Modality and Function: Reply to Nanay

Osamu Kiritani

New England Institute for Cognitive Science and Evolutionary Studies

This paper replies to Nanay's response to my recent paper. My suggestions are the following. First, "should" or "ought" does not need to be deontic. Second, etiological theories of function, like provability logic, do not need to attribute modal force to their explanans. Third, the explanans of the homological account of trait type individuation does not appeal to a trait's etiological function, that is, what a trait should or ought to do. Finally, my reference to Cummins's notion of function was intended to note that the homological account is permitted to use this non-etiological notion of function.

Keywords: deontic, provability, homology

There might be, as Nanay (2011) notes, much discussion on how *deontic* "should" or "ought" cannot be regarded as expressing modal force. An agent *deontically* should or ought to do something, whereas a trait of an organism *functionally* should or ought to do something. *Functional* "should" or "ought" does not need to be a kind of *deontic* "should" or "ought." Moreover, we could say that "modal facts can be explained in terms of simple events" (Nanay, 2011, p. 86). In provability logic, the provability of a sentence of a formal system is thought to be a kind of necessity: a sentence A is necessary ($\Box A$) if and only if A is provable in the system (Boolos, 1993).[1] The provability of a sentence can be analyzed in terms of its proof, not in modal terms. Similarly, in order to attribute modal force to functional claims, etiological theories of function do not need to "attribute modal force to the *explanans* of functional explanations" (Nanay, 2011, p. 87).

---

[1]Unlike alethic necessity, the sentence $\Box A \rightarrow A$ is not always true in provability logic, since even if A is provable in some system, A might not be true when the system is unsound. This is similar to the phenomenon of malfunctioning.

My suggestion about the modal character of etiological theories was intended not only to illuminate them but also to sufficiently show that the homological account of trait type individuation does not use the etiological notion of function (Kiritani, 2011, pp. 2–3). According to the homological account (Nanay, 2010, pp. 417–418), *X*s belong to the same trait type if and only if *X*s are homologues that have been selected for doing the same thing. It follows from the explanans of this account (*X*s are homologues that have been selected for doing the same thing) that *X*s are homologues that have the same etiological function (Nanay, 2010, p. 418). But this explanans does not use the etiological notion of function or, in other words, "the notion of function in the sense of what a trait ought to do" (Kiritani, 2011, p. 3). Suppose that etiological theories of function rely on the homological account of trait type individuation. According to such etiological theories, a trait token x has the etiological function to do F if and only if x is one of the homologues that have been selected for doing F. It follows from the explanans of these theories (x is one of the homologues that have been selected for doing F) that x is one of the homologues that have the etiological function to do F. However, this explanans does not use the etiological notion of function. The homological account of trait type individuation is available to etiological theories of function without running into circularity. Thus, Nanay's trait type individuation objection fails.

The aim of my reference to Cummins's notion of function was not to save etiological theories by appealing to it (Kiritani, 2011, p. 3). According to Cummins (1975, p. 765), the function of a thing is its capacity which contributes to a capacity of its containing system. Given that *X*s are homologues that have been selected for doing the same thing, certain past homologues were *capable* of doing so, which has *contributed to* the surviving or reproductive *capacities* of the past organisms *containing* these homologues. Then the explanans of the homological account (*X*s are homologues that have been selected for doing the same thing) might be interpreted as using Cummins's notion of function. My reference to Cummins's notion of function was intended to note that the homological account of trait type individuation, which etiological theories are to rely on, is permitted to use this non-etiological notion of function, whereas Nanay (2010, pp. 416, footnote 10, 2011, p. 87) denies another possibility of using this notion to explain trait type individuation.

References

Boolos, G. (1993). *The logic of provability*. Cambridge: Cambridge University Press.
Cummins, R. (1975). Functional analysis. *Journal of Philosophy, 72,* 741–765.
Kiritani, O. (2011). Function and modality. *Journal of Mind and Behavior, 32,* 1–4.
Nanay, B. (2010). A modal theory of function. *Journal of Philosophy, 107,* 412–431.
Nanay, B. (2011). Function, modality, mental content: A response to Kiritani. *Journal of Mind and Behavior, 32,* 85–88.