Sustainability and Justice

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Abstract

Justice has been a well-established notion since antiquity – see e.g. the *Politeia* by Plato. As Socrates noted, a just state and a just soul is governed by reason, not by human desires. The notion of sustainability arose in public discourse with the 'Report of the Club of Rome on the State of Humanity: The Limits to Growth' (Meadows et al. 1972). When referring to the natural basis of life, we mean the resources provided by nature that are necessary to support human life and cannot be substituted by man-made artefacts.

Sustainability has three dimensions: the economic, what is just and the ecological. Mainstream Economics and public discourse focus on the economic und just dimensions, while the ecological dimension is largely ignored. Ecological Economics focuses on the latter one.

This concept presents a conceptual framework for sustainability and justice. The concept of justice is developed in terms of distributional justice and in the sense of order justice (a sort of constitutional justice) as well; the latter is crucial for solving environmental problems. We show how closely sustainability and justice are interrelated.

This concept serves as a bridge between the general concepts of sustainability and justice and their concrete components. One major outcome is that the growth paradigm turns out not to be the solution but an obstacle to achieving a sustainable world.

As a practical example, we show how we can achieve a sustainable world. It is very unlikely that we will be able to decouple economic growth from environmental burden. It is crucial that we attain sufficiency in society, for sufficiency identifies what is enough to live a good life (Schneidewind and Zahrnt 2013; Zahrnt and Zahrnt 2016).

Related concepts: HOMO OECONOMICUS & HOMO POLITICUS; RESPONSIBILITY; POWER OF JUDGEMENT; BASICS OF LIFE; TELEOLOGICAL CONCEPT OF NATURE; ENVIRONMENTAL POLITICS

1. History

History of the concept of justice

The term *justice* originated in the discipline of philosophy and is foremost a virtue, an excellent attitude. Plato (428/427 – 348/347 BC) established a definition of justice in his book Politeia. According to his definition, justice consist basically in the fact that "everyone is doing his own and not manifold things." In that book, Socrates exemplifies justice as a good condition equally of the state and the human soul. A just state and a just soul are both governed by reason and not by human desires.

"One can, however, also denote states, organizations of polities, and natural distributions of goods as just or unjust. Justice means to regard and recognize not only one's own interests, but also the interests of others. Justice involves not privileging from the outset one's own interests over the interests of others. This is the backdrop of calls for a just distribution of goods and opportunities within a generation and between generations. Justice concedes certain claims (rights) to each individual (e.g., Mill, [1871] 1998: Chapter 5). However, this is not the complete meaning of justice. From a just distribution or order, we also require that it provides to everyone what he or she deserves, respects the dignity and freedom of everyone, and is stable and shows continuity. Aristotle (1985, 2000) focused on such a well-ordered stable (political and social) structure as a fundamental precondition of eudaimonia (happiness or, more literally, the good constitution of the soul)" (Becker et al 2015: 61).

John Stuart Mill (1806 – 1873) emphasises in his book Utilitarianism ([1871] 1998) that justice is basically an attitude of abiding by the law in general.

History of the concept of sustainability

"In Germany, the late 1950s and 1960s were characterised by optimism and economic growth. It was in this context that the oil crisis of 1973 – triggered by the oil embargo enacted by the petroleum exporting countries (OPEC) – hit the society and the economy where it hurt. The crisis made people aware of the finiteness of fossil energy resources. The dangers posed to humans and the environment by economic activities came to be a much discussed issue in the media as a result of events such as the chemical accident in Seveso, Italy (1976) and the Amoco Cadiz oil tanker disaster (1978). Although public interest was initially focused on acute risks and current disasters, gradually the global extent of and interconnections between environmental, resource and population problems

came to be recognised. The 'Report of the Club of Rome on the State of Humanity: The Limits to Growth' (Meadows et al. 1972) and 'The Global 2000 Report to the President of the U.S.' (Barney 1980) were important contributions in this regard. These reports raised grave doubts about whether resource and environmental problems could be solved by economic growth. Indeed, striving to achieve permanently high economic growth was interpreted as being the key cause of the environmental crisis, as it was assumed that high economic growth implied steadily increasing consumption of natural resources.

With awareness of the problem having been raised during the 1970s, attempts were made during the 1980s to come up with constructive solutions. At its 38th meeting in autumn 1983, the United Nations General Assembly decided to establish a World Commission for Environment and Development (WCED), tasked with drawing up 'a global programme of change' (Hauff 1987: xix). The Commission presented its final report, entitled 'Our Common Future' (WCED 1987), to the 42nd meeting of the General Assembly in autumn 1987 (WCED 1987, Hauff 1987: 352). The report is widely known as the Brundtland Report, named after the Commission's chairperson, former Norwegian Prime Minister Gro Harlem Brundtland. One key building block in this report is the demand for *sustainable development*:

'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.' (Hauff 1987:46)

Whenever policy makers or academics quote a source for the concept of sustainability, it is almost always this one (for an extensive discussion of the definition of sustainability and how it is operationalised, see Klauer 1999a, 1999b)" (Klauer et al. 2017: 17f).

2. Theory

The underlying idea of justice will be outlined (section 2.1) and discussed in the context of sustainability, which means that justice between different countries and different generations will be addressed (Section 2.2). We shall highlight characteristics of justice necessary to secure the natural conditions for life in the long-term (Section 2.3).

2.1 On justice

Justice concerns more than a just income and wealth distribution

Why do we consider justice to be fundamental? The reason is that justice is a central presupposition for sustainability. Justice has to be present within a given generation, i.e. intragenerational, and between current and future generations, i.e. intergenerational. Justice is however often reduced in public to a just income or a just wealth distribution. Although these kinds of justice are important, they are only one aspect of justice. We require from justice that it fulfils the following four preconditions:

- provision to everyone what he or she deserves,
- dignity and freedom,
- stability and
- continuity.

Stability and continuity can only be guaranteed if the natural foundation for living is preserved.

The preservation of the natural basis of life is a fundamental requirement of justice

"From our perspective, the discussions about sustainability so far have focused too narrowly on the material claims of current and future generations, and have neglected the aspect of stability. In these discussions it is recognized that lasting solutions for many sustainability issues can only be accomplished if one succeeds in constituting a fair balance between the poor and the rich; a fair balance among developed, developing, and less developed countries. However, it is not sufficiently recognized that the preservation of the natural basis of life is the foundation of any lasting solution to sustainability issues [BASICS OF LIFE]. Of course, only a stable and just society will be able to undertake the efforts which are necessary for sufficient environmental preservation. However, an intact nature is a necessary condition for any just distribution of opportunities. In this regard, care for the natural basis of life must have priority over, for instance, further politics of growth" (Becker et al. 2015:61).

Intragenerational and intergenerational justice

"Sustainability is essentially about preserving the natural environment on which all life depends, but it also has to do with the way people co-exist in the world and thus becomes

a question of justice. It addresses not only intergenerational justice but also intragenerational justice between rich and poor countries and between the different social strata within individual societies. Extending the justice perspective to future generations would remain an abstract exercise if it were to ignore the many different existential needs and environmental problems facing poor people currently living on the planet. The term sustainability refers to the concrete intersection of intragenerational and intergenerational justice with regard to natural resources, goods and suchlike" (Klauer et al 2017: 19f).

Neglect of limits of nature in the discussion of intragenerational and intergenerational justice

"Discussions about justice and sustainability have gone beyond the intragenerational dimension and have incorporated the intergenerational and inter-temporal dimension (e.g., Barry, 1997), and this is certainly a merit. However, regarding justice of opportunities and distributive justice, the discussions take place without adequate reference to the overall remaining and available environmental potentials, resources, and ecosystem services. The limits given by nature are mostly considered in a merely abstract way (with the exception of the climate change discussion). Due to 'heroic' assumptions about possibilities for substituting nature (Baumgärtner, Faber, and Schiller, 2006: 5–7, 177) and expectations about efficiency, the physical limits of nature seem to increasingly lose their rigidity. It is suggested that the dynamic of human innovations will be able to provide sufficient goods for distribution, hence the discussion about justice has substantially shifted toward the relationship among developed, developing and least developed countries, i.e. to the static dimension (the climate change discourse again is an exception, but seems to absorb public attention from other environmental issues).

As important as the issue of intragenerational distributional justice may be — redistribution from the global north to the global south would certainly reduce current poverty and result in a fairer distribution of development opportunities — intragenerational distributional justice does not prevent the overuse of the natural environment.

One might sarcastically say: If all US citizens gave their second and third cars to people living in poor countries in the global south, it might be considered 'good' in terms of distributional justice, but it would not be positive in terms of environmental harm or recognition of the limits of nature" (Becker et al. 2015:61-62).

Distributive justice and order justice

When talking in Mainstream Economics or public about justice, discussion mostly revolves around the just distribution of goods and services. However, another meaning of justice exists which is more encompassing and more basic, as mentioned above. At first sight justice, which is often also called social justice, seems only be concerned with the circumstance that certain goods are distributed in a community [see concept INDIVIDUAL, COMMUNITY & ENTIRETY] justly (Aristoteles 1995: 106; Aristotle 1985). Justice in this sense is distributive justice. This perspective has as its focus the justice of income, property, claims, consumption, access to education and important positions. However, if environmental pollution is considered to be unjust, then this example shows that that justice in a community is more than a just distribution of goods, services and opportunities. If not only environmental goods and services are distributed, this justice demands a certain structure and order which allows living without pollution. We shall call it *order justice*, to which we turn in detail in the next paragraph.

Order justice and homo politicus

While philosophy develops the theoretical conception of justice, the practical realisation of justice is the task of politics. We noted in HOMO OECONOMICUS & HOMO POLITICUS that the latter strives towards justice. That justice is not only, and not even predominantly, distributive justice, but order justice. Distributive justice is just one aspect of order justice (see Faber and Petersen 2008: 412-3).

Order justice is uncommon in public discussion and not a simple notion since this notion refers to the conditions of a 'good life' for human beings in a community (see Faber and Manstetten 2007: Chapters 5, 7 and 9). Although the primacy of individual freedom is not questioned, according to our conviction a far-reaching consensus exists that the good life of every individual requires essentially collective elements, such as freedom, protected rights, health, education, the possibility to act politically or religiously, welfare, public goods, success in a profession, i.e. the possibility to work and in this way to achieve recognition (Faber et al. 1997). In part, these rights belong to human rights (Faber and Manstetten 2007: Chapter 6).

To summarise: Order justice is a structure of communities that enable their members in the best way to lead a good life in the sense described above.

Normativity and facticity in the notion of order justice

"Order justice can be described as an order in which a community grants its members rights and claims and enables them to fulfil their wants and thus gives them the right to lead a good life. The idea of a good life has the character of a norm, insofar as certain elements of life stand out in a moral sense as good and desirable. The justice order, insofar it corresponds to the norm of the good life, is itself therefore normative.

However, it does not exhaust itself by its normativity. In fact, it has only a normative aspect. Justice order is a complex notion, for this term has besides its normative aspect a factual or preservation aspect. The good life is not only a system of norms, but it is a real life with real elements" (Faber and Petersen 2008: 412-413; our translation) and therefore corresponds to the last two of the four preconditions mentioned above, stability and continuity. This implies that "the order of a community is only just, if it takes account of factual conditions of life under which a community can preserve itself. In other words, only an order which can sustain itself in the world can be a just order in the sense of order justice. This means, for example, that individual claims for goods and their consumption can never be justified without allowances for the environmental conditions of the modern economy. This in turn implies that the norm of individual freedom - which we consider to be part of the good life in the modern spirit - can never be a freedom of consumption without constraint.

The difference between nomativity and facticity of order justice related to the environment

The difference of these two aspects of order justice is of significance in relation to the environment:

- On the one hand, everyone should have good environmental conditions (normative aspect);
- on the other hand, everyone should contribute to the preservation of their community, which implies that it remains environmentally sustainable (factual and preservation aspect, respectively).

Tension may exist between the normative aspect and the positive aspect. This tension results because the claims of individuals against the community are emphasised under the normative aspect of order justice, while the preservation aspect of order justice stresses the demands of society against the individual.

Public discourse is often one-sided since the normative aspect dominates on some occasions and the positive aspect at others.

Mediation between the normative and the factual aspects: power of judgement

How can we mediate between the normative and factual aspects? Evidently there are no general rules for resolving this conflict, for it depends on the circumstances. Hence, there is no single solution. It is always a question of power of judgement [POWER OF JUDGEMENT], for these kinds of questions can never be answered once and for all. Therefore, we have to be satisfied with providing a general solution which finds common consensus and is consequently accepted. Such a general solution cannot be derived coherently since a simple solution does not exist. The power of judgement allows us to make a judgement under these conditions which finds general acceptance (Kant 1983: 288f, 390f, Petersen and Faber 2005)" (Faber and Petersen 2008: 413-414; our translation).

2.2 Sustainability

Overview about our presentation of sustainability

Sustainability is difficult to define; therefore, we first need to develop a conceptual basis (Section 2.2). There are two basic ways to create models: The first is based on science and rests on strong assumptions; this holds particularly for those based on Mainstream Economics [IGNORANCE; EVOLUTION]. We shall deal with three of the constraining assumptions. The second way is based on the human will and takes ethics as its starting point . We will address the importance of the will to achieve sustainability as well as fairness between present and future generations [RESPONSIBILITY]. In Section 2.3 we present a critical discussion of the circumstance that sustainability is usually an anthropomorphic concept [BASICS OF LIFE]. By employing the teleological approach [TELEOLOGICAL CONCEPT OF NATURE] and the interest of entirety [INDIVIDUAL, COMMUNITY & ENTIRETY], we can develop a more encompassing view of sustainability. Finally, we show why policy recommendations for sustainability coming from Mainstream Economics receive so little attention in public discourse compared to Ecological Economics (Section 2.4) [HOMO OECONOMICUS & HOMO POLITICUS].

The conceptual basis for sustainable development

Nowadays, the term sustainability is used in an almost "inflationary and arbitrary way. Reference is made to 'sustainable financial policy' – meaning consolidation of a state's budget – while major corporations have 'sustainability centres' whose raison d'être has less to do with environmental concerns than with the company's standing in global markets.

The dangers entailed by this frequent, associative and conceptually free-floating use of the term are obvious: Sustainability might come to be seen as nothing more than a nice sounding but essentially meaningless concept. It is hard to prevent the term being emptied of its meaning (intension) by this wider and looser use (extension). All we can do is counter it by creating a convincing conceptual foundation and set of definitions.

The concept of sustainability plays an important role in current environmental policy. It addresses key problems associated with modern society – the threat posed to the natural environment by our way of life and our economic system, global change, the manifold complex and long-term impacts of human interventions in natural systems, concerns over the long-term well-being and indeed the very survival of humanity. Correspondingly, academic research and debate on these issues is wide ranging, one important aim being to clarify the meaning and implications of sustainability as a concept. Finally, various attempts have been undertaken to develop systems and operational approaches capable of linking the sophisticated theoretical conceptions with the practical demands of sustainability policy (see SRU 2002, 2004, 2008)" (Klauer et al. 2017: 16f).

The main questions

Since the economic activity of the present generation impacts the resources and environmental problems of present and future generations, discussions on economics and the environment always need to take into account the present and long-term effects of economic activities. The questions that need to be asked in this context are:

- "Can we maintain our economic activities without endangering the basis for a life of dignity for future generations or even the basis for the physical existence of future generations?
- What would an economy look like if it were to take into account its own long-term effects?" (Faber/Manstetten 2007: 258; our translation).

Since the natural basis of life is a necessary condition for any lasting order of society and the global community, its preservation is in itself a requirement for justice and closely connected to the discussion of sustainability. In order to understand the importance and the interdependence of these two concepts, this section deals with their historical development.

The debate on the concept of sustainability led to confusion

"Continuing environmental pollution and destruction have led to debate on the re-orientation of economic activity. The key concepts in this discussion are 'sustainable

development' and 'sustainability'. Instead of contributing to a clear understanding and new aims, this debate has more often than not confused the issue. Many of us have a clear intuition concerning the problem which is described by 'sustainability'. Expressions such as 'we cannot go on with our economic activities as we have up to now because we would endanger the basis for our lives' convey an appreciation of the difficulties. However, they do not give us any hint as to how to find a way towards sustainable development because we still do not know how to define sustainability in a fully encompassing manner.

In the following, we shall ask the question:

- 'Why is it so difficult, if not impossible, within the framework of the present debate, to develop operational proposals for a sustainable economy?'
- We shall further attempt to clarify the scientific, political and ethical dimensions which are behind the concept of sustainability.

In this way we shall try to offer a structure which enables one to analyse problems in the field of sustainability in a more appropriate manner" (Faber et al. 1998: 75-76).

Reducing sustainability to a simple question

"We first confine ourselves to developing a concept for sustainability development which is operational. The advantage of this approach is that this restriction enables us to formulate that part of the problem which all concepts of sustainability try to solve with the simple question: 'To what extent can we use our natural resources and the environment if our economy is to exist in the very long-term?'

This question can give orientation as to how one can create models of a sustainable economy. Yet here one has to ask what conceptual foundations exist for such models. We see two ways to answer this question. The first is based on science and the second on human will.

1. The first way employs scientific results and insights concerning the carrying capacity of the Earth. Employing scientific results and insights on ecological and economic systems, one formulates technical and political indicators of how to act. These instructions, in turn, could form the framework for sustainable development of the economy.

2. The second way has ethical considerations as its starting point. It presupposes that human norms and forms of behaviour must fundamentally change in our present Western-style economies if humans are to live and be able to act in an economic manner on the Earth over a long period. A prerequisite for such a change is a decisive will (Petersen and Faber 2001) that is able to articulate itself.

The two ways are not contradictory; however, from a methodological point of view it is useful to consider them separately at first. We therefore deal first with the scientific-technical-economic way in Section 2.2 before addressing the ethical way later" (Faber et al. 1998: 78).

The scientific-technical-economic way: models of sustainable developments, the optimists and the pessimists

"Models of sustainable developments available in the literature thus far can be differentiated according to the extent to which there are substitution possibilities between natural resources and human-manufactured productive capabilities. We can distinguish two polar forms of models; strongly simplifying, we shall call them the 'optimistic' and the 'pessimistic' perspectives on sustainability. The optimists assume suitable possibilities for substitution exist for all indispensable functions of nature, or at least all economically relevant ones (as supplier of natural resources or receiver of emissions). This assumption implies that the optimists can presuppose an indefinite time frame for the economy.

'Without this minimal degree of optimism, the conclusion might be that this economy is like a watch that can be wound only once: It has only a finite number of ticks, after which it stops.' (Solow 1992: 9)

It is precisely the pessimists' thesis of non-substitutability which Solow rejects, one of the main representatives of Mainstream Economics. The hypothesis of non-substitution is supposed by pessimists for they question the possibilities of substitution for essential resources and environmental discharge capacities. From their point of view, it follows immediately that if one is interested in sustainable development, one will use nature as little as possible in order to exist as long as possible. We note that both extreme versions, the optimist's as well as the pessimist's, may contain accurate insights. Hence, one has to examine in each instance whether the optimist's or pessimist's position is applicable.

Substitution: in the area of natural resources

Each of the two positions may be assigned to an area within which it appears to be plausible. The optimists could be right concerning natural resources, while the pessimists could be right concerning environmental discharge capacities where substitution may not be even conceivable. An example of the latter is thermal pollution, a necessary by-product [JOINT PRODUCTION] not only of production and consumption but also of environmental protection activities because of the First and Second Law of Thermodynamics (Kümmel 1980: 110-11; Faber et al. 1995: 103; see THERMODYNAMICS).

Concerning natural resources, the optimists can refer to historical experience. At least Western societies have coped successfully with resource problems in the past. For example, the scarcity of wood in England in the eighteenth century was an incentive to substitute the scarce resource wood by the plentifully available coal. This led to many other inventions and innovations, such as the steam engine, which, in turn, made possible many other inventions and innovations. Resource scarcity thus led to the discovery of new resources and technical progress [see EVOLUTION, cf. Faber and Proops 1998: chapters 3, 6, 9 and 13].

Limited substitution: in the area of environmental discharge capacities

Pessimists opposing the hypothesis of substitution can refer to the fact that many environmental problems do not yet have any kind of solution [IGNORANCE]. Most technical solutions from the last decades often imply that the pollutants are transferred from one environmental medium to another. For example, the paper industry solved its sewage problems by building water treatment plants where large quantities of toxic sludge arose. This had to be either disposed of in special deposits or burnt in special incineration plants. Thus, the water pollution problem was transformed into a solid waste or air quality problem [JOINT PRODUCTION].

However, in many cases and perhaps even the decisive ones, one will not be able to decide in advance whether the optimists or the pessimists are right (cf. Faber et al. 1998: Chapter 11). Therefore, on the basis of our present knowledge, it is often a question of belief as to whether one sides with the optimists or the pessimists" (Faber et al. 1998: 78-80). In spite of the strengths of the first way, it implies important limits, to which we now turn.

Limits of the scientific-technical-economic way

"The reader should be aware that the scientific-technical-economic way of sustainable development rests on important limitations which relate to the assumptions they make regarding time, uncertainty and political implementation; this holds particularly for those based on Mainstream Economics. We shall address three of these limitations. The first concerns general aspects of time [BASICS OF TIME; IRREVERSIBILITY]; the second relates to problems of complexity, uncertainty and ignorance [IGNORANCE; EVOLUTION]; the third concerns difficulties of political implementation [RESPONSIBILITY].

General aspects of time

Models of Mainstream Economics presuppose that two essential questions concerning time have been answered: (i) One has to decide how many generations of resource use and of degrading and discharge capacities of the environment will be considered: i.e. the time frame has to be determined (Stephan 1995: Part II and III; Faber et al. 1999: Part II). (ii) Connected with this question is the problem of how much the present generation will sacrifice for future generations. This concerns the time preference of the society, i.e. the social rate of discount (Lind 1982; Winkler 2003). Both questions are, however, ethical in nature, not scientific. How difficult they are to answer and how wide the spectrum of their values is became evident when well-known experts in the field gave their estimates for the social rate of discount concerning the evaluation of national energy options. They varied from 2 to 20 % (Lind 1982: 9)! Everyone familiar with long-term planning knows that this variation would imply completely different policy prescriptions. It is only possible to develop models of sustainable development after decisions have been made concerning the length of the time span and the magnitude of the social rate of discount, is it possible to develop models of sustainable development.

Problems of complexity, uncertainty and ignorance

To illustrate this problem, let us consider the task of securing sustainable use of fossil fuel. Natural scientists, engineers and economists would have to combine their knowledge to compute an optimal intertemporal price system which can serve as a guide for sustainable development. This is a problem of tremendous, inherent complexity.

The second problem, uncertainty, becomes even more complex if we seek to take account of time lags and intertemporal repercussions (Stephan 1995; Faber et al. 1999; Winkler 2003). Many types of damage to the environment only become evident long after they are caused, as was the case with the greenhouse effect. In particular, much uncertainty and ignorance exist [IGNORANCE] in respect of the magnitude and even the nature of such damage. From this it follows that we are unable to ascertain the limits to our behaviour which would guarantee sustainability.

The case of the greenhouse effect (Proops et al. 1993) demonstrates that it will be very difficult, if not impossible, to find a scientific-technical-economic solution to pollution problems. This is because we are not yet, and perhaps never will be, able to limit the consequences of our production and consumption behaviour in space and time [JOINT PRODUCTION; EVOLUTION; IGNORANCE; BASICS OF TIME; cf. Förstner 1990: Chapter 12].

Solutions to resource problems appear to be comparatively simpler than those concerning pollution since one can restrict oneself to fewer parameters.

In contrast, environmental impacts involve many connected areas [TELEOLOGICAL CONCEPT OF NATURE; BASICS OF LIFE; cf. Faber et al 1998: Chapter 10 and Faber and Proops 1998: chapter 13]. Hardly any sector of the economy has no direct or indirect effect on the environment, and often the effects are very special in nature. Therefore, to find sustainable solutions would imply either that there is no uncertainty, novelty and ignorance or that one is omniscient (cf. Faber et al 1998: Chapters 4 and 11).

Difficulties of political implementation

A further assumption for the application of scientific-technical-economic solutions is that the political process takes into account the corresponding limits, contingencies, and behaviour of individuals, and these solutions are legally established. Of course, this is by no means an easy task, for it is not only conceivable but very likely that there would be noticeable constraints on the freedoms we are used to in Western societies, resulting from policies for sustainable development. In addition, we know that such encompassing changes in the political, legal and economic framework lead to drastic changes in the distribution of income and wealth. We know from the theory of Public Choice that this would probably lead to social unrest and could not be carried out politically in a democratic state [HOMO OECONOMICUS & HOMO POLITICUS; RESPONSIBILITY; POWER OF JUDGEMENT.] How difficult this is, even in a rather simple case, became evident in the negotiations on whaling. To this end, therefore, an 'omnipotent' state, in the sense of a world state, would be required. This in turn implies that strong will exists.

These three comments may appear rather dismal at first sight

These three comments on the nature of policies for sustainability may appear at first sight rather pessimistic. But we believe they *only* show that the exclusive focus on science, technology and economics is too restricted. This perspective is neither appropriate nor sufficient for establishing sustainable developments. The urge to solve this problem solely by scientific, technical and economic means is, on the one hand, presumptuous and builds up a tremendous burden, on the other hand, for everyone charged with finding solutions. It is presumptuous because it supposes that scientists know everything, and technicians, economists, entrepreneurs, administrators and politicians can implement anything. It is burdening because it puts a strain on all decision makers which they cannot possibly meet [IGNORANCE; EVOLUTION]. The aspect of presumptions reminds us of the ancient Greek notion of 'hubris' (cf. Faber et al 1992). It is possibly this attitude which has led Western

economies into their present environmental and resource problems. As noted in Faber et al. (1998: Chapter 4), the experience of many important processes being controlled has led to the belief that, in principle, all processes can be submitted to human management by means of science and technology. This attitude of overweening pride is the hubris of the Greek myth, for hubris means that humanity loses perspective and feels itself to be godlike.

Having dealt with the scientific-technical-economic concept of sustainability, its strengths and its limits, we now turn to the second way to tackle this problem. Here we will be mainly concerned with ethical considerations. We will call this the way of the will" (Faber et al. 1998: 82-84).

The second way: will and ethics

The first way, the scientific-technical-economic way, has to be complemented by ethical considerations, for we have to employ both to achieve sustainability.

Three conditions concerning duties

"Solow (1992: 15) emphasises that the insight into the necessity of creating a sustainable economy imposes duties on us. The question concerning duties as the main connecting thread for human action belongs to the field of ethics. Duties thus have sense and meaning only if

(i) they are recognised as such, and

(ii) the *will* exists to satisfy them. This holds equally for those duties which follow from sustainability; they appeal to the will of each individual as well as to the will of society, which is established through the political process [IGNORANCE, Section 2.6].

Duties have a different status from natural laws because they

(iii) presuppose *freedom* of action. Since this condition is very important, we shall illustrate it with an example.

The law of falling bodies is a law of nature. It can be used to calculate the amount of kinetic energy a human, who is standing on a precipice, would strike the ground if she or he were to take one further step. But this law of nature does not say anything about whether or not the human will take that step. Neither can it speak on whether she or he is or is not permitted to take that action. There is no law of nature which can tell us, with any certainty, just what a human will do. What a person *is allowed to do* can only be determined by a *norm*. Such a norm may state, for example, that humans are not allowed to kill themselves.

But even if this norm is generally accepted as a duty, it cannot preclude humans from killing themselves under certain circumstance. A law of nature can establish an if-then relationship, and the duty can tell whether the 'if' *may* occur. Nevertheless, humans are free to decide to infringe on the duty. As noted above under (iii), freedom is *always* part of the essence of a duty. From this it immediately follows that the possibility always exists that one can decide against the duty.

Thresholds concerning environmental values

The relevance of this example becomes evident when we transfer it to implementing certain threshold values concerning the environment. Let the latter be determined by scientists and let them be such that infringing upon them implies that sustainability is no longer possible in the long term. Assume, further, that violating them is forbidden by law. This implies certain duties for every individual [RESPONSIBILITY]. The observance of the law depends, to a great extent, on the willingness of the individuals to be so constrained. Though individual breaking of the duty can be tolerated, if a great number of people are not willing to abide by the law, observance of the law cannot be obtained, not even by order of the police. From this it follows that the fulfilment of the duties derived from laws concerning threshold values is always fundamentally based on the will of the great majority of people in a society.

Up to now we have dealt with the hypothetical case that scientists are able to determine the threshold values exactly. As shown above, however, in general this is not the case. Hence, a great range exists for political and individual decision-making. This is the case insofar as decisions concerning sustainable development always have an open aspect, which is therefore not scientifically safeguarded" (Faber et al. 1998: 85f).

Since exact thresholds concerning environmental values do not exist, we cannot solve the problem of securing sustainability by solely taking recourse to a scientific-technological way. To cope with this problem, we have to turn to a different perspective, an ethical one. It implies we need assume that there is a will for sustainability which is supported by duties to achieve it. What kinds of prerequisites are required and are appropriate to strike out on such a new path? First, we have to introduce the concept of *the will*, i.e. an intention to pursue the aim of securing sustainability.

The importance of the will to achieve sustainability

"It is evident that the will to achieve sustainability has to be a decisive one. It has to be the will to do right concerning the preservation of the foundations of life for future generations,

and to avoid doing wrong. The will to do the just thing and avoid unjust action is called, in the philosophical tradition, the 'good will'. One who acts according to 'good will' and, in addition, with the right insight, acts justly. It is in this sense that the demand for a sustainable economy is a demand for justice (see Chapter 3 above), in a special sense" (Faber et al. 1998: 86).

It was Kant (2006: 61) who maintained: "Nothing in the world – indeed nothing even beyond the world – can possibly be conceived which could be called good without qualification except the good will." However, it should be noted that good will has to be well advised concerning the circumstances and the context within which the 'good will' is at work. This means in particular we should know what is and what is not possible in terms of natural science, technology, economics and politics.

'Fairness' between the present and future generations and 'intergenerational equity'.

"The justice concerning sustainability means, according to Toman (1992: 4), 'fairness' between the present and future generations: '… intergenerational fairness is a key component of sustainability'. Redclift (1993: 8) speaks similarly of 'intergenerational equity'.

This demand for fairness or equity seems to be reasonable. However, one immediately asks: What is fair between succeeding generations? How can equity between them be achieved?

'Duty' with regard to sustainability:

One answer to these questions is provided by Solow (1992: 15) who describes the 'duty' concerning sustainability thus:

'The duty imposed by sustainability is to bequeath to posterity not any particular thing … but rather to endow them with whatever it takes to achieve a standard of living at least as good as our own and to look after the next generation similarly.'

Almost all adherents of the idea of a sustainable development formulate similar criteria. The background for this is a conception of justice which goes back to Aristotle (see Section 2.1 above). Justice of exchange has to be orientated to equality. One may not give less than one has received (cf. Nichomachian Ethics: V 7 1332 b 12-20). Although there is no direct exchange between present and future generations in a strict sense, one may say, in analogy to Aristotle, that an economy is only sustainable if it lets the next generation have not less than it received from the former generation" (Faber et al. 1998: 86 -87).

Finally, we note that the will for sustainability is a difficult concept; Petersen and Faber (2001) have discussed it at length.

2.3 Sustainability and the triple teleology

"The question of sustainability is usually only put with regard to only one species), namely humans (or fund; BASICS OF LIFE (Norgaard and Howarth 1991). The continued existence of other species (funds) is seen as a sustainability issue only in so far as it influences the welfare of humankind (cf. the literature on the optimal extinction of species, e.g. Clark 1976). From our approach, we may derive a more encompassing view of sustainability. We noted in TELEOLOGICAL CONCEPT OF NATURE that the three *tele* are recursive within an ecological entirety [INDIVIDUAL, COMMUNITY & ENTIRETY]. As long as this recursion is maintained, the integrity of the ecological entirety remains, and we may term the system 'sustainable' in a broad sense. As a consequence, sustainability means that a certain balance, or harmony (Faber, Manstetten 2010: 120-121) between the three *tele* is maintained for each species of the ecological entirety. If any of the *tele* becomes too important, for any species, then sustainability is threatened.

For example, if the first *telos* (self-preservation) of a species is allowed to grow out of proportion, that species will come to overuse the services of other species, risking their, and eventually, its own continuation. If the second *telos* (self-reproduction) becomes dominant, then over-population of that species becomes a threat to the ecological whole; which implies that its stability is endangered. Finally, if the third *telos* becomes disproportionate, the rendering of too great a service to other species will threaten the continuation of that species and the integrity of the ecological entirety" (Faber et al. 1998: 182).

2.4 Mainstream Economics

What conclusions can be drawn from our first and second ways in regard to Mainstream Economics? How does Mainstream Economics deal with the three limitations in Section 2.2 mentioned above? What role does ethics and justice have in Mainstream Economics?

In its pursuit to achieve sustainability, Mainstream Economics relies mainly on changing the price system which in turn is based on the concept of homo oeconomicus. As has been explained in HOMO OECONOMICUS AND HOMO POLITICUS, the homo oeconomicus is not

interested in justice [JUSTICE & SUSTAINABILITY]. Justice is, however, a necessary condition to find the right order of a state (see Section 2.1) which enables society to achieve sustainability.

Further, Mainstream Economics does not consider sufficiently the three limitations ('time', 'complexity and ignorance' as well as 'difficulties of political implementation') to find the right adjustment of the price system. This becomes evident

1. for the limitation 'general aspects of time' from BASICS ON TIME, THERMODYNAMICS and IRREVERSIBILITY;

2. for the limitation 'complexity, uncertainty and ignorance' from IGNORANCE and EVOLUTION and

3. for the limitation 'difficulties of political implementation' from the concepts RESPONSIBILITY and POWER OF JUDGEMENT.

All these limitations are not given the prominence they deserve by Mainstream Economics. See Faber (2008) for more details.

For all these reasons, Mainstream Economics is not able to contribute substantially to a successful politic of sustainability (for a more detailed argumentation see Petersen and Faber 2001: 68-69; Faber and Manstetten 2007; Klauer et al. 2017). This conclusion is even substantiated by mainstream economist themselves since they complain that Mainstream Economics receives so little attention and public acceptance with its policy recommendations for sustainability (Kirchgässner 1997: 27). In summary, Mainstream Economics does not overcome the limitations of the first way described in Section 2.2 and does not give the second way, the will and ethics, the relevance it deserves.

3. Practice

3.1 Practice: Repositioning the Sustainability Discourse and the Process for Attaining a Sustainable World

It is not sufficient to discuss sustainability theoretically. It is necessary to view sustainability as a process in time. First, we have to describe the present state of sustainability (Section 3.1). While we have discussed one of the three dimensions of sustainability, justice, at length in Section 2.1, we will turn to the economic dimension in Section 3.2. To achieve sustainability, it is often maintained that economic growth is a necessary requisite.

However, the meaning of growth is often not well defined, hence we clarify it Section 3.3. From our consideration, we conclude that it is time to reposition the sustainability discourse (Section 3.4). This enables us to explain how sustainability can be achieved in the course of time [BASICS ON TIME; IRREVERSIBILITY; ENVIRONMENTAL POLITICS] (Section 3.5).

The present degradation of the natural basis of life

"The preservation of the natural basis of life is by itself a requirement of justice (see above chapter 2) because the natural basis of life is a necessary condition for any lasting order of societies and the global community. It has widely been recognized that we are currently close to, or have even exceeded, ecological limits and nature's capacities to absorb human impacts (IPCC [Intergovernmental Panel on Climate Change], 2007; MEA [Millennium Ecosystem Assessment], 2005; UNEP [United Nations Environment Programme], 2007) [BASICS OF LIFE]. If we consider the changes in developing countries such as China and India and even more in the least developed countries in Africa, global environmental burdens assume even more alarming proportions with regard to future development. There has certainly been some progress in environmental policy within the last 40 years. In addition, technological progress has resulted in an increase of efficiency in energy and resource use. In certain regions and with regard to specific substances, a substantial reduction of pollution has been achieved. However, in many cases the actual pollution has not actually been reduced, but rather has been substituted with consequences yet not known or shifted to other regions [ENVIRONMENTAL POLITICS]. The tremendous increase in energy use and global CO_2 emissions by 80% between 1970 and 2004 and the projected growth of CO_2 emissions from energy use by 40–110% between 2000 and 2030 (IPCC [Intergovernmental Panel on Climate Change], 2007: 36–44) prove that all efforts undertaken so far are by no means sufficient to achieve targeted climate change limitation goals. It is highly doubtful that the resources and absorption capacities of the earth will suffice to maintain current living standards in developed countries while at the same time enabling the more than 3 billion people in developing countries to secure reasonable living standards, not to mention the additional ca. 2.5 billion people expected to live on earth by 2050 (UN [United Nations], 2011).

Many impacts on the natural basis of life are qualitative impacts that are irreversible

It is important to recognize that many impacts on the natural basis of life are not just quantitative impacts that simply reduce available resources, but qualitative impacts that irreversibly change the quality of the natural basis of life [IRREVERSIBILITY]. Examples include biodiversity loss [RELATIVE & ABSOLUTE SCARCITY], desertification, and climate

change (Faber, Proops and Wagenhals 1992: Chapter 1). The matter then is not how to distribute limited natural means among generations, but rather that future generations no longer have the option to use certain natural means or ecosystem services at all. The idea of pushing back natural limits through technological innovation and efficiency is not always adequate to such cases and particularly ignores uncertainty regarding ecological thresholds and sudden changes in natural systems" [JOINT PRODUCTION; IRREVERSIBILITY] (Becker et al. 2015: 62-63).

Decoupling of economic growth and environmental burden is more than doubtful

"It was broadly assumed that the conception of the strategy of sustainable development, which has been evolving since Rio 1992 (UN [United Nations], 1992), might lead to a convergence of ecology and economy. We do not hold this belief anymore. The hypothesis of an absolute decoupling of economic growth from environmental burdens (i.e. the assumption that future economic growth will be possible without an increase of environmental burdens and use of environmental resources), on which this belief was based, has proven to be wrong, so far.

During the time when the Limits to Growth (Meadows, Meadows, Randers, and Behrens, 1972) and the preparations for the Brundtland Report (WCED) [World Commission on Environment and Development], 1987) affected the public, it seemed possible that the insights into ecological limits and responsibility for future generations could result in adequate priority being given to the ecological dimension. Several political proposals exist in this regard. For instance, in Germany, the Federal Environment Agency (UBA), the German Advisory Council on the Environment (SRU), and the German Advisory Council on Global Change (WBGU) all support a concept of ecological limits. The sustainability strategy of the German Federal Government (GFME [German Federal Ministry of the Environment], 2012) programmatically promotes the concept of environmental space (*Umweltraumkonzept*) (although the priorities of political action are often pragmatically determined otherwise).

Neglect of the ecological dimension

Nevertheless, the ecological dimension of sustainability has rarely been adequately considered. Only international climate policy considers the ecological dimension, to some extent. In climate policy, the conflict between welfare and ecology clearly emerges: The discourse on justice has an intergenerational focus and refers to the remaining ecosystem services [see chapter 3 above and BASICS OF LIFE; RELATIVE & ABSOLUTE SCARCITY]. The negotiations on climate change consider both the static and dynamic dimensions of the

issue. However, only a few countries deliberately discuss climate change with broad public and societal participation and with regard to justice and ethical aspects (Becker and Brown, 2013). This is one of the reasons that the discussions so far have not resulted in substantial political decisions or actions" (Becker et al. 2015: 63).

3.2 The economic dimension: welfare and efficiency

Advancing the concepts of welfare and economic efficiency

"A crucial aim of justice is to facilitate the possibilities and means for living well. "In this regard, sustainability also encompasses the concepts of welfare and economic efficiency. However, discussions about the economy (which basically deals with human needs and preferences and efficient ways to satisfy them) have not substantially been influenced by the concept of sustainability so far. In particular, the concept of efficiency has not been advanced and is still used in a static (or comparative-static) sense. This means that potential changes over time are not adequately considered, such as potential changes in technology, availability of resources, consumption patterns and preferences, or environmental damage. What is efficient today may easily become inefficient tomorrow due to changes in such parameters [EVOLUTION]. As one does not consider long-term consequences, it seems efficient not to waste any natural potential and use all available natural factors and resources to increase economic welfare.

Such a narrow economic perspective is particularly problematic because it does not recognize any absolute ecological limits (Baumgärtner, Becker, Faber, and Manstetten, 2006b and RELATIVE & ABSOLUTE SCARCITY) which are crucial for the preservation of the natural basis of life. This holds for the use of natural resources in economic production as well as for the negative environmental impacts resulting from joint production (Baumgärtner et al., 2006 and JOINT PRODUCTION). The earlier warnings about the limits to growth, articulated in discussion following the Club of Rome (Meadows et al., 1972, 2004), have been ignored or rejected on the basis of optimism about innovation and possibilities of substitution.

Replacing natural capital with technology and human-made capital

From a purely Mainstream Economics' perspective, it always seems to be useful to replace natural capital with technology and human-made capital. This seems to generate additional possibilities for action—and may seem to be the right strategy in the short term. To

stimulate economic growth may also seem to be a proper strategy when it is assumed that growth will foster innovation, which ultimately leads to the decoupling of economic growth and environmental burden. However, the risks and uncertainties of the systemic consequences of growth [IGNORANCE] are neglected, and a proper institutional framework to study and consider these risks and uncertainties has not yet been sufficiently established. Negative external effects and long-term consequences are still not adequately considered in public discussions, concrete decision-making processes, and political and business actions. In summary, the fundamental discourses on justice and welfare both fail to adequately address the aspects of sustainability that were originally emphasized by the sustainability concept: the importance of considering and protecting the natural basis of life as the essential foundation of future development, welfare, and justice" (Becker et al. 2015: 63-64).

3.2 The meaning of growth

Dominance of the growth paradigm in Mainstream Economics and public discourse

"The main reason for prioritizing economic requirements over ecological requirements is due to the dominance of the growth paradigm in Mainstream Economics, in growth policy and public discourse (Seidl and Zahrnt, 2010). There seems to be a broad consensus that sustainable development cannot be realized without continuous economic growth. Thus, issues of sustainability and development are mainly discussed with regard to justice and welfare, but not with regard to ecological needs. The concept of growth plays a fundamental role in societal and public discourse. Exponents of growth policies argue that growth supports justice.

On arguments for economic growth

Economic growth generates more potential for redistribution. By inducing innovation and efficiency, growth may even generate the possibility of bequeathing future generations 'more nature' than in the case of forgoing growth. Growth exponents further argue that the important goal of sustainable fiscal policies and sustainable budgets can only be achieved by economic growth — at least if one does not want to achieve the reduction of debt solely by cutting government spending and reducing entitlements and social services. From this perspective, the usefulness and importance of economic growth seems to be without doubt: Economic growth is considered the crucial link between justice and welfare. Without growth, justice between the global north and global south, and justice between

generations, seems to imply that substantial sacrifices would have to be made by developed countries in support of developing and least-developed countries, and by the current generation in support of future generations. However, far-reaching sacrifices and redistributions might substantially undermine and endanger social systems and the political stability of many countries. The better alternative, exponents of growth argue, is continuous economic growth.

Assumptions on substitution of natural capital and inducement of innovations: delimitation of the growth concept

This argument is (often tacitly) based on the assumption that natural capital can be substituted by human-made capital and that economic growth induces technological innovations — and, with them, gains in efficiency. This prominent and common argumentation led to a paradigmatic delimitation of the growth concept, which is in stark contrast to the arguments of the Club of Rome (Meadows et al., 1972) and empirical findings on energy, resources, climate change, biodiversity [RELATIVE & ABSOLUTE SCARCITY], etc. (IPCC) [Intergovernmental Panel on Climate Change], 2007; MEA [Millennium Ecosystem Assessment], 2005; UNEP [United Nations Environment Programme], 2007)" (Becker et al. 2015: 64-65). We note that this delimitation of the growth concept corresponds to the optimistic way of Mainstream Economists discussed in Section 2.2 above.

Growth does not result in more justice

"It is also worth noting that economic growth by itself does not result in more justice (see Chapter 2 above). This becomes particularly evident with the increasing gap between the rich and the poor within many developed countries that have seen long periods of economic growth. We do not intend to criticize economic growth in general, nor to suggest some kind of 'post-growth society' or 'post-growth economy'.

Critique of delimitation and dogmatisation of growth

Rather, our intention is to criticize the delimitation and dogmatization of growth and the tendency to base whole economic and social systems, and the fulfilment of public tasks, on growth assumptions. We maintain that with regard to the concept of sustainability, economic growth needs to be limited insofar as it endangers the natural basis of life [BASICS OF LIFE; RELATIVE & ABSOLUTE SCARCITY]. The crucial issue is neither the focus on the aim of economic growth nor the situational attempt to rapidly overcome the current crisis by

stimulating growth. Rather, the danger lies in making the functioning of the entire societal system continuously and fundamentally dependent on economic growth (Seidl and Zahrnt, 2010). This has been the main political course over the past decades and has led to the issuance of permanently increasing bills of exchange to the future, which can only be answered by permanently increasing growth. Systems that live with the hope of permanent (exponential) economic growth are at a high risk of becoming unsustainable. Such systems overburden not only the individuals who live and work in them, but also the natural systems within which they function.

Growth – not the solution but the danger

As such, growth will not be the solution to all sustainability issues but will become the very issue that impacts future generations (Becker, 2012). We have to consider, of course, that the current economy and larger parts of social and financial politics are based on the assumption of continuous economic growth and that one cannot expect a substantial change in the short term. Nevertheless, we think it is important that the political and public discourse overcomes its fixation on economic growth and that politics does not refer exclusively to growth as the solution of societal problems" (Becker et al. 2015: 65).

3.3 Repositioning discourse on sustainability

Politics needs to focus on securing the natural basis of life

Many Ecological Economists maintain "it is time to reposition the sustainability discourse [Responsibility]. The facts and insights of the last four decades have demonstrated that the priority placed on growth-orientated policies conflicts with the limits given by nature and, thus, is incompatible with the requirements of environmental politics. We hold that with regard to the conflict between economic growth and environmental protection, sustainability politics needs to focus primarily on securing the natural basis of life. This ecological economic claim is in contrast with Mainstream Economic politics which still adhere to the paradigm of unlimited growth, both nationally and internationally. For instance, the European Commission mentions the crucial role of growth in its Europe 2020 Strategy (EC [European Commission], 2010), as does the American President Obama in his Strategy for American Innovation (NEC [National Economic Council], 2009).

Critique extending to the concept of ‘green growth’

Our critique extends also to the concept of ‘green growth’. Economic concepts with the prefix ‘green’, such as ‘green deal’, ‘green growth,’ and ‘green jobs’, may be fruitful political concepts insofar as they express and support the vision of environmentally compatible economic activities. However, these concepts are also often used to harden the continuous prioritizing of economic growth against environmental protection. The tacit, underlying thesis in this case is that by some increase in efficiency alone, all economic action can become ‘green’. This stance, however, underestimates the counteracting effects of a growing population and demand (rebound effects) and, in particularly, it does not adequately consider ecological limits. While green technologies and efficiency increases might be part of a sustainable future, we cannot achieve a sustainable future by them alone.

The illusion that technology will free us from limits of nature

To think that technological innovation will free us from the limits of nature or at least buy us some time is an illusion which ignores the fact that we are continuously overstepping natural limits on a large scale and irreversibly [IRREVERSIBILITY] changing the natural basis of life. It is time, therefore, to dismiss the oversimplified harmonizing of sustainability rhetoric. The hope that there is no fundamental conflict between economic growth and environmental protection — that a win-win situation can always be achieved — has turned out to be an illusion: Even enduring ‘green’ growth will endanger the natural basis of life” (Becker et al. 2015: 65-66).

A need for honesty, courage and persistence

“It is time, thus, to dismiss oversimplified harmonizing sustainability rhetoric. The hope that there is no fundamental conflict between economic growth and environmental protection—that a win-win situation can always be achieved—has turned out to be an illusion: even enduring ‘green’ growth will endanger the natural basis of life. We need the honesty to fully recognize and address the conflicts between economic growth and environmental protection. We need the courage to prioritize the long-term protection of the natural basis of life, and we need the persistence to continuously adhere to this new prioritization” (Becker et al. 2015: 66).

3.4 The Process for Achieving a Sustainable World

This section shows how a sustainable world can be achieved in a society. The main insight is that the state has to lead the market and not vice versa. However, a bottom up and not a top down approach should be employed. A crucial condition is to attain sufficiency.

We need ethics more than scientific knowledge

"Sustainability is often looked upon as a scientific problem for which technical and economic solutions have to be sought, which implies that the first way, the scientific-technological-economic way is sufficient. While this is a necessary step, the limits of this approach are now apparent, as has been explained in Section 2.2 above. More than scientific knowledge, in its narrow sense, we need the wisdom of the second way, wisdom from the will and ethics, to formulate goals along with the social will and maturity of judgement [POWER OF JUDGEMENT] to realise those goals" (Faber et al. 1995: 247; Petersen and Faber 2001).

The political process for achieving sustainability

"With regard to the political process necessary for sustainability, our view is, as mentioned above, that the role of the state is to 'lead' the market (with all its imperfections) rather than to 'follow' it, as it does at present. While the market will surely be the nexus of economic interaction, the framework within which it operates will need to be established by consensus through the state. While the state is susceptible to the interests of powerful interest groups, even in democratic systems, we believe that only the state, as an institution, can potentially offer the long-term time scale necessary to achieve sustainability, and only the state has the potential authority and means to act as a balancing agent to powerful special interest groups.

Kant's dictum: The greatest form of despotism is when politicians to treat their subjects like children

Before proceeding, it is worth noting that Immanuel Kant maintained that the greatest form of despotism is when politicians treat their subjects like children who are not able to distinguish what is useful or harmful to them. We think that this insight holds for the topic of sustainability, too. Therefore, we emphasise not only the necessity of political leadership, but also the roles of freedom and consensus.

Two tendencies concerning sustainability

Two tendencies exist in Western societies concerning sustainability:

(i) From the supply side, there is a beneficial tendency to use more 'soft' technologies and products.

(ii) From the demand side, there is a harmful tendency always to consume more and more.

In general, there is a considerable asymmetry between the policy use of these two tendencies; environmental policy is mainly restricted to action on the supply side. This is so because changes on the demand side are considered to be a threat to social harmony. However, we believe that policies targeting the supply side are not sufficient on their own.

A major issue for an effective policy on sustainability is therefore to influence the demand side. To this end, the consensus of the people is necessary" (Proops et al. 1996: 133-134).

Sufficiency and sufficiency politics

During the last decade, a movement has developed which counters the harmful tendency of the demand side described in the previous paragraphs. This development is called *sufficiency*. This name stems from the Latin word *sufficere* which means to have sufficient (see: where a digital map for sufficiency policy is developed by Angelika Zahrnt and Dominik Zahrnt, based on the book Schneidewind and Zahrnt 2013). The main question of sufficiency policy is

- what is enough for a 'good life'?
- What is the right measure for consumption?

The answers to these questions provide guidelines to live and to act in a responsible way concerning the use of natural resources and the absorption capabilities of the environment; such guidelines again helps to diminish the demand of the natural resources and the absorption capabilities of the environment in practice. However, many hindrances exist in everyday life to finding the right measure for living and acting responsibly, but sufficiency policies can support this endeavour in many ways.

The benefit of sufficiency policies is that they focus on the insight that "individual approaches to sustainability are important, however, one has to recognise that their success is limited. Individual action is always embedded in an institutional and societal context. Sufficiency politics aims at reshaping this context so as to make it easier to live sufficient lives. Only then will sufficient lifestyles become more common and contribute to reducing environmental and resource consumption.

One of the reasons why sufficiency is hardly acknowledged as a strategy or supported accordingly on a political level is that individual behaviour is mostly regarded as a private matter. Another reason is that measures supporting efficiency and consistency are regarded to be growth-inducing, whereas sufficiency is considered damaging to growth.

"However, it is becoming increasingly clear that efficiency and consistency are insufficient as strategies for attaining sustainability goals. Strategies for sustainability should embrace all three principles (efficiency, consistency and sufficiency) and be more creative, resolute, and daring in implementing sufficiency politics. The sufficiency politics map is meant to inspire and accompany political actors on this path" (Zahrnt and Zahrnt 2016, Sufficiency Politics Map).

We conclude that the Digital Map of Sufficiency is a useful tool to help individuals live in a sufficient way; this in turn essentially contributes to achieve to achieve sustainability.

4. Literature

The content of MINE originates from scientific work published in books and peer-reviewed journals. Quotes are indicated by a special typographic style.

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Faber, M., Manstetten, R., Proops, J.L.R. (1998), *Ecological Economics. Concepts and Methods*. Edward Elgar, Cheltenham.

Proops, J.L.R., Faber, M., Manstetten, R., Jöst, F. (1996) Achieving a sustainable world. *Ecological Economics 17: 133-135.*

Key literature

Becker, C., Ewringmann, D., Faber, M., Petersen, T., Zahrnt, A. (2015) Endangering the Natural Basis of Life is Unjust: On the Status and Future of the Sustainability Discourse, Ethics, Policy and Environment, 18:1, 60-67. [Central paper for Section 2 of this concept.]

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