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The Move from *Is* to *Good* in Environmental Ethics

John Nolt*

Moves from *is* to *good*—that is, principles that link fact to value—are fundamental to environmental ethics. The upshot is fourfold: (1) for nonanthropogenic goods, only those moves from *is* to *good* are defensible which conceive goodness as goodness *for* biotic entities; (2) goodness *for* nonsentient biotic entities is contribution to their autopoietic functioning; (3) biotic entities also function "exopoietically" to benefit related entities, and these exopoietic benefits are on average greater than their own goods; and (4) the most general *is*-to-*good* principles that are defensible (and hence the ones of greatest importance for environmental ethics) concern a realm of nonanthropogenic goodness that encompasses both living and nonliving nature.

INTRODUCTION

Holmes Rolston, III has observed that reasoning in environmental ethics often exhibits what he calls a "transition from *is* to *good* and thence to *ought*."[1] The following argument (from his *Environmental Ethics: Duties to and Values in the Natural World*) is a case in point:

(1) Species defend particular forms of life, pursue pathways through the world, resist extinction, regenerate, exhibit creative resilience and maintain a normative identity over time.
(2) Moral concern is appropriate to entities that engage in such processes of value.
(3) So, moral concern is appropriate to species.[2]

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[1] Holmes Rolston, III, *Environmental Ethics: Duties to and Values in the Natural World* (Philadelphia: Temple University Press, 1988), pp. 230–31.

[2] A species for Rolston is "a living historical form . . . propagated in individual organisms, that flows dynamically over generations" (ibid., p. 135). "Genetically, though not neurally, a species over generations 'learns' (discovers) pathways previously unknown. . . .There is a specific groping for a valued ought-to-be beyond what now is in any individual. Though species are not moral agents, a biological identity—a kind of value—is here defended" (ibid., p. 143). "[P]rocesses of value found first in an organic individual reappear at the specific level: defending a particular form of life, pursuing a

The first premise expresses the move from *is* to *good,* i.e., from fact to value. It asserts that to anything that has a certain empirical attribute (in this case the attribute of being a species) there belong certain values (in this case defending particular forms of life, pursuing pathways through the world, resisting extinction, regenerating, exhibiting creative resilience and maintaining a normative identity over time). The second premise expresses the move from *good* to *ought,* i.e., from value to moral duty. It says that we have a certain duty (in this case a duty of moral concern) in regard to anything that has the kind of value mentioned in the first premise. The conclusion is a principle of environmental ethics.

More generally, the class of such arguments can be characterized by the following schema:

All *F* has good (or value) *G* (*is* to *good*),
We ought to *V* whatever has *G* (*good* to *ought*),
We ought to *V* whatever has *F* (*is* to *ought*),

where *F* is some attribute that defines a class of natural entities, *G* is a good or value, and the variable *V* is to be replaced by a transitive verb specifying a moral attitude or action (e.g., "protect," "promote," "respect," "consider the consequences of our actions for"). Arguments of this form are common in the literatures of both environmental ethics and animal ethics[3]—though, of course, not all arguments for environmental ethical principles have this form.

The form itself is valid. Any controversy must therefore lie with the premises. In an earlier paper, I surveyed and evaluated justifications for various instances of the second premise, the move from *good* to *ought*. Here I attempt a similar survey and evaluation for instances of the first, the move from *is* to *good*. That is, I consider, one by one, various moves from *is* to *good* in environmental ethics, finding reasons to reject some and accept others. This survey yields four main conclusions:

(1) For nonanthropogenic goods, only those moves from *is* to *good* are defensible which conceive goodness as goodness *for* biotic entities.
(2) Goodness *for* non-sentient biotic entities is contribution to their autopoietic functioning.
(3) Biotic entities often function "exopoietically" to benefit related entities, often at other levels of organization, and these exopoietic benefits are on average greater than their own goods.
(4) The most general *is* to *good* principles that are defensible (and hence the ones of greatest importance for environmental ethics) concern a realm of

pathway through the world, resisting death (extinction), regeneration maintaining a normative identity over time, storied achievements, creative resilience learning survival skills. If, at the specific level, these processes are just as evident or even more so, what prevents duties from arising at that level? The appropriate survival unit is the appropriate level of moral concern" (ibid., p. 151).

[3] For more examples, see John Nolt, "The Move from *Good* to *Ought* in Environmental Ethics," *Environmental Ethics* 28 (2006): 355–74.

nonanthropogenic goodness that encompasses both living and nonliving nature.

THE SCOPE OF THE DISCUSSION

To keep the discussion manageable, I limit it primarily to *is*-to-*good* moves in which the good *G* is conceived as nonanthropogenic. Many environmental goods are "anthropogenic," in the sense that their being goods presupposes the existence of human values. Mountains that have certain features, for example, are recreationally good, but their goodness does not lie merely in those features (e.g., composition of rock, complement of flora and fauna, quality of snow pack), but also in the fact that some people value recreational activities associated with them (e.g., climbing, hiking, or skiing). The natural *is* (embodied the mountains' features) constitutes recreational goodness only in conjunction with human valuing.

Other forms of goodness, however, are entirely independent of human valuers. Black bears find chestnuts good to eat, and their doing so has nothing to do with us.[4] Sunlight and water are goods for photosynthetic plants. These goods are "nonanthropogenic." They were good for their respective organisms before humans appeared on Earth and would still have been good in the same way if we had never evolved. Because it is concern with such nonanthropogenic goods that makes environmental ethics theoretically unique and significant, it is on them that this discussion focuses.

There is one more restriction on the discussion. As I explained in the previous paper, a thing's being good for an entity is logically independent of whether we have duties to preserve or protect that entity or that good. Thus, by themselves *is*-to-*good* moves imply nothing about how we ought to treat natural entities. To obtain from them principles of environmental ethics, we must conjoin them with moves from *good* to *ought*. Since I am concerned here just with moves from *is* to *good,* any question of how we ought to act with respect to such goods or the entities whose goods they are is beyond the scope of this paper.

THE GOODNESS OF NATURE

The romantic in many of us wants to see nature as benevolent. Thus, we may be tempted to make this move from *is* to *good:*

Anything natural is good.

But this claim is refuted by what medieval philosophers called "natural evils": disease, parasitism, infection, genetic disorder, injury, suffering, premature death,

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[4] My description of this circumstance is, of course, dependent on the form of our language. But the natural phenomena thus described predated us and are independent of our description of them. Antirealists may find this claim contentious. My reply can be found in John Nolt, "An Argument for Metaphysical Realism," *Zeitschrift für Allgemeine Wissenschaftstheorie* 35 (2004): 71–90.

and the like. These conditions are *natural* because they occur without human agency.[5] They are *evils* in the sense of being harms. The existence of natural evils implies that not everything natural is good—or at least that not everything natural is good *for every creature*.

The romantic may persist: perhaps nature is generally good in spite of natural evils. The problem of explaining how a benevolent nature could co-exist with natural evils is analogous to the problem of evil in theology (the problem of explaining how an omniscient, omnipotent, omnibenevolent God could co-exist with natural evils and sin). Indeed, the two problems generate similar dialectics. In both cases, once the futility of denying natural evils becomes evident, the next step is often to insist that they all are somehow beneficial—to retreat, in other words, from the sweeping claim that everything natural is good to the more modest principle that everything natural is good *for something*. That retreat is prudent, but insufficient. Nature *is* remarkably inventive at turning the misfortunes of some creatures into the goods of others. But to inflate this inventiveness into a universal principle is unwarranted. Was there never harm without benefit? Is nothing in nature merely indifferent?

A flagrantly Pollyannaish romanticism may in the end resort to the desperate claim that nature as a whole somehow always works out for the best. Wrong again. When at last in the natural course of its evolution the sun exhausts its hydrogen, expands into a red giant star and incinerates earthly life, that will not be for the best.

Or will it? There is, of course, no clear sense in which the Earth's incineration will be for the best for any earthly living thing or for earthly life as a whole. But it just might be for the best relative to some broader context of value—perhaps the welfare of certain extraterrestrials or the designs of God. We have, however, no knowledge of such a broader context, and so we cannot successfully appeal to it in justifying moves from *is* to *good*.

We see here a simple and straightforward instance of a pattern that will appear elsewhere in our discussion. I call it the "teleological leap." The pattern is this: we want to regard as good something that is not known to be good for any biotic entity; so we explain that goodness by reference, either implicit or explicit, to supposed purposes or values that are unknown. Any successful move from *is* to *good* in environmental ethics will have to do better than that.[6]

THE GOODNESS OF BEING

There is an even broader, is-to-good principle that features prominently in medieval metaphysics:

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[5] It was, however, typical in medieval philosophy to think of them as consequences somehow of the Fall.

[6] My criticism of teleological leaps should not be understood as a rejection of teleology per se, but only of ill-founded or non-natural teleology. I regard it as obvious that organisms and other biotic entities are teleological in that they strive to reproduce, sustain themselves, etc.

Whatever has being is good.[7]

Augustine uses this idea to solve the theological problem of evil; but, if true, it would also support belief in nature's goodness. Evils in general (both natural evils and sin) are, according to Augustine, forms of nonbeing, i.e., deprivation. Hence, God did not create evil, since what has no being was not created. Everything God did create, then, must be good, though not all of it is perfect. Because natural evils are mere deprivations, they can co-exist with a fundamentally good nature. Everything in nature *is* good—insofar as it has being at all.

The qualification "insofar as it has being at all" is crucial, for Augustine assumes that being, like goodness, comes in degrees. It is obvious, of course, that *goodness* comes in degrees. But Augustine also inherits two Platonic assumptions: (1) that the higher the degree of goodness the higher the degree of being and (2) that there is a unique highest degree of goodness: perfection. Thus, he holds that everything is good (or approximates perfection) in proportion to its degree of being. This (in a slightly more explicit form) is the *is*-to-*good* principle mentioned at the outset of this section.

But this principle presupposes a natural hierarchy of degrees of being that is no longer plausible. Besides, it is too indiscriminate; it finds goodness everywhere—in every miniscule photon and every lifeless asteroid, as well as in every living thing. If we ask, "In what way are all these things good?" Augustine may make a teleological leap: they are good for the purposes of God. But we cannot make such a leap, for we do not know the purposes of God, and we have no naturalistic explanation of how such an indiscriminate goodness could be good at all.

THE GOODNESS OF PERFECTION

While Augustine's identification of goodness with being is passé, his identification of goodness with approximation to perfection can still seem obvious. The apparent obviousness dissolves, however, upon closer examination, for in the biological realm, at least, we can no longer make much sense of the idea of perfection. From Plato onward, much of the Western tradition held that for each biological species there was a single immutable form that defined the ideal of perfection for its members. But that notion has two fatal flaws: (1) it is incompatible with Darwinian biology, and (2) even if it were not, it is no longer clear why perfection in that sense should be good at all.

There are no immutable species forms because species' gene pools are in constant flux as environmental conditions change. That flux tends not toward some fixed ideal of perfection, but toward the moving target of fitness—or else toward extinction. Nor is fitness itself an ideal, a maximally good state. It is, rather, a matter of sufficiency—the ability to reproduce under existing conditions. We cannot even regard the individual's genome as encoding an ideal toward which it

[7] Augustine, *Confessions,* bk. 7, chap. 12.

unfolds, for some genomic "blueprints" are better than others, and their goodness is not intrinsic to themselves, but rather a matter of how well they suit the organism for the environments that it will chance to encounter. There is better or worse for individual organisms, certainly; but there is no reason to think that the "better than" relation has a single maximum: the uniquely perfect ideal.

Moreover, even if, despite Darwin, there did exist some unique ideal of perfection for each organism, the question would still remain: why would perfection *in that sense* be good—good how and for what? The tradition had various teleological answers. Plato and Aristotle explained the goodness of perfection by positing a natural tendency of things to strive for, imitate, or approximate their ideal forms.[8] Perfection was good for an organism, then, because to realize its ideal form was its natural end, its *telos*. In medieval theology, standards of perfection were regarded as divinely ordained. Since Darwin, however, there has been no reason to believe in ideals that function either as goals toward which organisms naturally strive or as standards set for them by divine decree. This is not to say that organisms lack purpose, but only that they lack the specific purpose of realizing ideals. In what sense, then, could realization of an ideal (even supposing such things existed) be good for them—or, indeed, good at all?

GOODNESS-*ABOUT* AND FOOT'S "NATURAL GOODNESS"

Surprisingly, some contemporary thinkers still seem to hold that biological goodness can be defined as approximation to a kind-ideal. Jenny Teichman, for example, writes:

> What is good *about* an animal is whatever makes the individual creature a good specimen of its kind; what is bad *about* it is whatever constitutes a defect, illness, weakness or disability in that sort of animal.[9]

Teichman distinguishes what is good about an organism from what is good *for* it. What is good *for* it is what it needs to stay alive and healthy. I have no quarrel with this conception of goodness-*for* and will elaborate on it shortly. But goodness-*about*, as Teichman defines it, seems to presuppose the sort of notion of species- or kind-ideal that I have just argued is no longer tenable. Can that really be what she is up to?

Teichman's notion of goodness-about is inspired by Philippa Foot's conception of

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[8] The term *perfection* itself is in Greek *teleion*—a cognate of *telos*. It signifies the ultimate self-sufficient completion toward which things tend. (Thanks to John Kress for this point.) Plato's notion of things striving for but falling short of their forms is expressed in *Phaedo* 74d–75a. For an excellent account of Aristotle's views on these matters, see John M. Cooper, "Aristotle on Natural Teleology," in John M. Cooper, *Knowledge, Nature and the Good* (Princeton: Princeton University Press, 2004), pp. 107–29; originally published in Malcolm Schonfield and Martha Craven Nussbaum, eds., *Language and Logos* (Cambridge: Cambridge University Press, 1982), pp. 197–222.

[9] Jenny Teichman, "Good For and Good About," *Philosophy* 78 (2003): 117.

natural goodness, together with a similar idea propounded by Alasdair MacIntyre.[10] Foot, in turn, bases her account of natural goodness on Michael Thompson's analysis of natural-historical judgments—such statements as "rabbits eat grass," where "rabbits" refers not to individual rabbits but to a collective "life form." Thompson holds that such judgments are in a certain sense normative; the statement "rabbits eat grass" implies, for example, that rabbits that do not eat grass are defective.[11] Foot agrees, with the proviso that the judgment is normative only if the property (in this case the property of eating grass) predicated of the life form (in this case "rabbits") contributes to that life form's self-maintenance or reproduction.[12] Natural goodness is, then, on her account, the capacity of an organism to maintain itself and reproduce in ways appropriate to its kind.

Anticipating the Darwinian objection to species ideals, Foot concedes that the relevant "kind" is not the species as a whole but some "still" or time slice of it. Of Thompson's natural-historical judgments, she writes:

> Their truth is truth about a species at a given historical time, and it is only the relative stability of at least the most general features of different species of living things that makes these propositions possible at all. They tell how a kind of plant or animal, considered at a particular time and in its natural habitat, develops, sustains itself, defends itself, and reproduces. It is only in so far as "stills" can be made from the moving picture of the evolution of species that we can have a natural history account of the life of a particular kind of living thing.[13]

Foot, then—and hence, presumably, also Teichman—does not rely on the notion of an immutable species ideal. The ideal (if ideal it is) is time-relative. Foot also hints that there is some relativity to habitat, so that "kind" might turn out to be something quite temporary and local. Foot's move from *is* to *good* might thus be expressed as follows:

> An organism is naturally good to the extent that it is capable of living the life appropriate to its (temporary and, perhaps, local) kind.

But so deep a concession to Darwin blurs the notion of a kind. How thick should we make the time slice? How wide is the population and how varied are the habitats that determine a particular organism's kind? Various answers are possible; none seems privileged. What once was for each organism a single well-defined species ideal thus disintegrates into a fuzzy multiplicity of overlapping temporary and local "kinds."

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[10] Philippa Foot, *Natural Goodness* (Oxford: Clarendon Press, 2001) and Alasdair MacIntyre, *Dependent Rational Animals: Why Human Beings Need the Virtues* (Chicago: Open Court, 1999), esp. pp. 64–65.

[11] Michael Thompson, "The Representation of Life," in *Virtues and Reasons: Philippa Foot and Moral Theory,* ed. Rosalind Hursthouse, Gavin Lawrence, and Warren Quinn (Oxford: Clarendon Press, 1995), p. 295.

[12] Foot, ibid., pp. 30–31.

[13] Ibid., p. 29.

Perhaps, nevertheless, we can successfully rank organisms on a scale of approximation to such fuzzy and multiple kind-ideals. Suppose we can. Still, the question remains: in what way is Teichman's goodness-*about*—that is being a "good" specimen of one's kind—good? In the next section, I argue that the only defensible way in which it can be good renders it superfluous.

GOODNESS FOR BIOTIC ENTITIES AS THE ONLY DEFENSIBLE FORM OF NONANTHROPOGENIC GOODNESS

The ways in which a condition can be good can be divided into two broad categories: (1) it is good in that it is good *for* some entity (that is, contributes to that entity's well-being) or (2) it is good not in that it is good *for* any entity, but in some other way.[14] Answers of the first type can be further divided into three subcategories: the condition is good either in that (1A) it is good for humans, or (1B) it is good for nonhuman biotic entities, or (1C) it is good for non-biotic entities. (A condition could, of course, be good in more than one of these ways.) By "biotic entities" I mean not only organisms (including human persons), but also functionally organized aggregates of organisms (e.g., colonies, species, nations) and their functionally organized components (e.g., genes, cells, organ systems).

Goods of category (1A) are anthropogenic. If there were no human values, there would be no such goods. "Good" specimens of a kind can indeed be good in this way—in that, for example, they fulfill human desires for order, beauty, functional integrity, etc. A tiger that is "good" in this way might, for example, be one that elegantly meets human desiderata for tigers. But neither Foot nor Teichman (nor I) is concerned with such anthropogenic values—though sometimes they seem to lie confusedly in the background of the discussion. I mention category (1A) only to mark it off clearly and set it aside. It is irrelevant here.

Goods of category (1B) are, by contrast, quite relevant. These are conditions that are good in that they are good for some nonhuman biotic entity. An answer of type (1B) to the question "in what way is Teichman's goodness-*about* good?" might run as follows: it is good in that it is good for the organism itself, or its social group, its offspring, its species, or the like. That is a fine answer, and I have no objection to it. But it renders Teichman's distinction between goodness-*for* and goodness-*about* superfluous, for what makes an organism a "good" specimen of its kind on this view is simply that it has certain properties good for the organism itself or for related biotic entities. This answer reduces goodness-*about* to goodness-*for*.[15]

It might be objected that such a reduction puts the cart before the horse, since

[14] Categories (1) and (2) correspond respectively to what Ernest Partridge calls dyadic and monadic conceptions of evaluation. See Earnest Partridge, "Values in Nature: Is Anybody There?" in Louis P. Pojman, ed., *Environmental Ethics,* 2d ed. (Belmont, Calif.: Wadsworth, 1998), pp. 81–88; this is a revised version of an article that first appeared in *Philosophical Inquiry* 8 (1986): 97–110.

[15] I do not mean to suggest that this would trouble either Foot or Thompson. But it may be a problem for Teichman, who seems to hold that goodness-*about* is a distinct form of goodness.

we cannot say what is good *for* a specimen without knowing the standards of its kind. Thompson, for example, raises such a challenge:

> If, though, we want to apply "normative" categories to subrational nature, and apart from any relation to "our interests," then the questions inevitably arise, and not so unreasonably: Where does the standard come from? What supplies the measure? The system of natural-historical propositions with a given kind as subject supplies such a standard for members of that kind.[16]

Thompson is right to this extent: in learning and explaining what is good for a particular organism, we typically appeal to our general knowledge of the life-ways of related organisms—but merely as relevant information, not as an absolute standard. Goodness for an individual cannot be *defined* as its approximation to a standard natural-historical description, for two reasons: (1) not everything that occurs in the standard natural history of an organism is good for it—a point which I elaborate on in the section below entitled "Goodness for Non-Sentient Organisms as Healthy Achievement of Life Cycle Stages"—and (2) even closely related individuals may vary in such way that what is good for some need not be good for all. Even if all rabbits but one eat grass, it does not follow that the one's abstention is bad for it. To summarize, if goodness-*about* is a good of category (1B), it is reducible to goodness-*for*, but goodness-*for* cannot be defined in terms of goodness-*about*.

There remain only two ways of conceiving goodness-*about*—as a good of either category (1C) or category (2). Goods of category (1C) are goods *for* non-biotic entities. But which non-biotic entities? Natural non-biotic entities do not have goods. There is no good or bad for a cloud, a star, or a rock. Artifacts can have goods (sharpening may be good for a knife), but all such goods are ultimately anthropogenic.[17] That leaves non-natural entities. One can imagine a condition being good in that it is good for a ghost, a god, or some other non-natural (and hence unknown) entity, but only by a teleological leap. Thus, there are no *defensible* nonanthropogenic sorts of goodness in category (1C).

The only remaining way to achieve a distinct conception of goodness-*about* is option (2), the idea of what I call "free-floating goods"—conditions that are good, though their goodness does not consist in being good *for* anything at all. A certain sort of Platonist, for example, might hold that a ruby's participation in the form Ruby is just good, even if not good *for* anything at all. Likewise, one might claim that a tiger's being a "good" specimen of its (perhaps temporary and local) kind is

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[16] Thompson, "Representation of Life," p. 295.

[17] Tools employed by nonhuman animals are an exception, but these introduce no new considerations. If chimps find a modified stick good for pulling termites out of their nests, its goodness is goodness-for biotic entities (the chimps). There may come a time when such artifacts as robots are sufficiently autopoietic (see discussion of autopoiesis below) to count as having goods of their own. If so, then conditions will be good for these artifacts independently of the values of their makers and users, and value theory will have to accommodate this development.

something good *about* the tiger without being good *for* anything at all. This goodness, then, would seem to be just a brute and inexplicable fact. But no one, so far as I know, has made such a claim (none of the authors discussed above explicitly asserts that a condition can be good about an entity without being good *for* anything at all), and it is hard to see how one could even begin to argue for it.[18] There is, therefore, so far as I can see, no defensible nonanthropogenic notion of goodness-*about* distinct from goodness-*for*.

The pattern of reasoning by which this conclusion was reached can, I think, be generalized to show that there are no defensible sorts of nonanthropogenic goods *of any sort* distinct from goodness *for* biotic entities. The pattern is this: take any alleged contender for such a nonanthropogenic good and ask systematically, using categories (1A), (1B), (1C) and (2), in what way it is good. If it is a good of category (1A), it is anthropogenic. If it is entirely a good of category (1B), then it reduces to goods-*for*. If it is a good of category (1C), then it is either non-natural and thus indefensible or anthropogenic. Finally, if it is a nonanthropogenic good of category (2), it will, I contend, turn out to be indefensible, for it is difficult to see how one could show that a condition can be good without being good *for* anything at all.

GOODNESS AS INHERENT VALUE

In this section, I apply this pattern of reasoning to what is perhaps the most obvious contender for a nonanthropogenic good that is not reducible to goods-*for*: *inherent value* or *inherent worth*. (When not discussing the views of a particular author, I use these two terms interchangeably.) I argue, in particular, that inherent worth as conceived by Paul W. Taylor and inherent value as conceived by Tom Regan both contain anthropogenic elements, and that if we bracket these anthropogenic elements, what we arrive at are, once again, merely goods of category (1B)—that is, goods *for* nonhuman biotic entities.

Taylor's notion of what he calls "inherent worth" is a curious hybrid.[19] An entity's having inherent worth consists partly in what Taylor calls having "a good of its own"—precisely what I have been calling goodness *for* it. But it also entails, according to Taylor, two moral judgments:

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[18] In an early paper, "The Nature and Possibility of an Environmental Ethic," *Environmental Ethics* 3 (1981): 19–34, Tom Regan suggested in effect that there might be goods of category (2). But Ernest Partridge provided a convincing refutation of Regan's suggestion; see Partridge, "Values in Nature," pp. 81–88. Partridge ultimately concludes that "the only so-called 'values' in the biotic community are 'values-for' some organism"—a view that is similar to mine, except that it is restricted to organisms, while I hold that biotic entities that are not organisms also have goods. See also Ernest Partridge, "Discovering a World of Values: A Response to Rolston," in Pojman, *Environmental Ethics,* p. 92.

[19] See Paul Taylor, *Respect for Nature: A Theory of Environmental Ethics* (Princeton: Princeton University Press, 1986).

> . . . (1) that the entity is deserving of moral concern and consideration . . . and (2) that all moral agents have a prima facie duty to promote or preserve the entity's good as an end in itself.[20]

Such moral implications are not implicit in the biological facts; nor, as Taylor himself observes, are they entailed by the entity's having a good of its own:

> One can acknowledge that an animal or plant has a good of its own and yet, consistently with this acknowledgement, deny that moral agents have a duty to promote or protect its good or even to refrain from harming it. One does not contradict oneself by saying, "Yes I know that this action of mine will adversely affect the good of living things, but nevertheless there is no reason why I shouldn't do it."[21]

Inherent worth in Taylor's sense is thus nonanthropogenic goodness-*for* conjoined with a certain moral status—which, more generally, Taylor describes as worthiness of respect. This moral status is not itself a distinct form of goodness. It is, rather, a requirement on moral agents that they respect entities that have goods of their own. To assert, as Taylor does, that all living things have inherent worth is therefore to move not merely from *is* to *good*, as in our previous examples, but from an *is* (being a living thing) to both a *good* (having a good of its own) and an *ought* (being such that agents ought to respect it).

Moreover, although Taylor rightly holds that having a good of one's own is nonanthropogenic, he never claims that respect-worthiness is likewise nonanthropogenic. On the contrary, as I show below, there is strong reason to regard it as anthropogenic.

Regan too advocates what he calls "*a distinctive kind of value,*" inherent value.[22] But this value is, like inherent worth in Taylor's sense, a hybrid that integrates the familiar goodness-*for* with moral considerations. Inherent value, according to Regan, is possessed by all subjects-of-a-life. Subjects-of-a-life are animals that are capable of at least rudimentary forms of conscious self-concern:

> . . . they have beliefs and desires; perception, memory, and a sense of the future, including their own future; an emotional life together with feelings of pleasure and pain; preference- and welfare-interests; the ability to initiate action in pursuit of their desires and goals; a psychophysical identity over time; and an individual welfare in the sense that their experiential life fares well or ill for them. . . . Those who satisfy the subject-of-a-life criterion themselves have a distinctive kind of value—inherent value.[23]

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[20] Ibid., pp. 75–76.

[21] Ibid., p. 72.

[22] Tom Reagan, *The Case for Animal Rights*, updated and with a new preface (Berkeley: University of California Press, 2004), p. 236 (emphasis in original).

[23] Ibid., p. 243.

Simply put, if how an animal's life fares matters to it, then it has inherent value. If this were all there was to it, Regan's talk of inherent value would be nothing more than talk of goodness-*for*—of harms and benefits to the individual animal. It is, to be sure, goodness-*for* of a special kind; when an animal is consciously concerned about harms and benefits to itself, that concern adds a new level of complexity to its value (more of this in the next section). But the value, the good, is still value *for* the animal itself.

There is, however, more to inherent value than this, because Regan insists that all subjects-of-a-life have it *equally*. This is indefensible if inherent value is supposed to be nonanthropogenic—that is, if it is supposed to be independent of human values—for nonhuman nature nowhere offers evidence for the equality of any sort of value. Regan (quite rightly) does not argue for the equality of inherent value by claiming, for example, that each subject-of-a-life has the precisely same degree of self-concern. He argues instead that subjects-of-a-life must have equal inherent value because the only plausible alternative, perfectionism (the view that their value is proportional to their virtues), "pave[s] the way for" a theory of justice that permits ethically unacceptable forms of subjugation.[24] This argument is flawed, but its particular flaws need not detain us.[25] The crucial point for our purposes is that it mixes the demands of an *anthropogenic* theory of justice with the notion that subjects-of-a-life have a *nonanthropogenic* value for themselves.

This might not disturb Regan. His methodology is holistic and pragmatic, giving considerable weight not only to the facts of science, but also to our reflective intuitions—especially moral intuitions[26]—and modern Western reflective intuitions are anti-perfectionist and egalitarian. But if subjects-of-a-life have equal inherent value not solely in virtue of facts about them, but rather because a humanly developed value of justice requires that they have it, then that equality is anthropogenic. If the equality of inherent value is anthropogenic, then the inherent value itself must be anthropogenic, at least insofar as it has a definite quantity.

For similar reasons, inherent worth in Taylor's sense is most plausibly regarded as anthropogenic, for Taylor, too, is an egalitarian:

> . . . if inherent worth is attributed to any wild creature just in virtue of its being a member of the biotic community of a natural ecosystem, then each wild animal or plant is understood to have the same status as a moral subject to which duties are owed by moral agents. Whatever its species may be, none is to be thought superior to another and all are held to be deserving of equal consideration.

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[24] Ibid., summarized from pp. 247–48. The point that perfectionism leads to ethically unacceptable forms of subjugation is explicitly made on pp. 236–37.

[25] Perfectionism is not the only alternative. Moreover, the argument neglects the possibility that the inherent value of subjects of a life may be neither equal nor of varying commensurable degrees but incommensurable.

[26] Ibid., chap. 4.

As with Regan, this equality of respect-worthiness seems, if defensible at all, to be a construct of an anthropogenic sense of justice. The biological facts provide no evidence for it. Taylor infers it from the premise that no living thing is morally superior to (more worthy of respect than) any other.[27] But it does not follow from this premise, for two reasons (1) there may be no nonanthropogenic facts of the matter at all about respect-worthiness and (2) even if there are, the respect-worthiness of some creatures may be incommensurable with (and hence not equal to) the respect-worthiness of others.

In sum, both Regan's conception of inherent value and Taylor's conception of inherent worth incorporate moral considerations that are most plausibly regarded as anthropogenic. If we bracket these, then we do indeed arrive at something nonanthropogenic, but it seems to be just the entity's value *for* itself—and hence a good of category (1B).

Could we not, however, interpret inherent value as a good of category (2)—that is a free-floating good, one that is not good *for* anything? Not very plausibly. The obstacle here is Occam's Razor. All biotic entities that have inherent value also have goods of their own. These goods-*for* seem sufficient to account for whatever nonanthropogenic goodness is possessed by the entity and also—as Taylor and Regan both agree—to make it an appropriate object of human respect. We should not, then, posit *in addition* some free-floating good for which we have no compelling argument.

In sum, neither Regan nor Taylor offers us a conception of nonanthropogenic value distinct from goodness *for* the biotic entities that possess that value. Many other conceptions of inherent value are no doubt possible; but, by the reasoning of the previous section, I doubt that they are defensible.

GOODNESS FOR SENTIENT ANIMALS (HEDONIC GOODNESS)

Sentient animals have the same sorts of fundamental goods that non-sentient organisms do: survival, nutriment, defense against predators, etc. But overlain upon these fundamental values is a novel value structure in which pleasure has intrinsic value and suffering intrinsic disvalue.

Natural selection, of course, tends to correlate pleasures with conditions beneficial to species survival (e.g., copulation, eating, drinking, care for young) and suffering with conditions that are deleterious (e.g., injury, poisoning, disease). Hence, pleasure and suffering are generally of instrumental value for the species—and often, insofar as the welfare of the animal is beneficial for the species, beneficial for the animal itself. The pain that an animal feels in an injured limb, for example, motivates it to immobilize the limb, which facilitates healing, and also to avoid thereafter the cause of the injury.

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[27] Taylor, *Respect for Nature,* pp. 129–56.

But suffering also has an intrinsic disvalue for the animal and pleasure an intrinsic value. These hedonic values are the subject of such special *is*-to-*good* principles as:

For sentient animals, pleasure itself is good and suffering itself is bad,

and

For sentient animals, it is good not to suffer pointlessly.

Such principles express empirical truths. We are all acquainted with the qualitative goodness of pleasure—even pleasure that has bad consequences—and the qualitative badness of suffering—even suffering that has good consequences. There are, of course, debates about how far we can generalize this knowledge, which animals are sentient, and how we can know that they are. There are also issues about whether and how various degrees of self-awareness modify hedonic values. But none of these disputes seriously threatens to dislodge sentience as a valid source of *is*-to-*good* principles.

GOODNESS FOR NON-SENTIENT ORGANISMS AS HEALTHY ACHIEVEMENT OF LIFE-CYCLE STAGES

The boldest challenges raised by environmental ethicists to established theories of value rely, of course, on moves from *is* to *good* for *non*-sentient entities. Yet, these moves, too, can be elementary and empirical. It is an observable fact, for example, that rich, moist soil is good for certain fungi. Still, to make such moves systematically—that is, to formulate a general characterization of goodness for non-sentient organisms—is not easy. Taylor has suggested that goodness for non-sentient organisms amounts just to healthy achievement of all normal life-cycle stages:

> A butterfly that develops through the egg, larva, and pupa stages of its life in a normal manner, and then emerges as a healthy adult that carries on its existence under favorable environmental conditions, might well be said to thrive and prosper. It fares well, successfully adapting to its physical surroundings and maintaining the normal biological functions of its species throughout its entire span of life. When all these things are true of it, we are warranted in concluding that the good of this particular insect has been fully realized. . . . All the foregoing considerations hold true of plants as well as animals.[28]

But achievement of all stages of the life cycle, though generally good for something, is not always good for the organism itself. Consider, for example, the stage of reproduction. Most non-sentient organisms have no interaction with their offspring and so cannot benefit from them, and reproduction often weakens the parent, makes

[28] Ibid., pp. 66–67.

it more vulnerable, or even destroys it. In some species of spiders and insects, for example, after the male inseminates the female, she devours him. This is good for the female (she gets a nutritious meal) and perhaps also for the eventual offspring and the species, but it can hardly be said to be good for the male. Clearly, then, achievement of all normal life-cycle stages is not in all cases good for the organism itself.

GOODNESS AS CONTRIBUTION TO AUTOPOIETIC FUNCTIONING

To characterize goodness for the organism itself, we must distinguish two sorts of functions that organisms perform by evolutionary "design." I call these the autopoietic and (to coin a term) "exopoietic functions." "Autopoietic functions" of organisms are those that establish, maintain, or enhance their survivability—functions such as capturing sunlight or prey, resisting disease, obtaining water from the environment, respirating, healing injuries, eliminating wastes, and so on. An organism's "exopoietic functions" are those that establish, maintain, or enhance the survivability of some related biotic entity—the organism's offspring, for example, its social group, its species, or perhaps even (if Dawkins is right[29]) its genes. Reproduction is exopoietic, functioning to enhance the survivability not of the organism itself, but of its species.[30] The sting of the honeybee is also exopoietic, but it operates on the social level, serving the hive as a defense against intruders but fatal to the bee itself. Even natural death might function exopoietically at the species level, since it provides for species renewal and helps to maintain population equilibrium.

Both autopoietic and exopoietic functions are products of evolutionary adaptation. In exopoiesis, an organism functions not for its own benefit, but rather for the benefit of something related to it, to which it is therefore of instrumental value. But not every sort of instrumental value is exopoiesis, for an organism's functions count as exopoietic only if they are shaped by its evolutionary "design." A prey species, for example, is of instrumental value (as a source of nutrients) to its predators. But that instrumental value is not exopoiesis on the part of the prey, since natural selection does not "design" the prey to function as prey. Quite the contrary: selection works to improve the prey species' ability to avoid predation. It is only through the designs of the predator that the prey species becomes prey.

The distinction between autopoietic and exopoietic functions facilitates a more satisfactory definition of "goodness for non-sentient organisms"—a definition that is also a move from *is* to *good:*

> A condition is good for a non-sentient organism to the extent to which it contributes to the organism's autopoietic functioning.

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[29] Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1989).

[30] It may also serve other levels of organization, such as the organism's social group or the isolated population of which it is a member.

Contribution to autopoietic functioning is also typically good for sentient organisms, though for them value is complicated by the additional layer of hedonic goods. These complications, however, need not concern us here.

Autopoietic functioning has itself a kind of *instrumental* value; it is valuable in that it enhances the organism's chances for survival. This, of course, is just what evolutionary theory leads us to expect, since survival (to reproductive age, at least) is the standard to which natural selection "designs" an organism's autopoietic functions. But survival itself is of instrumental value as a necessary condition for the attainment of further goods—that is, for further autopoietic functioning. Thus, instrumentality flows from autopoietic functioning to survival and from survival back to autopoietic functioning, in a closed loop of value. The loop is tightened by the realization that survival and the capacity for autopoietic functioning are the same thing, for total loss of the capacity for autopoietic functioning is, precisely, death. The loop, then, comes down to this: autopoietic functioning for the sake of further autopoietic functioning.

We may wonder whether such a Sisyphean "good" is really good at all. Yet, plainly it is. Consider any representative instance: an abundance of plankton is good for jellyfish, for example, because it contributes to their nutriment and hence to their autopoietic functioning, which helps them survive; and their survival is good for them in that enables them to realize further goods.

Still, the good of any individual non-sentient organism seems relatively insignificant. For greater significance, we must turn to broader contexts.

GOODNESS FOR BIOTIC ENTITIES GENERALLY

Organisms function not only autopoietically to enhance their own survivability, but also exopoietically to enhance the survivability of related entities, often at different levels of biological organization: their species, their colony, their offspring, their organs, their cells, etc. But these other entities, too, may have their own autopoietic or exopoietic functions. An ant acts exopoietically for the benefit of its colony, but the colony as a whole functions autopoietically, maintaining itself through the functioning of its members. The colony also has exopoietic functions; it may reproduce itself, for example, by creating daughter colonies.

The fact that autopoiesis occurs not just in organisms but at many levels of biological organization tells against the biocentric individualist thesis that goodness resides specifically in organisms. Goodness can in fact be found wherever there is autopoietic functioning. We may thus assert this very general *is*-to-*good* principle:

> For biotic entities that can function autopoietically, what contributes to that functioning is good.

For each such entity, autopoiesis is instrumental for survival, which in turn is instrumental for further autopoiesis. Hence, the cycle of autopoiesis for the sake

of further autopoiesis is a structure that occurs not just at the organismic level, but at many levels of biological organization.

THE REALM OF NONANTHROPOGENIC GOODNESS

Value in nature is not, however, merely an ensemble of autopoietic cycles, one for each such entity, for the cycles are interlaced by forward-flowing and lateral streams of exopoiesis. To put this less metaphorically, biotic entities typically function to promote not only their own good but also both the goods of any future entities to which they will contribute via reproduction and the goods of other entities to which they are related, often at other levels of biological organization. Colonies, organisms, cells, and genes all reproduce, benefiting their descendants (forward-flowing streams leading to new cycles).[31] Cells, organs, and organisms function for the benefit of the organs, organisms, or species of which they are components; conversely, organisms or colonies function for the benefit of their component cells, organs or organisms (criss-crossing lateral streams).

Let's call the totality of goods accomplished for a biotic entity by its autopoietic functioning its "autopoietic benefits" and the totality of goods accomplished for other entities by its exopoietic functioning its "exopoietic benefits." An entity's exopoietic benefits can be extensive. A single cell functions expoietically to benefit not only the organ of which it is a part, but the organ system of which that organ is a part and the organism of which that organ system is a part. If that cell contributes to the organism's survival to reproductive age, then it also contributes to the lives of all the organism's descendants (by helping to ensure that they receive the organism's genetic code, if in no other way) and to the continuation of its species.

So long as a biotic entity has descendants, its exopoietic benefits and those of its functional components are perpetuated. An entity's exopoeitic benefits can therefore easily exceed its autopoietic benefits—what some might call its "intrinsic value." This is unreflectively obvious for those entities, such as cells or organs, that are mere components of organisms. But it is also true of organisms themselves. Goods that you and I enjoy today—the basic structures of the digits on our hands and feet, for example—are among the exopoietic benefits of a particular ancient reptile that was our common ancestor; for that reptile initiated a reproductive sequence whose benefits (including certain genes responsible for the structures of our hands and feet) we inherited. An entity's exopoietic benefits may even include contributions to the evolution of new varieties of value, such as those associated with sentience or rationality.

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[31] I am not assuming here the contentious principle that to be caused to exist is a benefit. Rather, what I mean by saying that a reproducing entity benefits its offspring is that it provides them with some of its substance, some stored energy, and genetic information, all of which contribute to their autopoietic functioning. If it is an organism, it might provide other benefits as well—a cocoon, web, nest, other form of shelter, feeding, protection from predators, etc.

Of course, our reptile ancestor is not *solely* responsible for the genes that have shaped our hands and feet or any other benefit we inherit from it. That ancestor had a mate, and we are descended not only from the two of them, but from all of their ancestors and many of their progeny. We inherit exopoietic benefits collectively from all these creatures, and so do many other biotic entities. The reptile pair's exopoietic benefits extend to all their descendants until now—and all those that will arise in the future. Thus, so long as life has much of a future, the totality of goods for all the biotic entities alive at a given time is less than their eventual exopoietic benefits to related entities. On average, then, the exopoietic benefits of a biological entity exceed its autopoietic benefits. Life's value lies largely in its future.

The value of a biotic entity is not exhausted, however, by its autopoietic and exopoietic benefits, for they are merely the sorts of goods evolution has "designed" it to promote. While an entity functions autopoietically to benefit itself and exopoietically to benefit related entities, it may also be *used* by still other entities, for which it serves as prey, shelter, a host, and so on. Consider, for example, the great number and variety of organisms that utilize a tree—not by the tree's "design" but by "designs" of their own. For these organisms, the tree has non-exopoietic instrumental value. Like autopoiesis and exopoiesis, non-exopoietic instrumental value occurs at various levels of biological organization. Thus, the total value *of* a biotic entity includes:

(1) The value for it of its autopoiesis;
(2) The value for related entities of its exopoiesis; and
(3) Its non-exopoietic instrumental value for other biotic entities.

This list is probably not exhaustive. Sentience and rationality introduce novel forms of value that may not be reducible to one of these three types.

One more value source must be recognized, for the nonliving world also contributes to a biotic entity's good. Biotic entities, in other words, need non-biotic resources, which thus become values for them. Some of these values are universal, or nearly so; water, for example, in one form or another, is a good for all biotic entities—at least on this planet. So are the atmosphere, the heat of the sun, and various minerals from the Earth's crust. The functioning of many organisms depends on the regular alternation of day and night, the cycles of seasons, or the phases of the moon. Such non-biotic phenomena have no inherent value (if there had been no life, they would have been valueless), but their instrumental value is very great.

Thus, in addition to the three forms of value *of* a biotic entity just mentioned, there are at least four forms of value *for* a biotic entity:

(1) The value for it of its autopoiesis;
(2) The value for it of the exopoietic functions of related entities;
(3) The non-exopoietic instrumental value other biotic entities have for it; and
(4) The instrumental value that non-biotic entities have for it.

Again, because rationality and sentience introduce additional goods-*for,* this list is not exhaustive.

Still, these two lists suffice, I think, to indicate the richness of the "realm of nonanthropogenic goodness"—goodness that is independent of us, our minds, and our cultures. Very general *is*-to-*good* principles are true of this realm—the principles, for example, that water is a good for all earthly biotic entities or that the value of life lies largely in its future (assuming that it has a future). In the final section of this paper, I comment briefly on the relevance of such principles to environmental ethics.

OTHER VALUE TYPES

Are there other forms of nonanthropogenic value that this survey has overlooked? Does nature contain, for example, non-biotic entities that have goods of their own? In part this is a question about the boundaries of the concept "biotic entity." I have deliberately left these vague. Organisms and their functional components are clearly included. So are species. (I am aware of the difficulties of saying exactly what a species is, but species have identity enough to count as entities, and their good is not reducible to the goods of their members.[32]) With regard to whether ecosystems, the biosphere, Gaia and the like count as biotic entities or whether they have goods of their own, I am skeptical on both counts, but I can't do these matters justice here. I would insist only that if such entities have evolved enough functionality so that things can be good or bad for them (as distinct from their components), then they also count as biotic entities.

Might there not be categories of value entirely distinct from any considered here? Rolston, for example, argues for the recognition of a third category of value distinct from intrinsic and instrumental value, which he calls "systemic value." A possible example, he thinks, is the regulation of insect populations by warblers. The benefits of such regulation are so widely distributed that one might think of them as benefits for an entire ecosystem; but that is not the line Rolston takes, for he does not think that ecosystems are "value holders." What makes systemic value distinct, he says, is that it is "not all encapsulated in individuals," but "smeared out into the system." It is "the productive process" whose "products are intrinsic values woven into instrumental relationships."[33] These metaphors are dense, but I can discern nothing in them that was not mentioned in the previous section of this paper. The goods catalogued there need not be goods for individuals (since not all biotic entities are individuals) and their exopoietic ramification ("smearing" out into the system?) is productive. Hence, I see no need to regard systemic value as anything beyond the realm of nonanthropogenic value described above.

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[32] For substantiation of this point, see Rolston, *Environmental Ethics,* chap. 4.

[33] Ibid., pp. 187–88.

One might wonder, too, about the value of biodiversity. The principle that diversity is inherently good—and hence that a more diverse world is inherently better than a less diverse one, even apart from diversity's benefits to the worlds' inhabitants—has a venerable pedigree. It underlies the long-held belief that the world, being the product of a divine Creator, ought to be as diverse as possible—an idea that Arthur O. Lovejoy dubbed "the principle of plentitude."[34] But as Lovejoy shows, this ancient principle, originally grounded in the Platonic equation of being with goodness, is today without foundation. Biodiversity is valuable, of course, but I see no reason to think that its nonanthropogenic value is not of kinds already considered here.

INTEGRATION OF *IS*-TO-*GOOD* WITH *GOOD*-TO-*OUGHT* PRINCIPLES

In this paper, I have examined justifications of moves from *is* to *good* in environmental ethics. I have so far said nothing about how human agents ought to act with respect to these goods. Here I indicate briefly how I think environmental ethics can benefit from this examination of *is*-to-*good* moves.

To begin, note that if environmental ethics is to reason from *is* to *good* and thence to *ought* (a pattern that is common and promising, though not compulsory), then that reasoning will yield the strongest conclusions when it uses the most general *is*-to-*good* and *good*-to-*ought* moves that are defensible.

The most general *is*-to-*good* moves that are defensible are, as I have argued here, those that recognize not just the goods of subjects of a life, sentient animals or organisms, but those of the entire realm of nonanthropogenic goodness.

I have not discussed the justification of moves from *good* to *ought* here, but in previous work I suggested that the most promising justification for duties to respect natural goods—understood now as the realm of nonanthropogenic goodness—lies in the value to human beings of self-transcendence.[35] If so, then the upshot will be an ethic of self-transcendence toward the realm of nonanthropogenic goodness. I plan to develop such an ethic in future work.

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[34] Arthur O. Lovejoy, *The Great Chain of Being* (Cambridge, Harvard University Press, 1961).
[35] Nolt, "The Move from *Good* to *Ought* in Environmental Ethics," pp. 371–73.