

THE VALUE OF BIODIVERSITY

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Summary

In their approach to the question of nature protection, many debates, publications and reports show that one overall question arises which lies at the heart of the discussion: "What kind of nature do we want to protect?" Normativity and value of the concept of biodiversity in moral judgments rest on background assumptions and elements of ethics which we must consider in relation to biodiversity.

Of particular interest here is the question of drawing positive and negative limits for the treatment of nature and its diversity with recourse to normatively understood guiding concepts like man, life, suffering or nature, i.e. anthropocentric, biocentric, pathocentric or physiocentric dimensions. Moral consequences and implications arise here for man's dealings with biodiversity.

As part of a typology of paradigmatic approaches in today's ethics of nature, two basic types can initially be distinguished: the exclusive-anthroporelational concepts, on the

one hand, and the trans-anthroporelational concepts, on the other. Although the former affirm the existence of ethical limits to human control over nature and non-human organisms, they deny that such limits are set by rights and duties of protection towards, or on the side of, the organisms themselves. In other words, the former type would restrict ethical limits exclusively to man himself.

On the other hand, the latter type of concepts is characterized precisely by their explicit recognition of direct responsibilities and duties to protect non-human organisms. The different approaches of exclusive-anthroporelational and trans-anthroporelational kind show various strategies of argumentation. In a practical process of decision making there might be a larger consensus concerning consequences than has been shown in theoretical considerations.

1. Introduction

In their approach to the question of nature protection, many debates, publications and reports show that one overall question arises which lies at the heart of the discussion: “What kind of nature do we want to protect?” Is it the 'natural' nature as a result of an evolutionary process without any human influence such as for example in coral reefs; is it the nature cultivated by generations of civilized human beings for example in gardens, or is it the kind of nature human beings need for their survival in future, for example specialized crops and farm animals that we want to protect? The recent concepts, uses and applications of ethical values and principles which guide measures for the protection of nature, the environment and endangered species refer very often to the concept of “biodiversity”.

By now in many societies the protection of biodiversity has become one of the central aspects which must be taken into consideration in the process of planning new roads, residences, airports, and other landmarks of civilization. Since the “Convention on Biological Diversity” has come into force biodiversity has internationally been regarded as a central goal of global environmental policy. The protection of the biodiversity of a specific national territory is subject to binding agreements under international law. This common policy and practice seem likely to be based on a clear scientific, empirical and pragmatic concept of biodiversity and its ethical and economic value.

But, regarding the details, the question of how biodiversity can be understood in a practical manner and what the principles and criteria are necessary to judge and assess the value of biodiversity, is still very much in the dark. The value of biodiversity can only be understood in the context of a reflection on those normative principles, concepts and theories into which biodiversity can be integrated in order to be applied in the field of environmental policies on different levels.

Central concepts which are strongly connected with the concept of “biodiversity” such as “species”, “ecosystem”, “gene”, “life form”, “balance” etc. are used in different ways in ecological and biological disciplines. This is the case because the subjects of the disciplines are different and their relation to the practices of the world in which we live, our "life-world" is not the same. But the meaning of those pre-scientific and scientific concepts depends very much on the history of the language of the discipline, the

technologies involved and its relation to those needs and goals which co-determine the biological research area in question. The meaning and value of biodiversity can only be understood, if the contexts in which these concepts are applied are adequately analyzed.

2. Need, benefit and value of biodiversity

The need of the diversity of biological species is at the same time both evident and unclear. Most of the arguments refer not to the number of species but to the quality they hold for human life and human flourishing. They are mostly concerned with food, health, wealth, knowledge, aesthetics, home and origin.

2.1. Arguments in the debate

Some of the arguments refer to the quantity and quality of species for the stability and balance of very diversified ecosystems, such as coral reefs or tropical rainforests. But quality also plays an important role in less diversified ecosystems. This issue includes the interdependences between different species (e.g. caterpillars specialized on specific leaves; interdependencies between blossom and pollinators), the network of organisms and abiotic elements and the whole balance of an ecosystem.

Apart from the controversial question of whether a more diversified ecosystem or a less diversified ecosystem is more stable, it is quiet clear that there are many examples which explain the link between stability and diversity concerning the sustainability and conservation of ecosystems. Species which at first sight appear not to be useful may yet have an important unknown function for the stability of ecosystems.

Another group of arguments aims at chemical ingredients of species which can be used for nutrition, medical therapy, crop protection, new building materials etc.; most of them are not even known yet. There are wild forms of those cultivated plants we use for nutrition (20 species cover 90% of the global nutrition). The genetic variability of these forms represents an important potential to ensure the foundation of nutrition. They provide a reservoir of genes which can be used against diseases or parasites.

Again and again scientific investigations discover wild plants, animals or bacteria with pharmacologically and therapeutically effective substances. The as-of-now undiscovered potential of these “natural pharmacies” is completely unknown. Both, the resources of a commercial kind and resources which are of importance to the native subsistence economies must be taken into consideration.

Research on biodiversity can thus lead to new technological know-how. Wild species may provide resources or basic parts of raw materials (oils, colors, fibers etc.) where there is no synthetic counterpart. Another area of research is the area of bionics, where structure, biostatics, or behavior of a species act as a sample for products of engineering (bionics). Humpback whales are masters of underwater communication, deep see fishes are capable of glowing without sparks, a blade of grass may become the model for the bending strength of television towers.

In the area of ecological sciences a diversity of species can be very useful as reliable indicators for mineral resources and toxic matters in different media. Concerning the global climate change bioindicators are a highly assessed component of monitoring.

Natural biodiversity has always been compared to the diversity of livestock and crop farms. The aspect of genetic diversity is particularly relevant here. Genetically uniform monocultures hold the danger of instability because of the less developed adaptability concerning demands of the environment—one virus might destroy a whole plantation.

Apart from the arguments of needs and benefits concerning the survival of the human race, research on biodiversity—which requires the existence of biodiversity—aims at pure knowledge without any application and has a pure scientific value: to learn about life and its origin. Biodiversity serves as an important background for research in molecular biology to understand the evolution of life and humankind. Only certain side effects of this kind of research might have the potential of application. Species of primates are important to understanding of the development of human behavior; research on the physiology of manatees and their slow clotting blood increases our knowledge about hemophilia.

A trans-utility benefit of biodiversity can also be seen in our aesthetic and emotional perception. Apart from the much valued achievements of civilization and cultured nature, the experience of pure diversified nature satisfies highly important needs which are deeply rooted anthropologically. The increasing interest in safaris, diving tours, whale watching, etc. is illustrative of this. Moreover, the experience of pure nature and inspiration drawn from it, has for centuries also been the subject of countless works of art, music and literature. Here pure nature, natural nature, diversity on the whole, and the entire natural system show their intrinsically aesthetic and emotional value.

2.2. Status of arguments

But what is the status of these very different arguments? Many conservationists with a mere scientific background argue for the protection of biodiversity only on the grounds of pure utility without moral reasoning. They even doubt whether ethics can provide better reasoning for a point of view at all. Instead, they equate moral intuition or attitudes in ethical reasoning with religious or general ideologies: “Our own view, and that of many other biologists and environmentalists, is that, as the dominant species on the planet, *Homo sapiens* has an ethical responsibility to preserve biodiversity.

This means opposing intentional exterminations of other species and supporting conservation efforts. One cannot assert this ethical responsibility on scientific grounds. It clearly arises from essential religious feelings” [Ehrlich & Ehrlich 1992, 220-221]. This argument fails because there are rational standards—comparable to those of empirical science—which provide the foundation for moral reasoning and arguments before we turn to final foundations with religious and ideological convictions, beliefs or feelings. There is a wide ranging spectrum of ethical standards. Each of them contains more or less demanding foundations of justification [cf. Galert 1998, 18].

Another group of conservationists have complete and utter confidence in the power of economic sciences to provide the foundations for the protection of biodiversity. David Ehrenfeld argues that a “Conservation dilemma” occurs if one identifies conservation of nature and biodiversity with conservation of natural resources. There will, however, be a lot of species for whom a particular economic need cannot be established.

We will as a consequence in some instances be caught in the unsolvable situation of having to invent doubtful economic values in order to be able to look at a species as a resource. Where basically there would be a need for ethics, we are faced with the rules of the market instead. “It does not occur to us that by assigning only instrumental value to diversity we merely legitimize the process that is wiping it out—the process that says, ‘The first thing that matters in any important decision is the magnitude of the dollar costs and tangible benefits.’...If I were one of the many exploiters and destroyers of biological diversity, I would like nothing better than for my opponents, the conservationists, to be bogged down over the issues of valuing” [Ehrenfeld 1993, 118-119].

Ehrenfeld wants to overcome this “arrogance of humanism” by also turning to the religious roots. Therefore he specifies the expression of non-humanistic values as the “Noah Principle”, the biblical approach to protect biodiversity. He describes it as an ancient way of evaluating ‘conservability’. The species and the life communities should be conserved “because they exist and because this existence is itself but the present expression of a continuing historical process of immense antiquity and majesty” [Ehrenfeld 1978, 207].

Unfortunately, Ehrenfeld gives no explanation of which principles should lead the decision-making process, if not all species and communities of life can be preserved. But it can be seen as a general plea for the effort of the transcendence of human values [cf. Galert 1998, 20].

Bryan G. Norton is one of the authors who argue against economic values as the core values to lead to the protection of biodiversity. He mentions the problem that regarding the economic paradigm the burden of proof is always on the conservationists’ side. If only those species should be protected which have an economic benefit for human beings this has to be shown in each case. But the protection of biodiversity should be the normal case and not the other way around [Norton 1986, 111; Gunn 1980, 23-29; Galert 1998, 21-22].

3. Biodiversity and ethics of nature

Normativity and value of the concept of biodiversity in moral judgments rest on background assumptions and elements of ethics which we must consider in relation to biodiversity. Of particular interest here is the question of drawing positive and negative limits for the treatment of nature and its diversity with recourse to normatively understood guiding concepts like man, life, suffering or nature, i.e. anthropocentric, biocentric, pathocentric or physiocentric dimensions. Moral consequences and implications arise here for man's dealings with biodiversity.

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In other words, the former type would restrict ethical limits exclusively to man himself. On the other hand, the latter type of concepts is characterized precisely by their explicit recognition of direct responsibilities and duties to protect even non-human organisms [on this distinction c.f. e.g. Regan 1995, 159; Krebs 1997].

3.1. Exclusive-anthroporelational approaches

The most prominent variant of an exclusive-anthroporelational concept is autonomistic in the narrow sense formulated above all by Kant. In §§ 16 and 17 of the Doctrine of Virtue in his *Metaphysics of Morals* (1797), Kant maintains, under the heading "Amphiboly of concepts of moral reflection", that if we judge the matter according to pure reason man cannot have any duties other than those towards man (himself or another). [Kant, MS II, AA VI, 442]. Kant therefore thinks that "indirect" duties are possible "in consideration of animals" but not "direct duties towards animals" [Kant MS II, AA VI, 443], so the assumption of the latter position is merely the result of an amphibolic confusion.

In rejecting direct responsibilities or duties of protection towards animals, Kant argues that a duty represents moral coercion by a will. According to Kant, only persons, not animals, have a will (*Wille*) in the sense of the ability to determine ends autonomously; this he distinguishes from freedom of the will (*Willkür*) in the narrow sense of pursuing an end [Kant MS II, AA VI, 442]. Ethical limits to control over animals are therefore set exclusively for the sake of the human beings affected by control over animals, but not for the sake of the animals themselves affected by this control.

The duties of responsibility that exist towards man are premised on his status as a moral subject founded in his ability to determine ends autonomously. And it is precisely this status that gives man the quality of being an end-in-itself and, as such, of having a categorical inherent value. In this way, man is understood as an "end in itself", or rather as a "value in itself". He is equally the subject and object of morality [Ricken 1987, 17].

The same exclusive-anthroporelational conclusion as Kant's (in the narrow sense) autonomistic concept has been arrived at by the many contractualistic approaches put forward more recently as part of the critical development of Thomas Hobbes' contract theory, as found in John Narveson (Narveson 1988) and especially in John Rawls with his book *A Theory of Justice* (¹1971/⁷1993). The measure of the legitimacy of an action is, according to the Rawlsian approach, its compatibility with certain normative principles. These principles are developed from a hypothetical contractual situation in society under fictitious rational conditions.

For Rawls, the idea of the contract takes the form of an operational test procedure, which distinguishes competing principles of justice in terms of their fairness. In a fictitious "original condition" rational individuals make choices under a "veil of ignorance" which only permits general knowledge (e.g. of psychological or economic mechanisms) but not specific knowledge of, for instance, each person's "position in society" or what ticket he or she happens to have drawn in the "natural lottery" that distributes endowments like intelligence or physical strength [cf. Rawls 1971].

Rawls looks at the normative principles which result from such a contractual situation and are therefore binding. For him, these are, first, the principle of maximum equal liberty of all members of society and, second, the principle of only allowing inequalities in distribution if everyone, but especially the worst-off group in society, has an advantage from them ("difference principle"). Since the objects of the moral principles refer exclusively to the members of the society constituted by this contract, Rawls' approach also excludes any direct moral relevance of living beings other than human beings.

Although certainly not in the form of direct duties, it is nevertheless certainly possible to derive ethical limits to man's control over animals and other life forms on the basis of exclusive anthroporelational concepts like the autonomistic and contractualistic variants. We already find the first decisive criterion in Kant, formulated there as the *pedagogical* criterion. Kant rejects any "violent and cruel treatment of animals", including "tortuous physical experiments merely for the purpose of speculation when the end could have been achieved without them".

This, he argues, is because such treatment blunts man's ability to empathize with their suffering, thus weakening and gradually eliminating a natural facility that greatly serves morality in relation to other human beings [Kant, MS II, AA VI 443]. A third criterion to mention is the *basic needs* criterion. This measures the legitimacy of the treatment of non-human nature primarily by its compatibility with the continued existence of the natural foundation of man's existence and basic option of being able to lead a good life. Basic needs are understood in terms of current as well as future generations.

Then there is the *aesthetic* criterion, which should be regarded in this context as a special variant, or rather specification, of the *basic needs* criterion. Starting with the significance of aesthetic contemplation of "natural beauty" as a basic option of good human life, it also calls for limits on human intervention in non-human nature [cf. Krebs 1997, 364-376.].

Proceeding from exclusive-anthroporelational concepts, we can identify a number of criteria for the ethical judgment of the treatment of non-human nature that also apply to the ethical judgment of the conservation of biodiversity. The ethical problems concerned with the protection of biodiversity are in essence resolved by reference to inter-generational obligations. Thus, as Günther Patzig has said, "in the broadening of moral responsibility beyond the circle of people living today lies the root of the rationally justifiable obligation we have towards our descendants in questions of raw material extraction, environmental pollution and species conservation." [Patzig 1984, 72].

He goes on to observe that, "we find a species-rich natural environment aesthetically pleasing and do not want to renounce this diversity of living beings as co-inhabitants of the earth, and that means organisms not just in a zoo but with full freedom of movement in their natural habitat.

This is why we also have an obligation towards our descendants to maintain an appropriately species-rich and experience-rich environment" [Patzig 1984, 74]. Yet in this approach there is no dignity accorded to species in themselves; rather, it is a question of indirect duties which are still only valid in a relation to human beings, i.e. which are exclusively anthroporelational.

Such exclusive-anthroporelational concepts can certainly show convincingly that it is problematic to confer onto animals or other living beings a "will" in the sense of the capacity for autonomously determined action, let alone for entering into a contract. Yet these arguments cannot rule out in principle that animals are able to have "interests" with regard to suffering. After all, we cannot identify here any rational reason why animals should not, at least *prima facie*, have to be given due respect for their own sake.

3.2. Trans-anthroporelational approaches

If, following Kant and Rawls, we confer a categorical "self-value" on man as an (in the narrow sense) autonomous being and subject of a morality, this in no way means that we should not recognize non-human organisms "if not as the subjects then certainly as the objects of morality" [Ricken 1987, 17] and therefore concede that there are direct moral duties towards animals. In fact, in the current discussion of natural and animal ethics we can make out seven main lines of argument, each of which will be critically outlined in the following sections.

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Professional Stages and Positions

Since 1998 Head of Research and Managing Director (since 2002) of the ‘German Reference Centre for Ethics in the Life Sciences’ (DRZE), Bonn.

1994-1998 Researcher at the Institute of Science and Ethics, Bonn.

1994-1998 Assistant of the subgroup “biotechnology” of the board of editors of the German *Lexikon der Bioethik* (ed. by Görres-Gesellschaft, Munich).

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