Philos. Technol. (2012) 25:543–546
DOI 10.1007/s13347-012-0079-2

COMMENTARY

Nothing Good Will Come from Giving Up on Aetiological Accounts of Teleology

John Basl

Received: 2 May 2012 / Accepted: 9 May 2012 / Published online: 24 May 2012

Keywords Synthetic biology · Synthetic organisms · Artifactual organisms · Aetiological account of function

One reason that developments in synthetic biology are philosophically interesting is that they force us to reconsider a central dogma of environmental ethics, namely that there is some fundamental difference between artifacts and organisms such that the latter have goods or interests of their own that are due moral consideration while the former do not. The creation of entities that are at the same time artifacts and organisms forces us to clarify and reflect on existing accounts of the metaphysical and moral distinctions many environmental ethicists have wanted to make between entities of these kinds. In "Biological Interests, Normative Functions, and Synthetic Biology", Sune Holm (2012) explores the challenge that synthetic or fully artifactual organisms raise for one of the most prominent accounts that supports the central dogma just described.[1] While various environmental ethicists have attempted to ground the interests, goods, or welfare of non-sentient organisms in their teleological organization, Varner (1998) was the first to leverage the aetiological theory of biological function to explain how it is that non-sentient organisms are so organized and so come to have interests. According to Holm, the creation of artifactual organisms calls into question the adequacy of Varner's account because such organisms, even were they intrinsically identical to some other, naturally occurring organism, would lack interests. Holm then attempts to address this inadequacy by substituting an alternative account of biological interests.

While I am very much sympathetic with Holm's criticisms of the particulars of Varner's account, we need not reject the aetiological account as the basis of claims about organismic interests; to do so would be to throw out the proverbial baby with the bathwater. To see why this is so, consider Holm's criticism of Varner.[2] Holm asks

[1] On the distinction between synthetic and artifactual organisms, see (Holm 2012, pp. 15–20).

[2] The following citations are for Holm and not Varner. I agree with the interpretation given, but I am also interested in what to say about such criticisms independent of whether Varner should be understood this way.

J. Basl (✉)
Bowling Green State University, Bowling Green, OH, USA
e-mail: jbasl@bgsu.edu

us to consider the case of Arto, an artifactual organism that has been created to sustain itself and reproduce, but nothing else (Holm 2012, p. 20). According to Varner's account of biological interests, Arto lacks any such interests (Holm 2012, p. 21). This is because, on Varner's account, it is a necessary condition for having interests that an entity be the product of natural selection (Holm 2012, p. 8). Since Arto, presumably has an interest in, for example, its membrane's continuing to function as a filter, the aetiological account of interests must be mistaken.

As reconstructed, there is no problem with this argument; it is sound so long as we understand the "aetiological account of interests" to be an account of biological interests where such interests are grounded in a natural selection aetiology. However, there is no reason to think that the only aetiologies capable of grounding teleology and thereby interests are natural selection etiologies. Arto is, obviously, a teleologically organized entity. So, obviously natural selection is not necessary for teleological organization. But, we all know this. Artifacts in general are teleologically organized. According to an aetiological account of teleology (or function), this is because artifacts are the result of a selection process albeit not a natural one. Arto's parts have functions on such an account because Arto is the product of design. Arto's membrane has the function of filtering not due to natural selection but due to artificial selection. Insofar as there is the possibility of an aetiological account of artifact function, there is the possibility of an aetiological account of artifact interests grounded in aetiology.[3] Artifact interests and biological interests can both be understood as types of teleo interest that are differentiated by the differences in the selection processes that ground claims about the functions or purposes of various organismic or artifactual parts.

Insofar as this is correct, it undermines Holm's primary motivation for seeking an alternative foundation for the interests of non-sentient organisms. This more general aetiological account of teleo interests can accommodate the fact that artifactual organisms have interests while maintaining the aetiological account of functions as its core.[4] Even given this modified account, there are still two avenues of criticism worth considering. One is that, on such an account, it isn't clear how to maintain the central dogma discussed above. The second is that such an account fails to explain how "instant organisms" might have interests.

For my own part, I'm unsympathetic with the central dogma. I believe that non-sentient organisms and artifacts are both capable of having interests or goods and that those goods or interests are non-derivative in both cases.[5] This is, of course,

[3] The relevant aetiology that grounds teleology in artifacts is a selection process. However, the selection process is very different than that involved in natural selection. There need not be any of the classical ingredients of natural selection (phenotypic variation, heritability of variation, and difference in fitness (Lewontin 1970)) or, as Godfrey-Smith (2009) puts it, a "Darwinian Population". Selection processes for artifacts are not well developed. Clearly, they involve intentions on the part of the designer/user (though this is not sufficient), and certain actions of the designer/user (also not sufficient). They must also allow that designers can generate teleology by setting up artificial selection processes that mimic natural selection as we sometimes do with artificial breeding or computer simulations. An adequate aetiological account of artifact function must tell us how intention and action combine to generate functions or teleology while making sense of myriad distinctions (such as that between "the function of" and "functioning as"). Thanks to Russell Powell for pressing me to elaborate these points.

[4] There are various theoretical reasons for preferring the aetiological account to rival accounts with respect to grounding claims of teleology or interests. Several such reasons are discussed by Holm (2012 pp. 9–14).

[5] This is not to deny that there may be reasons only to care about the interests of organisms or that there may be good reasons for discounting the interests of artifacts.

controversial, but I need not defend the claim here; it is enough to note that Holm's preferred alternative account also constitutes a denial of the central dogma. According to Holm, biological interests are grounded in a system's capacity for self-maintenance (Holm 2012, p. 26). If the capacity for self-maintenance is sufficient for grounding the interests of biological entities, what prevents it from grounding ascriptions of interest with respect to non-biological entities? It seems to me it would be arbitrary to claim that self-maintenance is relevant to whether a being has interests only in the case of biological entities.[6]

Holm (2012, p. 17) alludes to the problem raised for aetiological accounts by instant organisms: organisms that, as it were, pop into existence as if from nowhere.[7] Unlike artifactual organisms, instant organisms are not the result of any selection aetiology whatsoever. Any aetiological account of function or interests is powerless to ground claims about the biological or teleo function of any such organisms. However, this isn't so obviously counter-intuitive.

First, it is worth noting that instant organisms with a psychology will have as much claim to psychological interests as any other similarly constituted organism.[8] This means we shouldn't be turned off by thinking that it won't be bad, for example, to torture an instant or swamp "dog" because the dog lacks biological interests. That just isn't so.

Second, Neander (1991) has, to my mind successfully, addressed the problem of instant organisms. She asks us to consider the case of winged "lions" that spontaneously pop into existence (Neander 1991, p. 179). She then argues that we couldn't determine the function of their wings without knowing something about their selection history. I think a similar example having to do with artifacts is equally, if not more, compelling. It is the purpose or end of a clock to tell time; there are things that promote that end and things that frustrate that end.[9] However, let's imagine that while digging through a box of gears in search of a tool I had lost I throw a series of parts behind my head that, completely by chance, fall into place in an order that gives rise to something identical to a clock (perhaps a sun-dial is more probable). This "instant clock" is not a clock at all. It is not teleologically organized to tell time. Its failing to be wound does not frustrate the end of telling time; it has no such end. Insofar as the teleology of artifacts is akin to that of organisms, i.e., insofar as in both cases teleology is grounded in a selection process, instant organisms are like instant artifacts; they both lack teleological organization and, thereby, teleo interests.

To conclude, I think the lesson to take from Holm's piece is that the aetiological account of interests must be modified if it is appropriately to deal with developments in synthetic biology. I hope the above provides a rough sketch of how this might be accomplished. If such a revision is possible, I contend that we should prefer this revision to Holm's alternative account. Both accounts force us to reexamine, and I think reject, a central dogma of environmental ethics, but Holm's alternative forces us

[6] Holm seems to agree on this point, since he is concerned that his account applies to non-organisms as well as organisms (Holm 2012, pp.28–29).

[7] Such organisms were made famous by discussions of SwampMan introduced by Davidson (Davidson 1987).

[8] One complication here is Dretske's (1995) claim that selection is necessary for a cognitive system to be representational.

[9] "Frustrate" is not to be understood in a psychological sense.

to concede much more. As he notes, the self-maintenance account might require us to accept that much more than organisms and artifacts are subjects of interests (Holm 2012, p. 29).[10]

References

Davidson, D. (1987). Knowing one's own mind. Proceedings and Addresses of the American Philosophical Association 60.

Dretske, F. (1995). *Naturalizing the mind*. Cambridge MA: MIT Press.

Godfrey-Smith, P. (2009). *Darwinian populations and natural selection*. USA: Oxford University Press.

Holm, S. (2012). Biological interests, normative functions, and synthetic biology. Philosophy and Technology (in press)

Lewontin, R. (1970). The units of selection. *Annual Review of Ecology and Systematics, 1*, 1–18.

Neander, K. (1991). Functions as selected effects: the conceptual analyst's defense. *Philosophy of Science, 58*(2), 168–184.

Varner, G. (1998). In Nature's Interest. Oxford: Oxford University Press.

[10] For example, Holm says that we might be forced to understand hurricanes and candle flames as having interests in the same sense that organisms do (Holm 2012, p. 28). While candle flames might be understood as artifacts, I take it that (naturally occurring) hurricanes are a paradigm example of something that has neither function nor teleological organization.