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Environmental Ethics

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Abstract

Environmental ethics—the study of ethical questions raised by human relations with the nonhuman environment—emerged as an important subfield of philosophy during the 1970s. It is now a flourishing area of research. This article provides a review of the secular, Western traditions in the field. It examines both anthropocentric and nonanthropocentric claims about what has value, as well as divergent views about whether environmental ethics should be concerned with bringing about best consequences, respecting principles and rights, or embodying environmental virtues. The article also briefly considers two critical traditions—ecofeminism and environmental pragmatism—and explores some of the difficult environmental ethics questions posed by anthropogenic climate change.

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1. DEFINITIONS AND SCOPE

Environmental ethics is the study of ethical questions raised by human relationships with the nonhuman environment. Ethical questions are those about what we ought to do, and ethical claims are prescriptive, rather than descriptive or predictive. An example of a prescriptive claim is as follows: People should reduce the ecological impacts of their lifestyles. This claim could be true, even if lifestyles are currently unsustainable and future change is unlikely. Thus, prescriptive claims are not reducible to either descriptive claims about people's acts and beliefs or predictive claims about possible future events. They are instead normative and aspirational, describing the behaviors, practices, and character traits for which we ought to strive, even if these are difficult to achieve.

This implies that the empirical sciences alone are insufficient for answering ethical questions and justifying ethical claims. Of course, knowledge about ecological systems, the state of the world, human psychology, and social institutions is crucial to good ethical reasoning. For example, part of determining whether we ought to reduce our ecological footprint is having good data about ecological limits, lifestyle impacts, and what may occur if lifestyles do not change. However, to get from descriptive and predictive claims to normative or prescriptive claims other things are

required—values and principles. Therefore, central to environmental ethics are the tasks of determining what things in the nonhuman environment (hereinafter, the environment) are valuable; how and why they are valuable; and how we ought to consider these values in deliberations about principles, actions, practices, and laws. The goals and methods of particular environmental policies, ecosystem management strategies, and practices of environmental activism, among other things, can then be assessed in terms of how responsive they are to what is valuable in the environment and how well they embody the principles that those values justify. Many environmental issues, e.g., endangered species protection, sustainable resource management, genetically modified crop use, greenhouse gas mitigation, population growth, and chemical contamination, are as much ethical issues as they are economic or legal issues. It is therefore crucial to evaluate the policies and practices regarding them in terms of what is right and good, in addition to what is efficient or expedient.

Environmental ethics emerged as a distinct field of philosophy during the 1970s, and its scope has since expanded significantly. To carry out a rigorous and thorough review, therefore, we have, of necessity, restricted the areas we discuss. First, we focus specifically on environmental ethics, not on environmental philosophy more broadly construed, e.g., environmental epistemology, metaphysics, and aesthetics (but see References 1–3). Second, we concentrate on the secular, Western traditions currently dominant in environmental ethics within what is usually called an analytic philosophical tradition. We omit discussion of religious approaches to environmental ethics (but see Reference 4); non-Western traditions, including indigenous and Asian approaches to environmental ethics (but see References 5, 6); and Continental philosophical traditions, such as those emerging from phenomenology and existentialism (but see References 7, 8). By narrowing our focus in this way, we do not intend to imply that these approaches are not extremely important. Because of length restrictions, we cannot include the serious and careful consideration that these approaches deserve.

2. INTRODUCING THE FIELD

Ethical reflection on human relations with the nonhuman world is not new. Concern about the environmental impacts of human practices, and human treatment of animals, was found in ancient Greece (9). Jeremy Bentham (1748–1832) and John Muir (1838–1914) are both still influential in environmental ethics; and Aldo Leopold's *A Sand County Almanac* (10), a seminal work in the field with its essay on the Land Ethic, was published in 1949. However, as noted above, the modern field of environmental ethics emerged in the 1970s. The first academic conference concerning environmental ethics was held at the University of Georgia in 1971; the first journal, *Environmental Ethics*, was founded in 1978. From the 1980s onward, research, publication, and teaching in environmental ethics rapidly expanded. Monographs and edited collections central to the field, including Taylor's *Respect for Nature* (11), Rolston's *Philosophy Gone Wild* (12), and Elliot & Gare's *Environmental Philosophy* (13), were published in the mid-1980s. By the 1990s, textbooks and readers for students were being published, most prominently Des Jardins's *Environmental Ethics* (14) and VanDeVeer & Pierce's *The Environmental Ethics and Policy Book* (15). The International Society for Environmental Ethics was founded in 1989, and the International Association for Environmental Philosophy in 1997. New environmental ethics journals were also founded during the 1990s: *Environmental Values* (1992), *Ethics and the Environment* (1996), the *Journal of Agricultural and Environmental Ethics* (1997) and *Ethics, Place and Environment* (1998) (now *Ethics, Policy and Environment*).

As environmental ethics continued to grow in the twenty-first century, it diversified. Environmental ethics now supports many contrasting views concerning the fundamental problems in

environmental ethics, how to approach these problems, and how environmental ethical theory relates to pressing practical environmental issues. Here, we outline some central, but divergent, positions currently defended within environmental ethics.

3. UNDERSTANDING VALUE IN ENVIRONMENTAL ETHICS

3.1. Interpretations of Intrinsic Value

At the heart of environmental ethics is a question about what has value—what matters. The claim that the environment, or parts of it, has intrinsic value has been centrally important. However, this term can be and has been used in a number of significantly different ways. We identify five ways here. One additional sense of intrinsic value as meaning moral status or moral considerability is discussed separately below.

Intrinsic value may be understood as properly contrasted with instrumental value, where instrumental value is the value that something has as being a means to our ends (14, pp. 144–45; 16, pp. 56–74; for discussion, 17–19). To say that the environment has intrinsic value here is just to say that it has value beyond anything it does to help us achieve our aims—beyond, for example, providing ecosystem services, recreational opportunities, and so on. Those who claim that the environment has intrinsic value in this sense deny that it exists merely as a human resource.

Others take intrinsic value to be properly contrasted with extrinsic value, where extrinsic value is the value something has by virtue of its relation to another valuable thing (20, p. 29; 21, pp. 151–52). Extrinsic value is thus broader than and inclusive of instrumental value because "being a means" is one kind of relation something can have to another valuable thing, though not the only kind. In this view, to say that the environment has intrinsic value is to say that it is not valuable on account of its relations to things other than itself, but rather that it has value in its own right.

Another interpretation takes intrinsic value to be a matter of the metaphysical status of the properties in virtue of which something has its value (22, pp. 114–17; 23, pp. 321–39). To say that something is intrinsically valuable in this sense is to say that it is valuable because of the intrinsic properties that it has. For example, one might claim that an ecosystem is intrinsically valuable by virtue of its health, structure, or self-sufficiency.

Still others regard intrinsic value not as a matter of where something gets its value, or the metaphysical status of its value, but rather to mean the lexical priority of its value over other kinds of value (24, 25). In this view, to say that something has intrinsic value is to say that its value is more important than mere instrumental or extrinsic values.

Intrinsic value may also be taken to denote a particular way that something ought to be valued—that it ought to be regarded as worthy of respect (or some other intrinsically valuing attitude) rather than merely useful or convenient (or any other extrinsically valuing attitude) (19, 26). The idea here is that things that are intrinsically valuable ought to be valued differently, though not necessarily valued more, than extrinsically valuable things.

As the field of environmental ethics has developed, claims that the environment, or parts of it, has noninstrumental value have remained popular (see Reference 16). Claims that the environment has value in its own right, or that it merits certain special kinds of valuation, have been more controversial but are still widely endorsed. However, metaphysical understandings of intrinsic value and its interpretation in terms of lexical priority have both been much criticized—for failures in terms of both metaphysical and moral justification—and are not now widely accepted (16, 23, 25).

3.2. Intrinsic Value as Moral Status

The term intrinsic value is also sometimes taken to mean having moral status or moral considerability. To say that something has moral status normally means that it should be taken directly into account in our decision making; as Warren (27, p. 3) maintains: "we may not treat it just in any way we please." In most accounts, something that has moral status is understood to have interests, or a good, of its own; things can go better or worse for it, although better and worse can be understood in different ways. To say that something has moral status is not, however, necessarily to say that it has moral rights. Rights possession is usually construed much more narrowly than moral status and is normally only applied to humans and perhaps some animals (28). To say that something has moral status also says nothing about comparative value; it is a threshold concept. To say something has moral status is just to say it counts for something; the term moral significance is usually reserved for comparative judgments of moral weight (28).

From its earliest days until the present, environmental ethics has been concerned not only with what value means but also with what actually has value and with the implications such values may have for human relations and human behavior. Almost everyone agrees that human beings have high moral significance and that ethical issues arise when some human actions involving the environment negatively impact other humans. However, if some, or all, of the environment is thought to have intrinsic value, additional ethical issues are raised.

4. HUMAN VALUES IN ENVIRONMENTAL ETHICS

4.1. The Idea of Anthropocentrism

The term anthropocentrism can be used to refer to worldviews and attitudes, to intrinsic value, or to moral status and significance. The argument that anthropocentric attitudes, such as that humans have dominion over nature, lie at the root of our environmental problems has historically been influential in environmental ethics. In a key early paper, Lynn White Jr. (29) maintained that the claim that humans were both separate from and superior to nature was a fundamental cause of the environmental crisis. This idea also animated deep ecology, a radical environmental movement at its height in the late 1970s and 1980s, but still influential today (30, 31).

One common form of anthropocentrism claims that only human beings have intrinsic value. As discussed in Section 3.1 above, this can mean very different things. It could mean that things other than human beings can only have value as means to our ends, which is sometimes referred to as strong anthropocentrism (32). Or it could mean that only humans have value in their own right; everything else must get its value from some relation to us. It could mean that we only have value by virtue of our intrinsic properties. Or it could mean that the value of humans trumps the value of all other things or that humans ought to be valued in a distinctive way that does not apply to other things.

Perhaps the most popular way of understanding anthropocentrism, however, has been as a claim about moral status and/or moral significance. These forms of anthropocentrism maintain either that only human beings have moral status or that human beings are much more morally significant than any other living things. Someone who is nonanthropocentric about moral status, in contrast, maintains that at least some nonhuman beings or things, which may include animals, living organisms, ecosystems, populations, and species, have interests that should be taken into consideration in our moral decision making. Whether such things do have interests and, if so, whether these interests should be considered morally significant have been a matter of considerable debate within the field (11, 22, 33–39; see Section 5 below). Someone who is nonanthropocentric about moral significance also typically rejects the claim that human interests should always be

considered more important than the interests of other things. This could be by claiming that all interests are equally important (11, 34) or by claiming that importance is established by something besides species membership, e.g., contribution to ecosystem health (40).

Two further points should be made. First, significant environmental ethics problems exist, even for those who are anthropocentric. Human interactions with the environment generate substantial interhuman justice issues, both between existing people and between present and future people (see Section 4.2 below); and justice issues are a core concern of environmental ethics. Of course, nonanthropocentric views usually share similar concerns, extended to broader constituencies. Second, the term anthropocentric in environmental ethics has often been understood to carry negative valence (in a similar way to the negative valence popularly carried by the term egocentric); hostility to it has been so widespread that it has been argued that nonanthropocentrism is a "dogma of environmental ethics" (41, p. 142). However, a number of environmental ethicists strongly defend forms of anthropocentric ethics; many of these philosophers are known as environmental pragmatists (see Section 5.2 below).

4.2. Environmental Justice and Sustainability

Environmental justice is a key concern of environmental ethics. It is defined by the US Environmental Protection Agency as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (42, p. 2). As this definition indicates, there are both distributive and participative (or procedural) justice issues involving the environment.

Distributive justice concerns the allocation of burdens and benefits in societies. One important environmental burden is exposure to environmental hazards. Research has shown that low-income and high-minority communities are disproportionately exposed to environmental hazards, particularly chemical exposure and air and water pollution, stemming from living and/or working near transportation depots, industrial facilities, and waste processing facilities (43, 44). In the United States, race is significant to exposure above and beyond income, sometimes leading to the use of the term environmental racism (45). The United States is not anomalous in this respect; low-income and marginalized communities all over the world are disproportionally exposed to ecological hazards from, for example, mining, agriculture, and global climate change (45, 46).

Unequal exposure to environmental hazards might not itself be unjust, if there were good justification for the inequality. For instance, justice might allow unequal exposure even to the economically worst off, if those who shoulder the burdens also get associated benefits, or if exposure is the result of a sufficiently fair social and political process. However, this is rarely the case. Any plausible theory of justice must accept that race and wealth are not appropriate bases for differential treatment or political standing. To deny this would be to accept racism and classism and to reject the equal moral worth of people.

Participative justice means the involvement of those affected by decisions in making the decisions. Critics have pointed out that many people adversely affected by policies, institutions, and choices about environmental matters have no say in their formation (47, 48). This is a violation of participative justice. To avoid participative injustices, environmental ethicists have recommended full and meaningful participation, particularly by those whose health and welfare might be affected in environmental decision making (49).

Environmental ethicists have raised many global concerns about environment and justice. One such concern arises when the creation of parks and reserves restricts indigenous communities

from accessing historical lands and resources (50), and another from bioprospecting using indigenous knowledge (51). Justice concerns also arise in the context of debt-for-nature swaps where "a creditor agrees to forgive a developing country's debt on the condition that the developing country fund and implement a domestic conservation program" (52, p. 359). In cases like these, environmental ethicists have worked to define the operative principles of justice to evaluate the acceptability of current policies and practices, as well as alternatives to them.

Moreover, environmental hazards are not geographically or temporally contained. The ecological conditions of people not yet born are impacted by our current practices, lifestyles, and policies. Thus, another aspect of environmental justice for environmental ethicists has been determining what we owe to people who are distant from us across space and time, particularly those who do not yet exist (53, 54). One key area of ethical debate here has been the idea of sustainable development, popularly defined in *Our Common Future* (55, p. 54) as meeting "the needs of the present without compromising the ability of future generations to meet their own needs." Most accounts of sustainable development attempt to bind together concerns about equity (over both time and space), economics, and the environment, sometimes called the triple bottom line, into a single approach (56). Ethicists have been both supportive and somewhat skeptical about the idea of sustainable development, applauding the general thrust of the idea but expressing concerns about its potential vagueness (57, 58).

Global and intergenerational justice issues have recently gained greater attention because of their centrality to the ethics of global climate change. Affluent people living today are disproportionately responsible for anthropogenic climate change because of their high-consumption (and so high-emissions) lifestyles. However, poor people in low-income countries are, and will increasingly be, disproportionally exposed to the ecological hazards associated with climate change, being more dependent on their local ecological systems and having a lower adaptive capacity (e.g., less wealth and mobility). Future generations also do not directly enjoy the benefits of the current consumption that causes climate change, but they will inherit a host of environmental challenges as a result of it. Thus, climate change seems to be unjust from both an intergenerational and global perspective, although the exact nature of this injustice and how to respond to it are contested. This issue is often referred to as climate justice (53, 59–61). Central to climate justice is determining the moral status and significance of future generations and distant contemporaries, as well as working out what practices would be just with respect to them. These are conceptually and ethically interesting and difficult issues that have been extensively discussed by ethicists (62–64).

Finally, some environmental ethicists have suggested that we stand in a justice relationship to nonhuman environmental entities, such as species and ecological systems (47). The central idea here is that our species is taking more than our fair share of ecological resources; for example, we consume ~25% of net primary plant production, use over a third of the terrestrial surface of the earth for agriculture, and have fully or overexploited 87% of the world's fisheries (65, 66). In this view, we have responsibilities of distributive justice to make more resources available for other species and of restitutive justice to make up for past harms caused to other species, populations, and ecological systems. The question whether nonhuman organisms and collectives (ecosystems and species) are the sorts of entities that can be owed justice, from the perspective of ethics (as opposed to law), remains a contested issue in environmental ethics, closely tied to the issue of the moral status of these entities (see Sections 5.3 and 5.4 below). If they do not have moral status, then they cannot be due justice. However, even if they have moral status, it does not follow that they are appropriate recipients of justice because one could hold that justice only applies to a subset of the beings that have moral status (37, 39).

5. NONHUMAN VALUES IN ENVIRONMENTAL ETHICS

5.1. Ethics and Sentient Animals

One key approach to environmental ethics focuses on the moral status, and ethical treatment, of individual animals. Most commonly, moral status is attributed on the basis of animals' subjective experiential welfare, particularly animals' capacity to feel pain (for shorthand, we call this sentience). Singer's *Animal Liberation* (33) first championed this view in recent ethical debates. Singer argued that beings who can experience suffering and pleasure have morally relevant interests and that where beings have similar interests, irrespective of species, these interests should be taken equally into account. This argument both attributed high moral significance to nonhuman sentient animals and underpinned Singer's claim that focusing moral significance on species membership, rather than on the possession of sentience, is speciesism. The basic idea that sentience is a sufficient condition for moral status is widely accepted in environmental ethics, even by those who do not regard it as a necessary condition.

Sentience is not the only morally relevant capacity that can be attributed to animals. Singer (67) also argues that, in addition to sentience, some animals are self-conscious and have preferences to live, and that killing a being that has a sense of itself as a distinct entity with a future and that prefers to live is worse than killing a being without such a preference. In an alternative and highly significant account, Regan (34, p. 243) argued that all adult mammals have equal moral significance because they are what he calls experiencing "subjects-of-a-life." He takes this to encompass being able to feel pain, to have desires, to have ends of one's own, to have memories and expectations, and to have a sense of oneself as persisting over time. Another recent group of relational positions in environmental ethics argues that, although we have some basic obligations to all sentient animals, we have additional or stronger obligations toward certain animals, not on the basis of their capacities, but rather because of our special relations with them, for instance, animals that we have domesticated (68, 69).

Although almost everyone agrees that some nonhuman animals are sentient, it is sometimes argued that possessing sentience is not morally relevant (70), or that sentience does not provide the basis for much moral significance, even though it is sufficient for moral status (71). For these ethicists, what matters ethically is, for instance, being able to recognize and respect another's moral worth or being a rational language user. But, as Nobis (72) and others point out, this objection also raises concerns about the moral significance of certain human beings—infants and those with severe mental disabilities—who are equally unable to recognize and respect others' moral worth.

Among environmental ethicists, a further objection is that an ethical focus on individual humans and animals is not environmental at all. From biocentric perspectives (Section 5.2 below), it is argued that sentience-centered views draw the scope of morally relevant individuals too narrowly. From more holistic views, such as ecocentrism (Section 5.3), it is maintained that the focus on individuals is environmentally inappropriate; we should instead focus on ecological wholes, such as ecosystems.

5.2. Ethical Biocentrism

Ethical biocentrism is used to describe ethical positions in which all living things have moral status. One early form of ethical biocentrism, based on the idea of reverence for life, was proposed by Albert Schweitzer in *The Philosophy of Civilization* (73). More recently, a number of biocentric approaches have been systematically developed (11, 28, 41, 74–77). Though unified by a focus on the ethical importance of individual living things, these approaches disagree about what characterizes a living thing and why those characteristics might be thought of as morally relevant; whether

some living things are more morally significant than others; and whether the value of life is just one among a broader, plural set of values conveying moral relevance, or is the only such value.

Although exact interpretations differ, most biocentric ethicists argue that all living things can be benefited and harmed, that therefore they have interests or a good of their own, and that this good is something we should respect. A significant divide exists, nevertheless, between those who argue that all living things are of equal value and those who maintain that some living things are more morally significant than others. Taylor (11) argues for a position of biocentric egalitarianism, a view shared by Sterba (77). However, most contemporary biocentric ethicists (41, 74, 76) disagree, arguing that the possession of more complex psychological capacities, such as sentience, gives beings that possess them a higher level of moral significance.

This movement to inegalitarianism helps avoid some common objections to biocentrism. For instance, it is often argued that biocentric egalitarianism is completely impractical because we cannot avoid constantly harming living things; that it is simply absurd to think that we must take the welfare of bacteria into account, particularly if we are to regard them as of equal significance to cognitively complex animals; and that biocentric egalitarianism wrongly excludes morally relevant considerations, such as sentience and self-awareness (76). However, inegalitarian biocentrism avoids this critique. Being alive need not be the only criterion for moral significance. An *Escherichia coli* and a wolf are both alive, and this may be morally relevant, but additionally, that wolves have a mind (or brain) and are both sentient and social may also be relevant. An ethic that maintains it is no worse to kill a wolf than an *E. coli* must surely be misguided. Even though biocentric ethicists want to hold on to egalitarianism in principle, they often adopt practical principles that appear to conflict with egalitarianism—principles that prioritize some living things over others (most prominently, 11); this has led to charges of inconsistency. Inegalitarian views, however, appear to have plausible responses to the above objections (39).

5.3. Holistic Ethics: Ecocentrism

Some leading forms of environmental ethics argue that our moral focus should not be on individual organisms but on ecological collectives, e.g., ecosystems or the land. Aldo Leopold's work, especially his essay "The Land Ethic" (10), has been highly influential here. Leopold extends the moral sphere outward from the human community to include the biotic community: "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively, the land" (10, p. 204). Leopold famously defends a land ethic in which "[a] thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (10, p. 224). This is not to say that Leopold thought individuals—or human individuals, at least—are ethically irrelevant. He is usually interpreted as arguing that we also ethically need to take the land directly into account (see Reference 78), although this interpretation is occasionally disputed in favor of seeing Leopold as an anthropocentric pragmatist (see Reference 79).

Leopold's ecocentric and highly suggestive ethic was not systematic; in particular, he did not suggest ways of resolving any conflict between individuals and the land. Modern environmental ethicists have endeavored to develop a more secure underpinning for ecocentric ethics (22, 37, 80). These accounts as to why ecological communities or ecosystems should be accorded moral status differ considerably. Callicott (78) argues—drawing on Hume and Darwin—that just as we have emotional loyalties and moral responsibilities toward the human communities in which we are located, so too we should have such loyalties and responsibilities to the ecological communities of which we are also members. Rolston (22) focuses on ecosystems as wild processes that create and nurture life; we should not value the organisms, the products of the system, without recognizing

the systemic value of the processes that produced them. Johnson (37) argues that ecosystems should be understood as quasi individuals and that we can make sense of the idea that they have interests that do not necessarily coincide with the interests of their members.

However, such ecocentric views are often seen as problematic. One difficulty concerns what an ecological community, or an ecosystem, might be thought to be, and another is whether it is the kind of thing to which we can attribute interests. Some have raised questions about whether ecosystems are sufficiently cohesive, unified, and bounded (spatially and temporally) for us to think of them as having interests of their own (35, 81). Although concepts such as ecosystem health and ecosystem integrity are often used to refer to what is good for ecosystems (82, 83), it can be argued that these are merely metaphors that portray human preferences as though they were the interests of ecosystems (84, 85). Another issue concerns how we can justify the kind and level of ecological organization that ought to be the focus of our ethical attention. Given that there are many different ways of delineating ecosystems (topographically, by trophic hierarchies, by nutrient budgets, by energy flow patterns), as well as many different kinds of ecological wholes in addition to ecosystems (communities, biomes, ecotopes, etc.), which is the right one to serve as the basis for assessing interests (81, 85)? The more indistinct, incoherent, rapidly changing, and arbitrarily defined ecosystems or communities seem to be, the more difficult certain kinds of ecocentric ethics become to maintain, especially those that depend on the idea of ecosystems having a good or interests that can be set back or damaged.

5.4. Holistic Ethics: Species

Many environmental ethicists who defend ecocentrism also defend holism with respect to species, arguing that species have value distinct from that of the individual organisms that comprise them. Species, and populations, are certainly instrumentally valuable. They provide food, medicine, shelter, recreation, enjoyable experiences, knowledge, and more. The question here is whether they have value not based on their usefulness to us. There are two ways in which both ecosystems and species might have noninstrumental value. They might have interests or a good of their own that we ought to care about (moral status) or they might be valuable in their own right even if they lack interests (another form of intrinsic value).

The claim that species have interests distinct from the organisms that comprise them faces challenges rather like those raised by the claim that ecosystems have interests distinct from the organisms that constitute them. For one thing, it is not always easy to define the boundaries of species. There are a number of different species concepts—ecological, genetic, phylogenetic, reproductive, and so on—that divide living things up somewhat differently. However, pluralism in species concepts does not itself mean that there is not one that might be more important or useful in ethics (just as there are more useful ones in ecological or evolutionary biology). In fact, most proponents of the direct worth or value of species emphasize the concept that species are distinctive forms of life (12, 86). In this view, what makes two organisms conspecific is that they are genetically related individuals who share a common evolutionary history and way of going about the world (i.e., getting food, avoiding predators, and reproducing). However, even if species can be delineated in this way, it is still not clear whether they are properly regarded as having interests or a good. We commonly talk about species this way—as being healthy or as if things are good for them. However, species do not have minds, so they cannot have psychological interests, and they are not alive, so they cannot have biological interests. Individual wolves, silver maples, and human beings can be harmed and die, but *Canis lupis*, *Acer saccharinum*, and *Homo sapiens* cannot. The difficulties with grounding the interests of species have led many environmental ethicists to doubt whether they do have a good of their own that we should care about (39).

Even if species do not have interests, they may be valuable in other ways. Some species, in some places, have high cultural, symbolic, and religious importance, and they are valuable for that reason. Particular species (or forms of life) can be valuable for being amazing, beautiful, or rare. These types of values are not instrumental, i.e., they are not based on what the species or populations do for us, but they are valuer dependent. That is, they depend on our culturally, religiously, or aesthetically valuing them. Thus, they are intrinsically valuable in one sense (noninstrumental) but not in another sense (independent of their relations to other things).

However, some theorists, most prominently Rolston (12, p. 111), have argued that species also have human-independent intrinsic values: "These things count, whether or not there is anybody to do the counting." In this view, each species is valuable in itself because it is a unique and distinctive form of life resulting from human-independent evolutionary processes stretching back into deep time. This is sometimes called natural value (see Section 5.5 below). Many environmental ethicists, conservation biologists, and environmentalists find this view compelling (86, 87). However, this type of value is highly contested (32).

Finally, some theories have argued that species have distinctive, noninstrumental values by virtue of the contribution they make to biodiversity, which is itself valuable (88). This is sometimes called contributory or compositional value. Whether this view is justified depends on biodiversity having noninstrumental value. Moreover, the view is often accused of committing the part-whole fallacy (89). The fact that a whole or composite has value does not mean that each part that comprises it does. Each person may have inherent worth, but it does not follow that each of their organs or cells does so as well.

The issue of whether species have intrinsic value or moral status is important in environmental ethics because it is this sort of value that would ground duties and obligations to them (22). If we have a duty of justice to other species, or an obligation to them to prevent them from going extinct from anthropogenic causes, it must be because they have value independent of us that makes a claim on us as moral agents.

5.5. Wildness Value

One other important value here is wildness. Although not directly relevant to moral status, wildness is often argued to be of intrinsic value (in some sense) and motivates many claims for environmental protection. The idea that wildness or naturalness is of particular value has a long history, especially in the United States. It is embedded in the US Wilderness Act [16 U.S.C. 1131–1136(2)(c)], which defines wilderness as follows: "in contrast with those areas where man and his works dominate the landscape. . .where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wildness or naturalness is significant in environmental ethics; indeed Preston (90, p. 464) goes so far as to maintain that "the presumption central to environmental ethics is that human actions need to be circumscribed in such a way that the human-independent processes remain intact." One difficult issue here is what exactly wildness or naturalness should be taken to mean. Most agree that these terms refer to independence from humans in some sense. In Elliot's influential view (91) when we value objects or places for their naturalness, we value them because they have not been "shaped by human hand"; they are not of human origin. Ecological restorations, then, Elliot argues, do not have the same value as the natural originals because they lack continuity with a natural past. Hettinger & Throop (92, p. 12) defend a broader view of wildness as being "not humanized," where humanization means "influenced, altered or controlled by humans." In this view, being of nonhuman origin is just one way of being wild; and wildness is not absolute but can come in degrees.

The association of wildness with wilderness has been particularly problematic. It has been argued that wildness can be found all around us, even within cities, and that an understanding of wildness value as excluding humans (as in the traditional US wilderness idea) can lead to the displacement of indigenous peoples who do or did live in places called wildernesses, and is more broadly misanthropic (50, 93). Others have argued that—especially in an era of global anthropogenic environmental change—continued emphasis on wildness value and pristine nature is misplaced; we should instead pay more ethical attention to environments influenced by people (94). Those who defend the value of wildness—for instance McKibben (95)—find the pervasive human impacts of climate change particularly threatening. Even authors who are less inclined to come to this view about climate change itself (given its unintended, accidental nature) see geoengineering proposals intentionally to influence global climate as reducing wildness in ethically disturbing ways (see Section 8.2) (90).

5.6. Hybrid or Value-Pluralist Views

Environmental ethicists have argued for the moral status of many different kinds of beings and things, and have defended a variety of values. Some positions in environmental ethics are value monist—arguing that there is ultimately only one kind of master value (e.g., positive sentient experience, or flourishing) and that other apparent values can be analyzed in terms of or be reduced to that one value (20). Others argue instead for forms of value pluralism, wherein different kinds of things and beings may all have moral status (37) or multiple irreducible values—such as rationality or sentience—can be simultaneously defended. The central problem for value monists is to identify a master fundamental value, justify its significance, and explain how to translate other values into its terms. The central problem for value pluralists is to provide a way of prioritizing or balancing competing values when they come into conflict. Value monists generally endorse what is called strong value commensurability: Because there is a master value, all values end up being commensurable with one another, i.e., all values can be measured as some quantity of the master value. A pluralist view may adopt weak value commensurability, where one can consistently rank values and apply some kind of lexical priority rule where one value (or amount of the value) is always given priority over another value (or amount of the value). Other value pluralists reject such regular ranking patterns, arguing for different forms of value incommensurability, where value rankings either vary by context (so in some cases one might prioritize one value, in other cases a different value) or rankings cannot be done at all because rational choices cannot be made between them. Value-pluralist positions have been widely adopted in environmental ethics, on the basis that, as Carter (96, p. 76) puts it, "each value continually exercises its pull." Nonetheless, the issue remains unresolved.

6. ETHICAL THEORY AND ENVIRONMENTAL ETHICS

Environmental ethicists have very different views about what has value/moral status. However, this is not the only important divergence of views; an additional difference concerns what one should do with the values one adopts. Values need to fit into an ethical theory to guide action. For instance, is ethics primarily about maximizing what is good and minimizing what is bad? Or, alternatively, is it about what we owe to each other as morally important beings (or things)? Or should ethics, instead, be understood as being about the development of good character, making ourselves into the best person we can be?

Environmental ethicists—like ethicists in general—disagree profoundly about these questions, and these disagreements have shaped the field of environmental ethics. We review the three

leading, but conflicting, approaches to ethical theory in environmental ethics: consequentialism, deontology, and virtue theory.

6.1. Consequentialism

Consequentialism is the ethical theory that we should aim at bringing about best consequences through our actions, rules, or practices. Standard forms of consequentialism are maximizing (aim at the best expected outcomes of all available options) and require us to take the whole outcome into account (including the outcomes of omitting to do things we could have done). Within this broad description, environmental ethicists have defended different forms of consequentialism, in particular, by proposing varying views of good outcomes. Leading consequentialist positions in animal ethics argue either that we should maximize happiness (net of suffering) or that we should maximize satisfied preferences (net of frustrated ones) across all the beings that can suffer or have preferences (97). However, consequentialist approaches to environmental ethics need not concern either experiences or preferences. Attfield (20, 74) argues for a form of biocentric consequentialism, where the good (to be maximized) is organismic flourishing and the bad (to be minimized) is inhibiting such organismic flourishing, although, he notes, the flourishing of some organisms is of more moral significance than others. And holistic ethical views may also be consequentialist—aiming at maximizing ecosystem health or species flourishing. It has plausibly been argued that Leopold's land ethic (10, p. 224), with its outcome-oriented advocacy of what "tends to preserve the integrity, stability and beauty," itself endorses a form of consequentialism (98). So, consequentialists have very diverse ideas of what actually constitutes the good, even though they are bound together by the forward-looking aim at bringing about best outcomes.

6.2. Deontological and Rights Views

Deontological views, by contrast, maintain that maximizing the good is not all that matters and that we are permitted, and sometimes required, not to maximize the good, perhaps, where doing so would require us to be unjust. What matters in this view is what we owe to one another, rather than the creation of better or worse states of the world. From a deontological perspective, consequentialist approaches to environmental ethics may create problematic commitments; for example, they may imply that we should minimize wild animal suffering. But ultimately this could require us to manage ecosystems in ways that change their structure, including reducing the number of pain-inflicting carnivorous animals or feeding wild animals in times when food is scarce (99). Deontological thinkers may argue that this is interfering in ecological matters that are not our moral business (68, 100).

Deontological theories in environmental ethics emphasize rules, principles, duties, rights, or some combination of these, rather than maximizing the good. Rights theories form the most important group of views here, particularly those maintaining that humans have environmental rights. Hayward (101), for example, argues that humans have a right to an environment adequate for health and well-being and that this right should be constitutionalized. The idea that there are no good grounds for denying some nonhuman animals the basic rights that humans are believed to have, such as the right not to be tortured, killed, or confined, has also been widely defended (34, 102). Donaldson & Kymlicka (69) move beyond this, arguing for citizenship rights for domesticated animals in addition to the basic rights that all animals are argued to have; Cochrane (103), on the other hand, argues that, although animals have some basic rights, these rights do not include the right to liberty because animals are not autonomous subjects.

Although accounts of animals' rights differ (for example, in terms of whether keeping companion animals violates their rights), all agree that rights possession gives animals very powerful

protections, e.g., against being killed for food or used in painful experiments. This view can cause conflicts with other positions in environmental ethics—particularly where it is argued that sentient animals are causing damage to ecosystems or driving species to extinction (e.g., when sentient animals become invasive). In such cases, ecocentric ethicists argue that the animals should be culled, but animal rights theorists maintain that culling violates animals' rights (22, 34).

Deontological approaches are not confined to human or animal rights, although rights language is rarely used for nonsentient living entities. Taylor (11), for instance, argues that we have duties to respect individual living organisms and that these organisms cannot be entered into calculations for maximizing the good.

6.3. Virtue Ethics

Virtue ethics has recently undergone a significant revival and has been strongly taken up by environmental ethicists, beginning with Hill's paper "Ideals of Human Excellence and Preserving Natural Environments" (104). In the past decade, a series of papers and a number of important books arguing for environmental virtue ethics have been published, most prominently Sandler's 2007 *Character and Environment: A Virtue-Oriented Approach to Environmental Ethics* (105).

In a virtue ethics approach, actions, practices, and policies are evaluated in terms of whether they express or achieve virtue, as opposed to whether they promote appropriate consequences or conform to duty. For example, when evaluating different forms of animal agriculture, a virtue ethics approach asks which virtues are operative, e.g., compassion, ecological sensitivity, and efficiency, and then what form or method of animal agriculture best accomplishes these. Thus, the normative or prescriptive content of virtue ethics comes from substantive accounts of the character traits that are virtues, e.g., respect, humility, compassion, courage, ecological sensitivity, efficiency, and simplicity, and those that are vices, e.g., callousness, shortsightedness, arrogance, cowardice, profligacy, and laziness. Therefore, much research in environmental virtue ethics involves specifying which character traits are virtues and the dispositions (cognitive, affective, practical, and conative) that constitute them (106, 107). Decisions concerning which character traits are understood as virtues and which are vices are closely tied to what account of environmental values is most justified. Character traits that would be justified as virtues on a biocentric or holistic value system would be very different from those that would be justified on a strong anthropocentric value system.

Although virtue ethics has recently grown in prominence within environmental ethics, it is by no means the dominant view. However, even among those who reject a virtue ethics approach to environmental ethics in favor of consequentialism, deontology, or pragmatism (Section 7.2 below), there is now widespread recognition that attention to character is crucial for addressing our ecological challenges. What kinds of people we are matters because our character traits affect whether we act virtuously, bring about good consequences, and do our duty. Moreover, good environmental character is often beneficial to its possessor by fostering connection to place, opening her to rewarding and meaningful experiences, and making living an ethically good life more enjoyable.

7. CONTRASTING APPROACHES

Despite the fact that these analytic and theoretically oriented approaches to environmental ethics have dominated the field, two big-picture cultural critiques—philosophical ecofeminism and environmental pragmatism—argue that these approaches have gone the wrong way in terms of what really matters.

7.1. Ecofeminism

Ecofeminism is a diverse movement sharing one basic premise: There is a mutually reinforcing link between the domination of nature and the domination of women (108). As Reuther puts it:

> Women must see that there can be no liberation for them and no solution to the ecological crisis within a society whose fundamental model of relationship is domination. They must unite the demands of the women's movement with those of the ecological movement to envisage a radical reshaping of the basic socioeconomic relations and the underlying values of this society. (109, p. 204)

Even though ecofeminism maintains that there is a connection between the domination of women and of nature, there is disagreement about the nature of the link between these twin oppressions. And more recently, most interpretations of ecofeminism have been expanded further to include oppressions of class and race.

Although ecofeminism is diverse, ecofeminists have shared concerns about the approaches to environmental ethics we have discussed here. First, many ecofeminists argue that these forms of environmental ethics emphasize rationality at the expense of emotion, denying the role emotion does—and should—play in ethical decision making (110). Second, ecofeminists argue that these approaches to environmental ethics work with abstract principles of justice that are supposed to apply to all people everywhere, ignoring the complex and particular nature of the ethical situations that we usually encounter. Third, ecofeminists tend to be wary of identifying particular capacities that permit beings or things to qualify for moral status (111). This, they argue, potentially sets up value dualisms (such as sentient/nonsentient), a practice ecofeminists resist; it displays (according to ecofeminists) the characteristics of essentialism, abstraction, hierarchy, and individualism; and it assumes the moral insignificance of relationships (112). In contrast, ecofeminists generally defend ideas of a relational self, whereby individuals are understood as partly constituted by their relations and in which particular caring relationships, significantly featuring the emotions, are key to ethical decision making.

This critique more obviously applies to some traditions than others. Those environmental ethicists that, broadly, fall within a Kantian tradition or that emphasize rights (11, 34) are indeed strongly individualist and emphasize the importance of emotionally detached reasoning, maintaining that rationality, impartiality, and individualism are in fact strengths of their ethical positions. Equally, utilitarians, such as Singer (33), maintain that one should not disproportionately favor those to whom one has personal emotional attachments. Virtue ethicists, however, defend positions much closer to those of ecofeminists, especially when emphasizing the importance of virtues such as empathy and compassion. Any rapprochement between these approaches to environmental ethics and ecofeminism might well begin here.

7.2. Environmental Pragmatism

Most approaches to environmental ethics, including those discussed here, are theory oriented. At their heart are normative theories, e.g., consequentialism, deontology, or virtue ethics, and theories of value, i.e., accounts of which things matter and why. However, one family of views, known as environmental pragmatism, does not share these theory-oriented commitments and is skeptical about the prospects of identifying a single, most justified theory of environmental ethics. Moreover, environmental pragmatists typically believe that the search for such theories obscures the more important problems of responding effectively to environmental challenges. Therefore, environmental pragmatists tend to be highly pluralistic and contextual about value. Because these

views do not accept the idea of basic, fundamental values to which we can appeal, they tend to emphasize the importance of a process of inclusive, collaborative discourse in the evaluation and justification of practices and policies (113).

Environmental pragmatists tend to have strong practical commitments to achieving outcomes that effectively address problems and to using whatever conceptual resources are needed for this. Thus, pragmatists can appeal to rights or intrinsic values in nature, not in a foundational or deeply theoretical sense but as ways of representing people's value commitments within deliberative and discursive processes (16). Many environmental pragmatists argue that the theoretical debates in environmental ethics are largely moot because different theoretical perspectives can converge in practice when making policy. For instance, if anthropocentrism is sufficiently reflective—that is, if it takes future people, the services ecosystems provide to people, and other human cultural and aesthetic needs seriously enough—there will be, in practice, convergence between anthropocentric and nonanthropocentric environmental policy (32). Therefore, rather than arguing over contentious, nonanthropocentric ethical views we ought to just make use of the anthropocentric arguments for environmental protection that are much more likely to be popularly persuasive than nonanthropocentric ones: If we degrade the environment, it will harm us in the long run; we have a responsibility to future generations to take care of the planet; and justice and human rights require that we not pollute the environments in which other people live or destabilize the ecological conditions on which they depend (32, 114, 115).

8. TRENDS AND DIRECTIONS

In the past decade, environmental ethics has developed in new directions in terms of its closer relationships with other disciplines, engagement with emerging technologies, and responses to rising concern about anthropogenic climate change. These trends look likely to continue and intensify.

8.1. Growing Links with Other Disciplines

As the field of environmental ethics has matured, it has developed closer connections to other disciplines, especially within the biological and social sciences. In some cases, ethical understandings of environmental problems have changed as a result of developments within these fields. For example, the virtues recommended by environmental virtue ethics have changed as experimental psychology has discovered more about what motivates conservation behavior (116). Likewise, claims about the value of ecosystem health have been affected (and in some cases undermined) by shifts in the way that ecology understands ecosystems (81). In other cases, work within environmental ethics has challenged assumptions used by other fields in their assessment of environmental problems. For example, ethical critiques have challenged economic conceptions of value, political representations of the interests harmed by climate change, and concepts, such as biodiversity, that play an important role in conservation biology (89, 117–119).

8.2. Links with Emerging Technologies

Technology has always been significant to environmental ethics because it is the efficient cause of many of our environmental problems; is frequently promoted as part of the solution to those problems; and often mediates human-nature interactions, relationships, and experiences. As a result, environmental ethicists have often engaged in ethical analysis and evaluation of emerging technologies, an interest that has grown significantly in recent years. Synthetic biology, artificial intelligence, genetic modification, nanotechnology, agricultural technologies, geoengineering (see

Section 8.3.3 below), and new forms of energy generation have been of particular importance to the field in recent years (120–124).

8.3. Environmental Ethics and Climate Change

Global environmental changes—including urbanization, the spread of invasive species, and, in particular, the impacts of climate change—have become important issues for environmental ethics, in some cases leading environmental ethicists to rethink their prioritization of environmental values.

8.3.1. Ecological restoration and climate change. The practice of ecological restoration has long been contested in environmental ethics. In 1982, Elliot (91) argued that ecological restoration could not restore all the value lost in an ecological destruction, even if the restoration was in every way identical to the predestruction original. One of the reasons we value particular environments, he argued, is because they are not of human origin (they are, in this sense, wild or natural). Because restorations are of human origin, they lack the value of naturalness, even if they recreate other values. Katz (87), developing this view, argued that restorations are artifacts, i.e., products of human design and interests, and should be understood as examples of human domination over nature. Not everyone accepted this judgment; others maintained that restorations might instead be seen as healing or reparatory, bringing back lost values, and encouraging local communities and individuals to engage in active, positive relationships with the nonhuman world (125).

Climate change throws this debate into a new context: A changing climate means that aiming at a goal of historical fidelity in restoration will frequently be impractical. This has generated a discussion about both the meaning and significance of historical fidelity in restorations. Although most environmental ethicists still retain a place for historical fidelity (126, 127), others maintain that we should, as a practical necessity, de-emphasize the value of historical fidelity in restorations and instead emphasize other goals and values particular restorations might fulfill or protect (128, 129).

8.3.2. Species preservation, assisted migration, and climate change. As the climate changes, species that are unable to move (for instance, due to a barrier caused by urban expansion) and that cannot easily adapt to rising temperatures or changing precipitation patterns may be threatened with extinction. From most perspectives in environmental ethics (see Section 5.4 above), species are valuable for instrumental reasons or because they are believed to have some kind of intrinsic value. As ethicists such as Nolt (130) argue, because species are valuable and humans are (in some sense) morally responsible for the threat, species loss matters ethically. One way of preventing such species loss, for selected species at least, would be for humans to deliberately relocate members of threatened species to new more suitable habitats, a practice called assisted migration, assisted colonization, or managed relocation. Such relocations, however, have provoked substantial recent ethical debates (131–134). Some argue that assisted migration poses a significant risk of creating new invasive species (135), thereby threatening species and ecosystem values in the recipient systems. Others argue that, even in cases where invasiveness is not a worry, because many species carry place-specific historic and cultural values and their ecological roles in native ecosystems are context dependent, their value will not transfer to new locations (136). But not all ethical responses to assisted migration are negative. Environmental ethicists also argue that, in at least some cases, assisted migration can protect important values without threatening others and may contribute positively to the new location, either ecologically or culturally (137, 138).

One important difficulty that has emerged from debates about both restoration and assisted migration in the context of climate change is that values traditionally important in environmental ethics may no longer be pursued simultaneously. For example, in the past, setting aside areas of

land from human use would preserve both wildness values and species values. Climate change, however, in some cases, means that human intervention is necessary to preserve species, so it may become necessary to choose between preserving wildness and protecting species. How to negotiate such decisions will be an important area of future debate for environmental ethics.

8.3.3. Geoengineering, ethics, and climate change. The threat of significant negative impacts from climate change, and failure to successfully conclude binding international agreements on restraining greenhouse gas emissions, has precipitated proposals for geoengineering (intentionally manipulating the climate in response to climate change). Two main forms of geoengineering have been suggested: those that remove carbon dioxide from the atmosphere (e.g., carbon capture and storage technology, afforestation, and ocean fertilization) and those that reduce the amount of solar radiation reaching Earth by blocking or reflecting sunlight (e.g., space or desert mirrors, cloud whitening, injecting sulfur aerosols into the stratosphere). These proposals have generated significant debate among ethicists. First, some are concerned about geoengineering in principle, arguing that the willingness to contemplate geoengineering raises significantly troubling questions about human worldviews, values, and attitudes. Jamieson (139), in an early paper on geoengineering ethics, argued that intentional climate change would reinforce human arrogance and domination of nature, even if it were successful, a concern substantially developed by Hamilton (140). Preston (90) argues that, by creating an artificial climate, geoengineering conflicts with that highly significant strand of environmental ethics for which naturalness is an important value (see Section 5.5 above). In addition, some argue that the deliberate manipulation of the climate appears to create human moral responsibilities for its effects that a natural climate would not create (141). Second, geoengineering appears to present a moral hazard problem [although Hale (142) argues that the precise nature of this problem is rarely clearly formulated]. If people come to believe that the availability of a geoengineering option will protect them and their children from the negative impacts of climate change, they are less likely to reduce emissions now; yet this in itself makes the implementation of geoengineering more likely (143). Third, geoengineering raises problems about the justice of procedures and outcomes: Who should decide when to use geoengineering technology and in consultation with whom? If particular communities are not meaningfully consulted, but are significantly impacted, this appears to raise issues of environmental justice. And, in addition, present generations cannot consult future generations or nonhumans at all (144, 145). Fourth, each proposed geoengineering technology raises its own ethical issues, including issues of participative and distributive justice, as well as the likely effects of the technology on animals, organisms, ecosystems, and species. Although many (but not all; see Reference 146) environmental ethicists nonetheless conclude that we should continue research into geoengineering technologies, anticipating a time in the future when using geoengineering might turn out to be the lesser of two evils, responses to geoengineering move from the deeply unenthusiastic (90, 139, 147) to viewing it as a marring evil (148). Almost all environmental ethicists maintain that we should change our behaviors and economic systems, rather than further manipulate the climate. However, as threats from climate change become more acute, this debate in environmental ethics is likely to grow and intensify.

SUMMARY POINTS

1. Environmental ethics, a growing and diverse subfield of philosophy since the 1970s, examines ethical questions regarding human relationships with the nonhuman environment.

2. Researchers in the field investigate which things in the world have value and how much or what kind of value they have.
3. Human values to be fostered in human-environment interactions include justice, sustainability, and instrumental values, such as ecosystem services, recreation, and natural resources.
4. Many environmental ethicists believe nonhuman entities and places are also bearers of value, including sentient nonhuman animals, individual organisms, ecosystems, and species.
5. Environmental ethicists employ three main theoretical approaches: consequentialism, deontology, and virtue ethics.
6. Ecofeminism and environmental pragmatism have challenged mainstream views and methodologies within environmental ethics.
7. Climate change and the emergence of new technologies raise novel ethical challenges and questions that are beginning to be addressed by environmental ethicists.

FUTURE ISSUES

1. What kind of value do humans, sentient animals, organisms, ecosystems, and species have?
2. What is required to achieve participatory and distributive justice within environmental policies, institutions, and practices?
3. Do any of the three most common ethical theories (consequentialism, deontology, and virtue ethics) provide us with the best guidance about environmental problems either individually or in combination? Or is a new approach needed?
4. How, and to what extent, should mainstream environmental ethics respond to the critiques of it offered by ecofeminism and pragmatism?
5. How should climate change affect the way that we think about environmental issues such as ecological restoration, species preservation, or the value of wildness?
6. Can we responsibly develop powerful emerging technologies, such as geoengineering, nanotechnology, and synthetic biology?

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