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# NATURALNESS AND ARTIFICIALITY IN BIOETHICS

Naturalness and artificiality form an unlike pair – not only in bioethics. While the expression »natural« is usually connected with positive attributes, »artificial«, as a rule, has negative connotations. »Natural« suggests obviousness, self-evidence, genuineness or harmoniousness, whereas »artificial« implies complicatedness, lack of clarity, inauthenticity or incoherence. However, the terms are also used to refer to different object-domains independently of evaluative attributions. »Artificial«, for example, can be taken to refer to what is produced by actions, and to the rules governing actions performed in pursuance of stipulated goals. Human technology then falls under this heading, and so, too, do technical interventions in nature, which are the the subject matter in bioethics. »Natural«, on the other hand, may refer to what exists or can exist independently of human actions and thus includes the objects to which bioethically relevant technologies are applied. In academic discourse, of which bioethics is a part, it is generally unproblematic to differentiate between evaluative ascriptions of the properties »natural« and »artificial« on the one hand (part of the intensional meanings), and demarcations of the object-domains on the other (i.e. the extensional meanings). Wherever the object-domains do not admit of a sufficiently clear and uniform demarcation, the respective objects in those domains cannot be ascribed general properties.

However, according to some authors in bioethics, this insight is often missing in everyday discourse – insofar as the latter is concerned with bioethical topics. Although in everyday practice it is impossible to distinguish between the domains of the natural and the the artificial with adequate clarity and consistency, these authors argue, one-sidedly positive evaluations of naturalness enter into everyday moral judgments regarding bioethical problems and thus provide such judgments with claims of general validity. For example, they point out, an argument appealing to unnaturalness would be likely to be used against the use of modified mouse tissues to grow a human-like ear on a mouse's back but not against a domestic swine that is kept alive only with medical assistance.[1] Should it be considered

[1] See Birnbacher 2006, 89 and 91.

natural to have the »correct« ear in the »correct« place and at the same time to be dependent on medication?

My aim in this paper is to critically examine the issues underlying such discussions. I want to emphasize the difference between bioethics and sciences that are relevant to bioethics on the one hand and the lifeworld on the other hand, to which problems of bioethics apply. The difference between types of experience in the scientific realm and in the lifeworld is reflected by the different definitions of nature they tend to favor. Against this background, I will claim that the object domains of the natural and the artificial are indeed better separated in the context of everyday perception than is commonly assumed in academic discourse. This capacity for differentiation in everyday contexts makes it possible to give weight to the positive connotations of naturalness used against technological interference in nature in the lifeworld discourse. I do not claim that the positive connotations arise from the capacity for differentiation. Rather, I assume that there must be additional considerations which are not derived from the distinction between the domains of the natural and the artificial in order to make moral appeal to nature. But these considerations would be unsound if they ceased to rely on the possibility of differentiation between object domains.

I will start with some preliminary terminological and historical remarks. Then I will turn to possible scientific ways of separating the domains of the natural and the artificial. In everyday practice they usually can be neither reproduced nor understood. This situation has contributed to the need for an explanation of the moral appeal to naturalness that one encounters in the lifeworld. After a discussion of explanations that are given in the bioethical discourse, I will propose a lifeworld concept that allows for the use of a fundamental boundary between the natural and the artificial.

## Preliminary remarks

With respect to the relevant spectrum of meanings of the expressions »naturalness« and »artificiality« in bioethics, this article focusses on their reciprocal meanings. There are also meanings of both concepts that exist independently of one another or overlap, as is the case, for example, when the German novelist Novalis writes: »Nature itself also wants to have enjoyment from its great artificiality« (Novalis 1802, 26). »Naturalness« and »artificiality« designate the epitome of the characteristics of the natural or of the artificial, respectively, and therefore belong to the intensional meaning of these concepts. For the scope (or object domain) of the concepts »natural« and »artificial«, I will use the expressions »nature« and »technology«, respectively. »Technology« is the domain of the »artificial« to which bioethically relevant human interferences in nature belong.



The distinction between nature and technology is among the oldest conceptions of nature in European cultural history. One of its formulations traces back to Aristotle, who defines technology (technē) as what occurs in the case of human production and owes its existence to human production.[2] In contrast, Aristotle considers nature (physis) as that reality which changes or moves on its own.[3] I assert that these definitions are the ones that enjoy widespread plausibility in today's lifeworld. In everyday practice, we can successfully apply the criterion of self-movement in order to classify objects as natural or artificial. An animal that exists or can exist of its own cause belongs to nature; insofar as the food derived from that animal owes its existence to human production, it belongs to technology. In this way, many objects can be attributed to one of two categorically distinct domains of reality: the garden as opposed to the house, the freshly picked flower as opposed to the artificial flower, the hamster as opposed to the electronic toy.[4] Under the conditions of a technologically shaped lifeworld, it is astonishing how few objects there are that do not admit of classification according to this criterion. Among them are certain interventions in living creatures and technologically induced genetic changes.

I would like to conclude these preliminary remarks with a terminological point concerning the academic side of this set of issues with reference to the concept of »bioethics«. This concept can refer to various objects and thematic approaches, which can albeit only to a limited extent be characterized together. But one can subsume a large number of them at any rate by saying that bioethics is an academic undertaking of which ethical reflections refer to technical interventions in nature. Admittedly, this definition is too narrow insofar as it is linked to nature, which is not strictly necessary. If one conceives of bioethics as ethics of the life sciences, the concept of nature is only as necessary as it is for defining the life sciences. However, insofar as bioethics has to do with interventions in the human body, with phenomena of life and environment, the invocation of the concept of nature gains plausibility. The definition of bioethics that I have given is, on the other hand, too broad insofar as it is not specific about the technical interventions it refers to, and thus includes interventions, which are typically not the object of bioethical reflection, such as road-building and gardening.

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[2] With »technology«, I am translating the Greek term »technē«, which Aristotle conceives quite broadly. He includes under this heading, among other things, the activities and products of handicraft, medicine, statesmanship, poetry and the plastic and performative arts. It is clear from his writings, however, that handicraft has a central significance for the relationship to nature.

[3] Schiemann 2005a 31ff.

[4] Loc. cit. 127ff.

## Separating the domains of the natural and the artificial scientifically

Aside from these problems, the distinction between nature and technology indeed appears to be constitutive of the object domain of bioethical discourse. How could one speak about technical interventions in nature without distinguishing between nature and technology? It is no wonder that presentations in bioethics define the concept of nature they employ by demarcating it from technology or artificiality. Some authors in fact refer explicitly to Aristotle.[5] Nevertheless, these definitions are, as a rule, connected with qualifications that quickly lead away from Aristotle, if he is mentioned at all. Instead of being positively defined by self-movement, nature is usually defined negatively as something which does not owe its existence to human production.[6] In general, the distinction between nature and technology is context-dependent and its applicability in principle limited. In the case of an animal that has been bred, human intervention in nature is – to speak with Hans Jonas – »collaboratively« combined with organic processes (Jonas 1979, 165). Presumably, every technical manipulation of organic processes leads to states in which nature and technology are indistinguishable. If one wants to retain this pair of concepts anyway, it becomes necessary to speak of hybrids of nature and technology, which are only gradually distinct from one another. In relation to animals that have been bred, food that has been produced from them is to a larger extent a product of technology. But isn't it more natural than synthetic food? As Dieter Birnbacher rightfully observes, it is »difficult to give a comprehensive and uniform measure of the extent to which humans intervene in nature« (Birnbacher 2006, 6).

However, the relative character of the nature-technology distinction does not make it otiose; it is just dependent upon specific rules of application. If one gives suitable criteria it is possible to distinguish between nature and technology to a certain extent. A procedure that includes the use of scientific methods of investigation consists in assessing the technical component of a phenomenon – its artificiality – according to the history of its coming into existence. »Technical«, then, is whatever can be traced back to human intervention.[7] In this sense, an object belongs to nature if it is not possible (by all scientific methods available at a

[5] Krebs 1997 340, Eser/Potthast 1999 14, Habermas 2001 80–83. Given an Aristotelian definition of nature, the expression »technical intervention« is a pleonasm.

[6] Krebs 1997 340f., Bayertz 2005 12f., Birnbacher 2006 1ff., where nature is also demarcated from humans. Self-movement is no longer viable as a scientific definition of nature. Elements can be found, however, in the scientific definition of life. Cf. Rehmann-Sutter 1996, Krohs and Toepfer 2005 31ff. and 180ff.

[7] The »genetic concept of nature« (genetischer Naturbegriff), in the terminology of Birnbacher 2006 9ff.



given time) to trace its coming into existence back to production by human action. The application of this criterion lends an empirical character to the classification of objects as either natural or artificial. In laboratory experiments, the artificiality of technological objects can be evaluated by means of procedures that are similar to the Turing test of artificial intelligence.[8] Such a procedure decomposes all objects, in a context-sensitive manner and to a certain extent, into natural and artificial parts, thus stripping the concept of nature of its uniformity.

This circumstance has significant consequences for the bioethics discourse. For anyone who wants to ascribe a moral status to nature by which it can be defended against increasing technologization it is necessary to distinguish it from the non-natural in a manner that is uniform enough so that the line of demarcation can serve as the basis for general norms of action. The absence of this prerequisite condition for the demarcation of nature from technology, which is the concern of bioethics, is regarded as a sufficient argument against ascribing an intrinsic value to nature in the bioethics discourse.[9]

## Explanations of the moral appeal to naturalness

I characterized bioethics as an academic undertaking. As such, it is confronted with other ways of thematically grasping technical interactions with nature. With respect to the distinction between nature and technology, various bioethics authors, as already mentioned, have observed a divergence between the academic and the everyday discourse.[10] Kurt Bayertz, for example writes:

> Despite all anti-naturalistic trends in modern philosophy, ›naturalness‹ is intuitively regarded [... in everyday moral consciousness] as a value« (Bayertz 2005 10).

Similarly for Dieter Birnbacher:

> [A]gain and again, and in the most diverse contexts, the distinction between natural and artificial exhibits a far greater legitimizing force in everyday moral thought than in academic ethics. [... The] natural is preferred to the artificial, the pre-given to the produced« (Birnbacher 2006 21f.).

And Marcus Düwell reports much the same thing:

> In public discussions, people have relatively little compunction about appealing in an evaluative way to the concept ›naturalness‹ in their reactions to developments in the life sciences. Transgenetic animals, the artificial fertilization of embryos [...] are experienced as ›unnatural‹, although it is relatively easy for anyone schooled in philosophy to think of critical counterarguments to the charge of unnaturalness« (Düwell 2008 115).

[8] Cf. Schiemann 2005b 82ff.

[9] E.g. Bayertz 2005 11ff., Birnbacher 2006 29ff., Düwell 2008 115.

[10] Cf. Vieth 2006 33, Ach and Runtenberg 2002 207ff.

The difference between academic and everyday practical viewpoints has a persistence that stands in need of explanation in bioethics. Where does this widespread tendency to oppose technical interventions in nature by appealing to nature stem from? Dieter Birnbacher, who decidedly denies the possibility of classifying objects in the lifeworld as either natural or artificial (loc.cit. 6), explains what he considers an astonishing preference for the natural over the artificial by pointing to the overpowering weight of European cultural history. The »positive evaluation of nature [... is supposedly] characteristic of the entire European metaphysical tradition« (loc.cit. 35). By placing Christianity and Platonism at the center, he increases the significance of conceptions of nature that do not start out by distinguishing nature from technology, but rather define it as a creation and contrast it with its creator. According to Birnbacher, the high esteem in which naturalness is held is also supported by the »import [... of] numerous other usages of the term ›natural‹ « (loc.cit. 31). What he has in mind are such meanings of »naturalness« as »familiar«, »authentic« and »well-ordered«, as well as its opposition to the »deviant« (loc.cit. 30ff.). To Birnbacher it is clear that these explanations cannot justify the special moral standing of nature (loc.cit. 64).

As a second example, I would like to mention an approach by Marcus Düwell, who sees the naturalness arguments, which he also thinks call for explanation, as the expression of a »need for familiarity in the lifeworld« (Düwell 2008 117). This need is directed toward clearly recognizable, well-known and stable ordering structures, which incorporate oppositions between nature and technology (ibid.)[11]. Like Birnbacher, Düwell does not derive any normative consequences from his explanation. However, it is possible to develop an ethical argument on the basis of his reflections if it can be shown that the existence of ordering structures is a fundamental prerequisite for a good life in the experiential context of the lifeworld, and that the distinguishability of nature and technology is one of those ordering structures (loc.cit. 117 and 129).[12]

Despite all technologization of nature that has occurred in the lifeworld so far, a few authors – among them Jürgen Habermas – assume the existence of a »sharp categorical distinction between what has been produced and what has come into being naturally« (Habermas 2001 83, corresponds to 77). Habermas traces this rather Aristotelian conception of the lifeworld back to the »familiar action-forms of technical processing of material on the one hand, and cultivating or therapeutic interaction with organic nature on the other hand« (ibid.). This

[11] Düwell cites some examples of extreme connections between nature and technology which do not occur in the lifeworld (»mice with human ears«, »aliens that populate the spaceships in Star Trek«, »chimeras«, Düwell 2008 117), and speaks of »nature as the basis [... of] possibility for experience« (op. cit. 129).

[12] Düwell does not mention this argument but rather an analogous argument concerning the moral significance of aesthetics of nature (op. cit. 126).



connection of the difference between nature and technology with action-forms seems to me to be presupposed by Habermas' comprehensive concept of the lifeworld. It characterizes not so much an experiential reality but a theoretical entity, which refers to the entire social object-domain of the communicatively mediated coordination of action. Divided into a private and a public sphere, this domain also includes the expertcultures of science, morality and art.[13] The breadth of this concept of the lifeworld, comprising various experiential realities, detracts considerably from its critical potential.

## Nature and technology in everyday life

For the sake of a better understanding of the appeals to nature that are relevant to the bioethics discourse, the lifeworld concept should be defined more narrowly. In particular, it should be distinguished from scientific experience.[14] In doing so, I will borrow definitions from the lifeworld phenomenologies of Edmund Husserl and Alfred Schütz. According to some of their views, the lifeworld is a bounded experiential domain that is characterized by a non-professional type of action, by familiar social relations, and – most importantly for the concept of nature – by the direct perceptibility of objects relevant for action. The lifeworld is a perceptual world in which conscious attention is directed towards the practical interaction with known things and people, as they appear outwardly to the senses. This lifeworld concept is applicable in all cases in which I have so far spoken of everyday practice.

In this experiential context, the Aristotelian distinction between nature and technology can be efficacious even today, since it is also based upon differences that are accessible to immediate sense perception. The criterion of self-movement is, for Aristotle, applicable to nature in its entirety, but is most clearly apparent in the case of organisms. It designates states and changes of states which are brought about not by external causes but by inner principles, as well as these inner principles and the productive process caused by them. Objects qualify as natural merely by possessing inner principles of change. Self-movement reveals itself in, among other things, growth, nutrition, sensation, spontaneous locomotion and perception. It does not presuppose teleology, but rather implies changes that are unpredictable or incalculable for humans. Typically, self-movement is only a topic of interest when its self-evident existence is interrupted, in particular when it is a matter of life and death. Is a sick person who lies motionlessly in bed still alive

[13] For more on Habermas' lifeworld concept, see especially Habermas 1981, vol. 2, chap. VI, Lippitz 1980 160ff., Matthiesen 1983, Geiman 1990, Dietz 1993, Schiemann 2005a 93.

[14] For an introduction to the relationship between lifeworld and science in applied ethics, cf. Vieth 2006 33ff.

or already dead? The point of the Aristotelian lifeworld conception of nature is that knowledge of it does not presuppose knowledge of how it came into existence. Such a »phenomenological« understanding of nature is distinct from the aforementioned definitions of science, which ascertain the naturalness of an object on the basis of its origin.

Modern lifeworlds are cut off from the conditions under which the objects they contain originated. They are essentially artificial worlds, in which humans surround themselves with nonliving products and a surveyable number of animals and plants. Under such circumstances, the Aristotelian distinction is already present and unproblematic.

The unproblematic recognizability of elementary ordering-structures reflects the persistent distance between the natural and the artificial. Technology can modify natural processes, but it is still far away from constructing life, although this might perhaps possible in principle. The special status of life is still recognizable with the help of the criterion of self-movement. As an example, I would like to mention the so-called onco-mouse, which the philosopher of science Donna Haraway discussed as a paradigm case of the indistinguishability of nature and technology.[15] With this example, I am applying the lifeworld's criterion of self-movement to a laboratory context, and using it for a critical assessment of technological modifications of organisms. The onco-mouse is a transgenetic animal that is highly susceptible to breast cancer. Even non-professional observers can recognize this mouse as an organism that, although it has been seriously harmed, is otherwise organized according to internal principles of change (growth, nutrition, sensation, locomotion and perception). Insofar as the harm done to it has consequences for the entire organism, the holistic character of life finds expression here. Nature remains present as a self-moving phenomenon for everyday observers even in high-tech labs. Indeed, it presents itself in this mouse's suffering such that our sympathy is aroused, which is one of the factors motivating the protest against this case of genetic manipulation.

I would like to conclude by emphasizing again that no moral norms can be derived from the sharp character of the perceptually organized distinction between nature and technology. It is a merely extensional definition that demarcates one domain of objects without thereby directly picking out any properties relevant to action. However, as such it does precede any moral appeal to naturalness, since it guarantees an indispensable reference to a domain of objects.

Although the difference between nature and technology is not a foundation for norms, it does have a morally relevant orientational value as a fundamental classification. While nobody is responsible for effects brought about by nature, technology is traced back to the performance of human actions. While technology,

[15] Haraway 1997.



as a product of planned activity, is expected to be transparent, the autonomy of nature presents a challenge to human epistemic capacities. The concept of technology, along with other related concepts, such as the concepts of society, culture or history, demarcates a natural domain that is constitutive of the self-understanding of modern lifeworlds.[16]

## Non-scientific and scientific understandings

In bioethical discourse, the distinction between nature and technology that refers to self-movement takes on the meaning of a non-scientific object-constitution. The non-scientific character becomes all the more relevant in view of the tension that arises between it and scientific definitions of nature. It is also possible to scientifically distinguish between nature and technology. However, the specificity and the non-intuitive character of the experimental procedures thereby employed are not accessible to lifeworld perception. Moreover, one must bear in mind that the use of scientific technology tends to dissolve the foundations of the lifeworld distinction. Natural processes are incorporated in technical procedures that are employed in the lifeworld, and technology is implemented within the human body.

The implementation of technology in the human body is probably still the most important aspect of human enhancement. There are many different forms of application that insert technology in humans. In the lifeworld as I have defined it, technical interventions mainly occur in the context of curative treatments, which means that they support our nature as a self-moving entity. While the scientist or doctor may see traces of medical or technical interventions in the body, the person in question need not herself have any experience of them. The more successful the implementation, the more invisible it is from the perspective of the lifeworld.

I have been arguing for the current relevance of the distinction between nature and technology, but at the same time I would like to leave open the possibility that other – in particular scientific – definitions of nature are gaining in importance in the lifeworld. However, the fact that the nature-technology distinction has continued up to now to be at least understandable can be regarded as an indication of the possibly epoch-making scope of biotechnology. This technology has a tendency to dissolve a categorical difference that is still current today and which can be traced back to antiquity. With respect to the dissolution of its demarcation, that has already occurred, the criterion of self-movement is generous, so to speak, since it relegates even technically overlain, manipulated and dependent realities to nature.

[16] Cf. Taylor 1996 539ff., Viehöver et al. 2004, 65–94.

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Sebastian Schleidgen, Michael Jungert,
Robert Bauer, Verena Sandow (eds.)

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Bibliografische Information Der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.ddb.de abrufbar.

Gedruckt auf umweltfreundlichem, chlorfrei gebleichtem und alterungsbeständigem Papier ♾ ISO 9706


Schulze-Delitzsch-Straße 19, D-33100 Paderborn
www.mentis.de



Printed in Germany
Einbandgestaltung: Anne Nitsche, Dülmen (www.junit-netzwerk.de)
Satz: Rhema - Tim Doherty, Münster [ChH] (www.rhema-verlag.de)
Druck: AZ Druck und Datentechnik GmbH, Kempten
ISBN: 978-3-89785-733-9

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