicholas (1966) *Analytical Economics, Issues and Problems,* London, Oxford University Press

Georgescu-Roegen, Nicholas (1971): *The Entropy Law and the Economic Process* (Harvard University Press, Cambridge Mass.).

Habermas, Jürgen (1990): *Moral Consciousness and Communicative Action* (The MIT Press, Massachusetts).

Hessen, Dag O. (2001): *Charles Darwin og artenes opprinnelse* i Vitenskap, teknologi og samfunn, red. Eli Seglen Cappelen

Hopfenbeck, Waldemar (1993): *The Green Management Revolution* Prentice Hall

Ingebrigtsen, Stig and Jakobsen, Ove, (2006): Circulation Economics – A Turn towards Sustainability, *International Journal of Social Economics,* Vol. 33 No. 8, pp. 580-593

Luc Ferry (1996): *Ny økologisk orden – Treet, dyret og mennesket,* Oslo, Tiden Forlag

Marshall, A. (1920): *Principles of Economics,* 8th edition. Macmillan and Co., Ltd., London

Ormerod, Paul (1994): *The Death of Economics,* London, Faber and Faber

Pearce, Joseph (2001): *Small is Still Beautiful,* London, Harper Collins Publ.

Persky, J (1995): "Retrospectives. The ethology of homo economicus." *Journal of Economic Perspectives* 9 (2), 221-231 spring

Porter., Michael og Claas van der Linde (1995): "Green and Competitive: Ending the Stalemate" *Harvard Business Review* Sept.-Oct.

Rawls, John (1971): *A Theory of Justice* Cambridge Mass.

Rescher, Nicholas (1996): "Process Metaphysics – An Introduction to Process Philosophy," State University of New York Press

Savory, A. & J. Butterfield. (1999): *Holistic Management, A New Framework for Decision Making,* Washington, Island Press.

Sen, A (1987): *On Ethics and Economics.* Basil Blackwell Ltd., Cambridge

Siebenhüner, B (2000): "Homo sustinens – towards a conception of humans for the science of sustainability." *Ecological Economics* 32, 15-25

Skirbekk, Gunnar (2002): *Undringa* Oslo, Universitetsforlaget

Taylor, Charles (1998): *Autentisitetens etikk* Oslo, Cappelens upopulære skrifter

Welford, Richard (1995): *Environmental Strategy and Sustainable Development*, London, Routledge

Whitehead, Alfred North (1967 a): *Science and the Modern World* New York, The Free Press

Whitehead, Alfred North (1967 b): *Adventures of Ideas* New York; Macmillan

Wilber, Ken (1983): *Up from Eden-a Transpersonal View of Human Evolution*, Boulder, Colorado, Shambhala

Zadek, S., (2001): *The Civil Corporation – The New Economy of Corporate Citizenship* London, Earthscan