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Current challenges to the concept of sustainability

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Non-technical summary. In this paper we discuss current challenges to the sustainability concept. This article focuses on seven dimensions of the concept. These dimensions are crucial for understanding sustainability. Even today, the literature contains basic misunderstandings about these seven dimensions. This article sketches such fallacies in the context of global and planetary sustainability. The sustainability concept has been criticized as a content-empty 'fuzzy notion' or non-committal 'all-purpose glue'. This article thus has a critical intention of reflecting the sustainability concept accurately. The aim is to contribute a better understanding of the concept.

Technical summary. This paper focuses on questions related to the normative content of sustainability. Even today, the literature contains basic misunderstandings about this content. So, this article sketches seven such fallacies in the context of global and planetary sustainability. They are partly to blame for the recent discourse about the environment and development ending up in a cul-de-sac, discrediting the term sustainability. This article thus has a critical intention of reflecting the sustainability concept accurately by discussing current challenges. The aim is to contribute a better understanding of the normative aspects of sustainability. By presenting a differentiated analysis of its content the article will provide a reflected version of the sustainability concept, characterized by the following dimensions: (1) ecological: reflection on the conditions and consequences of human activities; (2) political: sustainability as a cross-sectional political guideline; (3) ethical: intergenerational and global responsibility; (4) socio-economic: operationalizing the principle of sustainability; (5) democratic: pluralism, participation and democratic innovation; (6) cultural: lifestyle and a new model of wealth; (7) theological: belief in creation and sustainability. We do not want to offer limited definitions, but rather to stimulate a debate about rehabilitating the sustainability concept. Therefore, these dimensions are crucial for understanding sustainability.

This article focuses on current challenges to the sustainability concept. The questions that are asked address the following seven dimensions, which are indispensable for understanding the term 'sustainability' and its normative content: (1) ecological dimension, (2) political dimension, (3) ethical dimension, (4) socio-economic dimension, (5) democratic dimension, (6) cultural dimension, and (7) theological dimension.

This paper has a critical intention. From our perspective, basic misunderstandings exist about these seven dimensions. We thus present and discuss seven fallacies. These fallacies are partly to blame for the fact that in recent years, the discourse about the environment and development has led to a dead-end, discrediting the term 'sustainability'. The concept is seen as a seemingly content-empty 'fuzzy notion' or a non-committal 'all-purpose glue'. The aim of this paper is to contribute to a better understanding of the concept of sustainability by presenting a differentiated analysis of its content. This effort highlights the 'the *need* of an ethics of planetary sustainability' (Losch, 2018, p. 6), which will probably become an urgent topic to discuss at different levels.

1. Ecological dimension: reflection on the conditions and consequences of human activities

The first fallacy: sustainability refers mainly to a principle of passive limitation or regulation of human activities.

The principle of regulating sustainability was first formulated by the Saxon mining officer Hans Carl von Carlowitz in his book *Silvicultura oeconomica* in 1713 (von Carlowitz, 1713, p. 105f.). This principle was a feature of the early Age of Enlightenment. Carlowitz, who 'published the first comprehensive treatise about sustainable yield forestry' (Silvius, 2018, p. 332), used the term 'sustainable' to denote the opposite of 'neglectful'. Therefore, sustainability does not refer to a principle of passive limitation, but rather to the optimal planting and cultivation of trees that are suitable for a specific soil and demand. From the start, sustainability has been more than a rule for forest preservation. However, summarizing such rules for management

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makes the idea memorable and suitable for an initial understanding of the concept. In general terms, the principle means not using more resources than can be regenerated during the same period.

The core of sustainability, however, entails the planning and anticipating of the economy in the ecological metabolic cycle and its rhythms of time (this topic is discussed further under point 6: the cultural dimension). Therefore, it is necessary to reflect on the conditions and consequences of human activities for current and future generations. Sustainable development must be understood as a process of actively and innovatively searching, learning and shaping the present and future of human activities on Earth – and in outer space. The term 'sustainable' is not just a synonym for 'good' (Ostheimer, 2013), and the future is generally difficult to predict (see point 3: the ethical dimension). Thus, questions such as How to manage the risk? How to manage the failure? must be asked in this context. However, Ulrich Beck did not directly use 'sustainability' in his analyses of 'risk in society' and 'reflexive modernity' (Beck, 1986, p. 107f.). The term 'future-oriented' as a claim to justice, solidarity or responsibility is the most common normative description of sustainability. Trying more and more to shape the unplannable, the sustainability concept will be acknowledged as a political guideline rather than as just a principle of passive limitation or regulation of human actions. Sustainability does not refer only to the limits of what is allowed or forbidden. It is not simply about preserving what exists, but rather about making room for nature's vital forces.

Generalizing the principle of sustainability as a rule for good resource management, it might seem that the property rights of one generation's natural resources are never unlimited. Sustainability must not be viewed simply as a rule of balance and self-sufficiency for preserving the natural capital stock (see point 4: the socio-economic dimension). It rather has the character of a 'usus fructus': a right to acquire yields, if the potential of generating yields is preserved. Because humankind did not create nature, humans cannot claim ownership in an absolute sense.

The above line of thought, which was presented by the liberal philosopher John Locke as early as the 17th century, is well known today. It features in the monotheistic religions with their belief in God as the owner of His creation. Whether people believe in God or not, sustainability always requires critical reflection on the notion of 'property'. Hence, it is crucial to reflect on the 'ownership of natural resources'. The topic of property rights over natural resources must be discussed, not only for resources on Earth but also beyond. To whom do the resources of Earth and outer space belong (e.g. in the case of space mining)? Who profits from the exploitation of near-Earth objects (e.g. asteroids)?

International agreements must determine these property questions in a fair way for all humankind, so that sustainability can become a mediating concept. The United Nations, in its Committee on the Peaceful Uses of Outer Space (UNCOPUOS), has established a Working Group on the Long-term Sustainability of Outer Space Activities (UNOOSA, 2018). This group has 'addressed thematic areas, including sustainable space utilization supporting sustainable development on Earth' (Losch, 2018, p. 1).

2. Political dimension: sustainability as cross-sectional political guideline

The second fallacy: sustainability is the equivalent consideration of ecological, social and economic factors.

At the United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro in 1992, the global community agreed on the central theme of 'sustainable development'. This theme was defined as a Program of Actions for the 21st Century (so-called *Agenda 21*), which became a decisive document in the global acceptance of sustainability. However, more than 25 years later, the term 'sustainable development' still lacks precise understanding or implementation as a guiding principle in global partnership. The implementation of the 17 Sustainable Development Goals (SDGs), by achieving all 169 targets in various areas, was recently decided at the highest global level by the United Nations in 2015 (United Nations Department of Economic and Social Affairs, 2018).

The systematic accentuation of the interdependences among ecological, social and economic factors forms the core of the United Nations approaches to sustainability. However, the widely discussed 'three pillars concept' is misleading. Hence, 'equality' does not have an exact meaning in this context. The three pillars concept harbours both a deep truth and a danger. It is true that from the ethical and political viewpoints, the strategic point of sustainability is to broaden the ecological perspective through social and economic approaches. Environmental policy is integrated into socio-economic concepts of development with regard to strengthening local knowledge cultures. Such effort is understood as the ecological dimension of poverty prevention. For this purpose, sustainable actions must not remain abstract but must become concrete in the context of various development models (Ostrom, 2005; Pope Francis, 2015).

However, it would be incorrect to use the three pillars concept to claim that ecology, economy and social affairs all have equal value. These are different areas which cannot be compared directly. A scholar who defines 'sustainability' as the sum of social, ecological and economic objectives would fall victim to a fallacy. Because hardly anything exists that cannot be subsumed under these three notions, the range of the concept becomes almost infinite (Vogt, 2013). For the term 'sustainability' to make sense, it should not be defined as a sum but rather as the interdependence and interaction of ecological, social and economic factors. It is not about the totality of eco-social and economic problems. Rather, it concerns a cross-sectional policy, based on interdisciplinary analyses and a systemic way of thinking about the re-nationalization of environmental problems (Reis, 2003).

Although the SDGs do not commit the mentioned fallacy in most parts of the text, they sometimes take too little account of central global challenges such as increasing resource consumption and population growth, externalization of ecological and social costs. Some goals even seem to be contradictory. Within the text, there is sometimes a conflict of objectives between economic growth that is to be achieved (for instance in chapter 8 of the SDGs) and ecological limits of nature. This needs to be discussed in even more detail in order to strengthen the value of the concept of sustainability.

3. Ethical dimension: intergenerational and global responsibility

The third fallacy: intergenerational justice, as the normative core of sustainability, guarantees future generations an equal amount of natural resources.

When scholars talk or write about sustainability and the perspective of intergenerational justice, they often refer to the definition in the Brundtland Report, *Our Common Future,* published

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in 1987. That definition reads as follows: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (World Commission on Environment and Development, 1987, p. 41). The problems involve setting standards for intergenerational justice. Questions include: can there be a guaranteed right to an equal amount of natural resources with regard to historically contingent developments? Are future generations possible legal entities?

In view of the gross differences in geographical, cultural and historical conditions in which people live, postulates of (absolute) equality are highly problematic. As the future cannot be calculated, and the needs and competences of future people are not fully known, freedom should be given a high priority. Thus, the idea of equal distribution of resources among generations is of little practical help in many areas. The aim should rather be to leave to posterity a world that offers enough free space and enough chances. This would enable future generations to make their own decisions and further develop their capabilities. To examine factors in the relationship between people and commodities, the capability approach can be used (Sen, 1999). Therefore, sustainability requires openness to allow for unplanned things.

Sustainability is based on resilience in dealing with stress and surprises, as well as on transformational competence in designing transitions. Hence, sustainability extends beyond a focus on desirable goals to critical reflection on forces and obstacles that either enable or prevent a transformational process in society. In other words, intergenerational justice requires awareness of complexity and process, so that people can deal with issues related to power, ignorance and shaping the unplannable. This need becomes more urgent when the global and intergenerational perspective is augmented with factors related to extra-terrestrial life (life beyond Earth). The demands and rights of these entities, if they exist, might also need to be considered. Should we be thinking about the protection of planets as potential habitats for extra-terrestrial life or future generations? (Losch, 2018).

In the logic of its argument, the United Nations' (Rio de Janeiro) sustainability concept did not invoke specifically ecological terms. Instead it was based on broadening the understanding of 'equity' in global and intergenerational dimensions. In other words, the main interest was global and intergenerational equity (Reis, 2003). This was a logical consequence of globalization, whose seemingly unlimited use of space and time in economic and social interactions raises ethical questions. Globalization necessitates an extension of ethics regarding the limits of natural resources (Vogt, 2014).

The scientific debate hinges on the question of whether 'equity' means 'equality' in egalitarian terms. If so – for example, in the study 'Zukunftsfähiges Deutschland' (Loske & Bleischwitzt, 1996), two ethical postulates are derived. On the one hand is equal chances for future generations, and on the other hand, equal rights to globally accessible resources.

Currently, the central reliability test for intergenerational responsibility on Earth is carbon dioxide (CO_2) equity. A human rights approach would stress that fighting poverty must be integrated systematically and dealt with in terms of ethical priorities. Normatively, the fight against poverty should arguably have moral priority over climate protection. However, especially in the ecologically sensitive habitats of the Global South, environmental protection is a decisive way of combatting poverty and safeguarding human rights. Climate change, water pollution, soil degradation and deforestation have long been the main causes of poverty in these regions (Potsdam Institut für Klimafolgenforschung, 2010; Vogt, 2013).

For leading and developed nations, CO_2 equity means those countries must reduce their CO_2 output by at least 80% by 2050 (relative to 1990). Thus, from a scientific perspective, climate equity requires – above all – improving data on and calculations of CO_2 cycles. For example, factors such as aircraft fuels and the sink function of woods and soils should be considered. Equality regarding access to natural resources as a basis for intergenerational and global justice is a claim which needs far more normative reflection (Kistler, 2017).

4. Socio-economic dimension: operationalizing the principle of sustainability

The fourth fallacy: sustainability means preserving an equilibrium system in nature that does not consume more resources than it can regrow.

Sustainability manifests in the endeavour to preserve Earth's natural resources. Debate about natural resources aligns with the idea of 'strong' and 'weak' sustainability. Weak sustainability allows for the substitution of natural stock by an ecological, social or economic gain in value, whereas the strong sustainability interpretation does not (Münk, 1999). In addition, the notion of 'strong sustainability' can create misunderstanding of the three pillars concept. The seemingly equal standing of the three dimensions undermines the ecological postulate. According to the concept of strong sustainability, the exploitation of natural capital stock cannot be compensated for by a gain in economic value in a constrained sense.

The ecologist Wolfgang Haber suggested that the model of sustainability evident in nature amounts to an idealization of recycling and self-sufficiency concepts. Haber stated that this natural model cannot provide a meaningful model for modern urban civilizations (Haber, 1994). The conservation rule of so-called strong sustainability is based on an idealization of equilibrium models, which can be questioned both in evolutionary theory and in cultural history. As a rule, socio-ecological interactions are open systems.

The model of strong sustainability also incurs a methodological problem. In the model of strong sustainability, the term 'resource' is assumed to be a pre-social fact. However, something can be defined as a resource only once it has been shown to have utility value. A resource is, by definition, something that can be used or consumed; thus, it is a culture- and technology-dependent variable. For example, after hydrogen engines were invented and were in demand, hydrogen became a resource. Therefore, what constitutes a resource depends on relevant technological innovations and social demand. Through new and more efficient inventions, resources can be increased. If this argument is denied, the concept of sustainability degenerates into a passive principle of constraint.

Sustainability is not 'strong' when one assumes a naturalistic notion of resources. However, to do so, one would have to forget about the complex interdependence among socio-economic and ecological systems – which follow their own logic. The current backdrop is global crises related to climate change, financial crises, unemployment, hunger, lack of fresh water (in certain regions), loss of biodiversity, soil erosion and scarcity of resources – to name a few aspects of the many developmental crises of the early 21st century. Thus, operationalizing the concept of sustainability

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requires focusing on resilience for the future. Sustainability advocates should deal strongly with democratic processes of change.

5. Democratic dimension: pluralism, participation and democratic innovation

The fifth fallacy: the model of sustainability is a clearly defined objective. Approval of the concept of sustainability can simply be guaranteed by the widespread participation of affected groups.

Participation, and thus actor-oriented concepts, have central significance in sustainability. The third (and most creative) section of *Agenda 21* of the United Nations Conference in Rio deals with this topic. In the implementation of sustainability, however, utopian exaggeration of the role of civil-society initiatives is often evident. This tendency can be described as the naivety of idealistically charged concepts among civil society. Eco-social protest movements are not intrinsically good. They are often based on a radical reduction of complexity which prevents a nuanced awareness of the factual problems. Sustainability also requires uncomfortable decisions, which are not fostered by a policy that is too much reliant on media approval.

Analyses by social scientists, and courageous political leadership, are necessary correctives for the utopian exaggeration of civil-society rationality, and for promoting joint responsibility in sustainability processes. The constructive dynamics of societal adaptation to the conditions of nature rest on innovation and cultural values. The objectives of sustainability must be integrated into scientific, technological and economic development. Such adaptation is possible within a framework which acknowledges the diverse preferences, worldviews and competences of a pluralistic society. Because of such openness, models of sustainability cannot present a fixed aim. Sustainability is rather a system of objectives with components. It embodies a pluralistic model, which can be represented in concrete terms through diverse societal processes in the areas of economy, science and culture (Vogt, 2013).

The openness of sustainability demands the participatory shaping of public life by civil society. The active shaping of living spaces should not be decided exclusively by authorities (top-down) but must also grow slowly (bottom-up). Through recognition and participatory shaping, a consciousness of responsibility can thrive (Honneth, 1994). Thus, participation is an essential element of the ethical principle of sustainability. Sustainability requires far-reaching democratic innovations. A multi-dimensional approach is needed, which takes up the practices of sustainability employed by pioneer groups. This approach would open up spaces in civil society for a change in values. Such change must be secured structurally through changing the social institutions.

6. Cultural dimension: lifestyle and a new model of wealth

The sixth fallacy: green growth and efficiency gains are sufficient reasons to economically implement the concept of sustainability.

Sustainability does not only mean a socio-technical programme to save resources; more than anything else, it means a new ethical-cultural orientation. Current paradigms of progress and unlimited growth must be replaced by the guiding principle of development, which is embedded in the metabolic cycles and rhythms of nature. Sustainability also implies a new definition of limits and goals for progress. Instead of 'faster, higher, farther', safeguarding the ecological, social and economic stability of human living spaces will be a central principle.

The considered avoidance of risk is another principle for societal development and political planning. Thus, reflection is required on certain issues of liberalism. However, alternative (post-growth) models also raise many unanswered questions (Sachverständigengruppe 'Weltwirtschaft und Sozialethik', 2018). Sustainability must be described in terms of criteria for what should grow and what should decrease. Furthermore, these criteria require standards (for a discussion of controversial economic and scientific theories, see: Miegel, 2010; Hauff, 2012; Linz, 2014).

The blind spot in traditional growth concepts is that growth is equated unilaterally with an increase in prosperity. However, the gross national product is also increased by accidents, although these can hardly be counted as profit. A common misconception of sustainable growth, linked to social theory, is that qualitative standards for and definitions of a good life are regarded as private matters and are thus excluded from public and scientific discourse. The win–win promises, which focus on decoupling growth and environmental consumption, have not proved their worth. Successes in individual areas, for instance, have been neutralized or reversed by the so-called 'rebound effect' of rising demand for prosperity. In other words, efficiency gains are neutralized due to rising prosperity (von Weizsäcker, Hargroves & Smith, 2010; Sachverständigengruppe 'Weltwirtschaft und Sozialethik', 2018).

Sustainability therefore also requires a systemic and anchored ability for people to become self-sufficient (thrifty) and efficient (technologically optimized). In addition, sustainability requires the substitution of resources. Being able to link innovative technology with organizational optimization and changes in personal attitudes is essential.

A culture of sustainability acknowledges the protection of nature as a cultural task. Such a culture also integrates the quality of the environment as a fundamental value in definitions of wealth – at the cultural, social, health-related, political and economic levels. Sustainable culture expresses a rediscovery of the ethics of moderate living. A sustainable lifestyle does not forego wealth but rather aims to achieve intelligent, resource-friendly and environment-friendly patterns of consumption (Stehr, 2007). Nevertheless, the opportunity for critical consumerism is rather small. In her book *Ende der Märchenstunde*, Katharina Hartmann drew a sobering picture of the power of a moralization of the markets through eco-social customer demand (Hartmann, 2009).

7. Theological dimension: belief in creation and sustainability

The seventh fallacy: religions, especially Christianity, do not play a major role in shaping the concept of sustainability and bringing it to life.

The distinct quality of Christian ethics in a pluralistic society is not derived mainly from additional arguments for sustainable actions. It lies, rather, in incorporating a spiritual dimension that inspires and motivates ethical behaviour. Christian ethics draw on a rich tradition that aims to translate ethics into an ethos by addressing both hearts and minds, and both deep-seated hopes and daily life.

The Brazilian theologian and writer Leonardo Boff criticized the anthropological and ethical traditions of modernity for not moving beyond rationality. Boff stated that 'Without mysticism and its institutionalization in the different religions, ethics

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would degenerate to a cold catalogue of regulations and the codes of ethics would become processes of social control and cultural paternalism' (Boff, 2000, p. 11).

Spirituality is a type of knowledge that draws attention to the connection between ideas and emotions. It enables us to understand the manifold qualities of nature – beyond their physical, quantifiable features. Many environmentalists insist on an intrinsic value of nature. This requires a perspective that endorses not only the factual and scientifically quantifiable reality but also the beauty of nature, its sense and symbolism. It requires an aesthetic and spiritual sensibility that does not see things in isolation but in their entirety and their relationships. This is how ecological and religious perceptions can enhance and complement each other.

Responsibility for nature during climate change, the rising number of human beings on Earth, and the scarcity of resources are not a problem of knowledge. The problem is one of conviction and belief: we know about climate change and environmental issues, but it also seems that we do not really know; we do not understand, in a deeper sense, what the scientific data are telling us. We cannot sufficiently imagine what the data mean for us and for people all over the world – or for life on Earth in general. Therefore, we are unable to react adequately. We have never experienced such a deep, complex change of living conditions. The consequences seem too obscure for most westerners and for wealthy people globally. Pope Francis, in the encyclical *Laudato si',* called this a 'lack of sense for reality' because of a 'lack of physical contact' with nature and with people who are suffering (Pope Francis, 2015, p. 49).

One of the deepest aspects of spirituality presented in *Laudato si'* is a balance between realistic and critical awareness of the situation of ecological destruction, and of the social problems connected with it – as well as the positive attitude of hope. The Christian holy scripture is called εὐαγγέλιον, the 'good message'. That means a Christian's task is to spread hope, not anxiety. Important in this context is the cultural understanding of life and human identity and the practice of solidarity. The ecological crisis raises religious questions. It requires us to understand the greater cultural, anthropological and ethical contexts in which human lives are embedded.

The religious potential lies in spiritual orientation, long-term ethics, the forming of a global community, ritual endowment of life with meaning and institutional anchoring. A belief in God's creation highlights the limits of humankind with a certain humility and modesty. So far, these qualities have been activated only minimally. In other words, the discourse on sustainability is productive for religion to the extent that it raises basic issues about the world's long-term future, and about global responsibility.

Sustainability is the missing link between a belief in creation and modern environmental discourses. The Christian idea of charity was, for many centuries, understood merely as a personal virtue; the idea became politically effective and relevant only when connected to the solidarity principle. Similarly, the belief in creation needs translation into categories at the level of social order so that it can become a politically viable and justifiable idea. Belief in creation, without sustainability, is – in terms of structural and political ethics – a form of blindness. Sustainability without the belief in creation, whether Christian or not, risks ethical shallowness (Vogt, 2013).

If we assume, in line with leading sociologists (Lübbe, 1998; Luhmann, 2000), that managing contingency (in the meaning described above) is a main function of religion, then the competence of theological ethics in the discourse on sustainability becomes evident. Managing contingency is vital to respond to the postmodern breakdown of the belief in progress, which is the starting point of debates on climate change and sustainability. We do not need to resort to ecological apocalyptic scenarios or to a new version of the utopia of permanent growth. The religious dimension of hope liberates us from blind belief in the political promise of a complete management of all problems of ecology and social life.

The seven theses that have been briefly presented here leave questions unanswered and require deeper discussion. We did not want to offer limited definitions, but rather to stimulate debate about rehabilitating the 'sustainability concept'.

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