

# Problems with the Move from *Is* to *Good* for Non-sentient Organisms

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In his seminal work *Environmental Ethics: Duties to and Values in the Natural World*, Holmes Rolston III rightly notes that reasoning in environmental ethics frequently proceeds from the observation that natural entities have certain physical or biological characteristics to the conclusion that they have certain sorts of value or goods and then to the further conclusion that we have certain obligations toward them. This two-step pattern, which he characterizes as a “transition from *is* to *good* and thence to *ought*”<sup>1</sup> aims to provide environmental ethics with a solution to Hume’s *is-ought* problem. The first step corresponds to a theory of value for environmental entities, the second to an environmental ethic. In a recent article, I surveyed and evaluated various strategies for accomplishing the second step—which I call the move from *good* to *ought*—finding reasons to reject some and continue working on others.<sup>2</sup> The present paper takes a step toward a similar survey and evaluation of the means of accomplishing the move from *is* to *good* in environmental ethics—that is, toward a critique of theories of environmental value. It is, however, quite limited in scope, focusing solely on the problem of characterizing the good for non-sentient organisms. That something is good for an entity is, as I argued in that earlier paper, logically independent of whether we have moral obligations to preserve or protect that good. Thus what I will say here has no direct implications regarding how we ought to treat non-sentient organisms. This ethical question is entirely beyond the scope of this paper.

An organism’s good, is, of course, what is good *for it*—and for its own sake. Ways in which the organism is good or valuable *for other entities* are not relevant to *its* good. I have heard it said, for example, that certain feed additives are good for livestock because they maximize productivity (of meat, milk, eggs, or the like). But enhanced productivity is “good for the animals” (a misleading phrase at best) only insofar as they serve as agricultural instruments. It is in other words a good, not for the animals themselves, but rather for humans—if it is a good at all. Such instrumental notions of an organism’s good are not what concern us here.

Once we set aside this crass sort of instrumentality, the notion of an organism’s good may seem unproblematic. It is obvious, for example, that adequate sunlight, water and nutrients are goods for photosynthetic plants. But problems appear on a closer view. I’ll discuss two of them.

The first is what I call the *problem of the beneficiary*. The problem is that some of what appears to constitute the good of an organism is actually not good *for it*. The good in question turns out to be, like the good of increased livestock productivity, instrumental. The beneficiaries of this instrumentality are, however, not human beings

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<sup>1</sup> Rolston, Holmes III, *Environmental Ethics: Duties to and Values in the Natural World*, (Philadelphia: Temple University Press, 1988), pp. 230-1.

<sup>2</sup> “The Move from *Good* to *Ought* in Environmental Ethics,” *Environmental Ethics* 28, 4 (Winter 2006), 355-374.

but biological entities other than the organism itself—its offspring, for example, or its social group, or its species. The second problem is the *problem of value-relevant identity*—the question of whether it is the organism in the biological sense, or something with different identity conditions, that is the subject of harms and benefits. These two problems are interestingly interrelated, as we shall see.

### **The Problem of the Beneficiary**

#### **The Good as Healthy Achievement of Life Cycle Stages**

How may we define the good for a non-sentient organism? Paul Taylor suggests that it is healthy achievement of all the normal stages of its life cycle:

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.<sup>3</sup>

At first glance, Taylor's account seems plausible enough. But achievement of all stages of the life cycle, though perhaps good, is not necessarily good *for the organism*. Final decrepitude, ending in death, though a normal stage of the life cycle of many organisms, is hardly a good for them. Likewise, reproduction, though also a normal stage of the life cycle, is usually of no benefit to the organism itself. Most non-sentient organisms have nothing to do with their offspring and so cannot benefit from them. Reproduction may, moreover, weaken the parent, make it more vulnerable, or even destroy it. In some species of spiders and insects, for example, after the male inseminates the female, she devours him—hardly a benefit to the male<sup>4</sup>. Clearly achievement of normal life-cycle stages is not in all cases good for the organism itself.

#### **The Good as Health**

Perhaps, then, the good for an organism is best defined not as achievement of lifecycle stages, but merely as continued health. Health is certainly a good for humans and other sentient beings, so why not for non-sentient organisms as well? Once again, however, appearances are deceiving—and for the same reasons. Health (for non-sentient organisms) is the capacity to perform biological functions. And, though most of its biological functions are beneficial to the organism itself, some, as we have seen, are not. A fertile organism that becomes infertile suffers a diminishment of its health, but it is not clear that it suffers harm; for, as we just noted, reproduction, though a good, is not in general a good for the organism. Health and the good are therefore distinct, even for non-sentient organisms.

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<sup>3</sup> *Respect for Nature: A Theory of Environmental Ethics*, (Princeton: Princeton University Press, 1986), pp. 66-7.

<sup>4</sup> I am assuming here that spiders and insects are non-sentient. If this assumption is wrong, then this example and others in this paper require modification or replacement, but my main line of argument will be unaffected.

It might be objected here that infertility does harm the organism by depriving it of the good of passing its genes on to posterity. I have not denied that it is good that an organism passes its genes on to posterity. But I have denied that it is always a good *for the organism*. The notion that it must benefit the organism seems to me to have its roots in one or both of two confusions: (1) a kind of unconscious anthropomorphism (thinking that because humans typically value having progeny, having progeny must be a value to all other organisms as well), or (2) confusing benefit to some other level of biological organization (group, population, species, or the like) with benefit to the organism itself.

### **The Good as Autopoietic Function**

But if even health itself is not the good of an organism, what is? The health of an organism is, once again, its ability to perform its biological functions. But, as we have seen, only some of its functions count toward *its* good. Thus to define the good for a non-sentient organism, we must distinguish two sorts of functions, which I call the autopoietic and (to coin a term) the exopoietic. *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. *Exopoietic functions* are those that have evolved to enhance the survivability of some other biological entity—the organism’s offspring, its social group, its species, or perhaps even (if Dawkins is right<sup>5</sup>) its genes. Reproduction is exopoietic, functioning to enhance the survivability not of the organism itself but of its species.<sup>6</sup> The sting of the honeybee is an exopoietic function operating at 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 adaptation and helps to prevent population overshoot.

Both autopoietic and exopoietic functions are products of evolutionary adaptation, but of adaptation operating at different levels of biological organization. Typically, functions that enhance survivability at one level of organization also enhance survivability at higher levels. Thus photosynthesis, which is autopoietic for individual plants, is also necessary for the survival of their species. Relative to those plants, therefore, photosynthesis is both autopoietic and exopoietic.

What enhances the health and survival of higher levels of organization, however, often does not enhance the health and survival of lower levels. Thus many functions are exopoietic but not autopoietic for organisms. Among the examples already mentioned are reproduction, the bee’s sting, and (perhaps) natural death.

Although an exopoietic function makes an organism instrumentally valuable to some other entity or entities, not just any sort of instrumental value is exopoiesis, for exopoiesis is a biological function of the organism itself that 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 species to function as prey. Quite the contrary: selection works constantly to improve the prey species’ ability to escape

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<sup>5</sup> Dawkins, Richard, *The Selfish Gene* (Oxford: Oxford University Press, 1989).

<sup>6</sup> 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.

predation. It is only through the external “design” of the predator that the prey species becomes prey.

The distinction between autopoietic and exopoietic functions enables us to give a more satisfactory definition of the good for a non-sentient organism: an organism’s good is simply its autopoietic functioning. Conversely, to harm a non-sentient organism is to diminish its capacity for autopoietic functioning.

### **A Paradox of Value**

Autopoietic functions themselves have a kind of instrumental value; they are valuable to the organism in that they enhance its chances for survival. This is, of course, is precisely what evolutionary theory would lead us to expect, since survival (to reproductive age, at least) is the criterion according to which natural selection “designs” the organism’s functions. Is survival, then, the organism’s *ultimate* good—or is there some further value of the organism toward which survival too is instrumental?

In the case of humans, survival is not always an ultimate value. There are those, of course, who regard it as such, but not everyone does. Clearly, however, survival is instrumentally valuable for attainment of further human goods, in that it is a necessary condition for the fulfillment of projects and desires. Non-sentient creatures, of course, do not have projects or desires. Still, it seems obvious that for them survival is, analogously, of instrumental value as a necessary condition for their attainment of further good—that is, further fulfillment of their autopoietic functions.

But now we have a circle. Autopoietic functioning is valuable because it contributes to survival, but survival itself is valuable to the organism in that it is necessary for further autopoietic functioning. Instrumentality flows from autopoietic functioning to survival and from survival back to autopoietic functioning, in a closed loop of value. This loop can be drawn even tighter 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 circle, then, comes down to this: autopoietic functioning for the sake of further autopoietic functioning. That is the sum and substance of the good for non-sentient organisms.

It might be objected that this is not, after all, the sum of it—that life itself has a value for the organism that is distinct from autopoietic functioning. An analogous idea, understandably popular in the case of human beings, is that life is a good for humans whose worth transcends mere biological functioning—that its value to us lies, for example, in the dignity of reason or in ability it gives us to know God. But few venture to affirm that the lives of non-sentient organisms have a similar sort of value for them.

Albert Schweitzer might be thought to be an exception. For Schweitzer, it is “the will to live” that defines the good for all living things.<sup>7</sup> He understands the term “will” more or less as Schopenhauer does, as not requiring consciousness. In non-sentient organisms it thus consists of purely unconscious impulses. How, if at all, these unconscious impulses are to be distinguished from autopoietic function is not clear. Indeed neither Schweitzer nor anyone else, so far as I know, has clearly articulated any reason to believe that the good for a non-sentient organisms anything over and above autopoietic functioning. The conclusion reached earlier therefore stands: the good for

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<sup>7</sup> *Civilization and Ethics*, trans. A. Naish (London: Black, 1923).

non-sentient organisms is simply autopoietic functioning in the service of further autopoietic functioning.

But now comes the final twist on the problem of the beneficiary: once we distinguish what is good for non-sentient organisms themselves from what is good for other levels of biological organization, that goodness seems paradoxical. Consider an analogy: people who find their lives unsatisfying often come to a sense of the worthlessness of life in general by reflecting that one toils to raise children merely so that one's children can toil to raise children, and so on and on, in a dismal Sisyphean cycle. Where is the value in that? The value-circularity for non-sentient organisms is similar in structure: autopoiesis merely for the sake of further autopoiesis. So likewise, we may ask, where is the value in that? For humans, the trite—though often correct—reply is something like this: the value lies in the process; the journey is the destination; you should learn to count your blessings. This advice is intelligible and indeed often true for humans. We often *can* learn to take pleasure in process, enjoy the ride, and experience a sense of gratitude. But it has no application at all to non-sentient organisms, which can experience and appreciate nothing. When conceived in this way, the good for non-sentient organisms seems hardly to be a good at all.

To summarize: we set out to define the good for non-sentient organisms and ran headlong into the problem of the beneficiary. We sought to solve that problem by locating the good for non-sentient organisms in autopoietic functioning. But then that good seemed to revolve in a paradoxical circle and hence to lack significance.

At this point we would do well to turn away from abstract reasoning back to the commonplace observation that sunlight and water are good for trees. Surely this is correct. There is, then, such a thing as the good for a non-sentient organism. If this good seems to lack significance when conceived merely as autopoiesis for the sake of autopoiesis, that may be because in restricting our attention just to the good of the organism itself, we strip that good of the context in which significance resides. We murder to dissect.

But before pursuing this thought any further, I want to consider my second problem, the problem of value-relevant identity.

### **The Problem of Value-Relevant Identity**

*Value-relevant identity* is the identity of the entity to which harm or benefit is ascribed. The problem of value-relevant identity is that in a given instance differing but equally plausible conceptions of value-relevant identity lead to wildly differing assessments of harm or benefit.

The problem of value-relevant identity has been studied primarily in the human case. For humans, value-relevant identity is often thought to involve some sort of psychological continuity. Thus it is the psychological being that is ultimately benefited or harmed and whose continuation is of moral significance. Conceptual problems arise when we imagine cases in which people split or merge or memories continue but brains or bodies do not (and vice versa). Fortunately, most of these problems have little application to actual, present-day humans. We are still far from brain transplants or electronic storage of human memories.

But for non-sentient organisms, almost the opposite is true. For one thing, it cannot be a psychological being that is ultimately harmed or benefited, for non-sentient

organisms have no psychology. Their value-relevant identities must therefore be rooted entirely in biological considerations. The biology, moreover, is astoundingly complex. Nature's fertile genius provides us with living examples of almost every conceivable variation on the problem of value-relevant identity. It is in many cases not clear whether a given transformation constitutes a harm or a benefit to or the continuity or destruction of the entity in question, in part because it is not clear which entity *is* in question.

Take the lowly amoeba, which reproduces by mitosis. Is a mitotic split autopoietic and hence good for the amoeba—or not? We can see it either way. On the one hand, we may regard the split as the destruction of the original organism, leaving two new organisms in its place. On this conception, mitosis is clearly not autopoietic for the parent and hence not a good for it. The beneficiaries, if any, are the two new organisms. Alternatively, we can think of the parent as having not been destroyed but rather having been transformed into a pair of amoebas. It thus lives on unharmed in its progeny. On this conception the split enhances the parent's survivability; for it is less likely that both descendents will die prematurely than that the parent will, and the destruction of just one of them does not amount to the destruction of the two-stage entity that consists of both the parent and its offspring. But if mitosis increases survivability, then it is autopoietic, and hence a good, for that entity. The verdict depends on what you take the value-relevant identity to be: the organism that comes to an end with the split or the entity that fissions and continues as a duality.

Nature gives us not only splits but mergers. Fungi, for example, consist largely of thread-like mycelia, which typically grow in a moist medium such as decaying wood, manure or soil. When the mycelia of two separate but genetically compatible fungal organisms meet, they unite and form fruiting bodies (mushrooms), whose cells each contain two nuclei, one from each of the parent organisms. Do the two parents live on in this union or not? If so, then the merger may well be autopoietic and hence good for them. If not, then it is merely exopoietic, benefiting only the newly-formed entity. Neither conception seems uniquely right. Once again, the question of harm or benefit seems to hinge on a choice of value-relevant identity.

Questions of identity may arise even without splits or mergers. Is metamorphosis, for example, good for a caterpillar? It seems, on the one hand, to entail the caterpillar's destruction. Yet for the continuous organism consisting of the caterpillar and butterfly stages, it is merely a transformation. Once again, whether metamorphosis is a good seems to hinge on choice of value-relevant identity.<sup>8</sup>

Problems of value-relevant identity can generally be interpreted as further variants on the problem of the beneficiary. The caterpillar that is destroyed by metamorphosis is clearly not the beneficiary of the metamorphosis, just as the spider that is eaten by his mate is not the beneficiary of reproduction. But the organism consisting of the caterpillar and butterfly stages may be a beneficiary of that transformation—or at least may not be harmed by it. Various value-relevant identities are, in other words, alternative forms of

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<sup>8</sup> I have suppressed complexities here. In fact it is not clear that metamorphosis is a good for the continuous organism that is comprised of both the caterpillar and moth stages. We tend to think anthropomorphically of the transformation of the "ugly" caterpillar into the "beautiful" butterfly as good, but in biological terms it is chiefly a transformation from a non-reproductive stage to a reproductive stage, and we have seen that reproduction is not in all cases beneficial to the organism itself. The capacity for flight *might* be a benefit to the organism, but probably not in the way we are most likely to imagine it, as something *enjoyed*.

biological organization, each having its own good. We are left, then, with a bewildering sense of the relativity, complexity and interrelatedness of value through various biological levels.

### **Conclusion: Value Entanglement**

Consideration of the problem of the beneficiary led us to the conclusion that the good of an organism seems when considered in isolation to lack significance. (It is just autopoiesis for the sake of further autopoiesis.) If this is right, then perhaps the whole enterprise of trying to isolate value for individual organisms is ill-conceived, at least when those organisms are non-sentient. Perhaps, in other words, consideration of the organism's good in isolation strips away the context in which much of the value (and hence significance) of the organism resides. This context, I want now to suggest, is, specifically, the context of exopoiesis—of the external beneficiaries-by-design of the organism's functions. The problem of value-relevant identities enriches our understanding of that context, demonstrating that the network of external beneficiaries is far more intricate than appears at first glance.

These reflections move us away from the notion that value is to be found primarily in the good of individual organisms and toward a conception of *value entanglement*—that is, a conception in which many of the functions of a biological entity have by evolutionary design instrumental value for other biological entities. The good that an organism is “designed” to serve is therefore larger than the good of the organism itself. Autopoiesis exists not merely for the sake of further autopoiesis but for exopoietic aims as well. The missed context is restored. What before appeared merely as a paradoxical loop of value can now be seen to have channels flowing out to other entities in a widening web of significance. The picture is no longer Sisyphean; for reproduction, in particular, is creative, constantly introducing novelties into an open future.

Whether any of this is of *ethical* significance is, to repeat, beyond the scope of this paper. But I infer that if we want to reason, as Rolston does, “from *is* to *good*” (and, perhaps ultimately, thence to *ought*), we are most likely to succeed if we work not with a notion of the good for organisms themselves but with a clear appreciation of value entanglement.