

## Function and Modality

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Naturalistic teleological accounts of mental content rely on an etiological theory of function. Nanay has raised a new objection to an etiological theory, and proposed an alternative theory of function that attributes modal force to claims about function. The aim of this paper is both to defend and to cast a new light on an etiological theory of function. I argue against Nanay's "trait type individuation objection," suggesting that an etiological theory also attributes modal force to claims about function. An etiological theory of function can be thought to analyze claims about function with modal force, not relying on any theory of counterfactuals.

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Naturalistic teleological accounts of mental content (e.g., Millikan, 1984, 1993; Papineau, 1984, 1987, 1993; cf. Macdonald and Papineau, 2006) rely on an etiological theory of function in order to explain the contents of mental representations. If the content of a representation is determined by the current properties of a representational system alone, it is difficult to see how misrepresentation can occur. Misrepresentation occurs when a representational system does not represent correctly though it has the function to do so. Naturalistic teleological accounts of content attempt to account for misrepresentation by appealing to an etiological theory of function, which analyzes claims about function in terms of the evolutionary history of a trait of an organism.

According to an etiological theory of function (Godfrey-Smith, 1994; Griffiths, 1993; Millikan, 1984; Neander, 1991a, 1991b), a trait of an organism has the function to do *F* if and only if it has been selected for doing *F*: its performing *F* has contributed to the survival or reproduction of the ancestors of this organism. A human heart has the function to pump blood because the fact

that it pumped blood contributed to the survival of our ancestors. Nanay (2010) raises the following objection to the etiological theory. It presupposes an account of individuating *trait types*, with reference to which functions are to be defined. However, no such account is available without running into circularity. Suppose that certain tokens belong to trait type *T* if and only if they are homologues: they have common descent. The forelimbs of vertebrates, such as the wings of a bird and the forelegs of an ancient amphibian, are homologous. But the wings of an eagle and the forelegs of an ancient amphibian are not tokens of the same type. On the other hand, we would say that the eyes of an eagle and the eyes of an ancient amphibian are tokens of the same type. What makes us classify two token traits under the same type in the latter case but not in the former one? It depends on what the trait in question has been selected for, that is, the etiological function of the trait. It follows that certain tokens belong to trait type *T* if and only if they are homologues that have been selected for doing the same thing or, in other words, that have the same etiological function. This way of individuating trait types uses the notion of function in order to explain trait type individuation.

Nanay attempts to develop an alternative theory of function that does not make reference to trait types at all. If a theory of function does not rely on any account of trait type individuation, the function of a token trait must be determined by the properties of that trait token alone. Then it is difficult to see how the function can be different from what the trait token actually does. In other words, it is difficult to see how a trait can malfunction. My heart malfunctions when it does not pump blood though it has the function to do so. Nanay proposes accounting for malfunctioning by attributing modal force to claims about function: doing *F* is a function of *x* if and only if it is true that if *x* is doing *F*, then this *would* contribute to the survival or reproduction of the organism with *x*. He suggests that the auxiliary “would” expresses modal force, and proposes analyzing claims about function in terms of a counterfactual while noting that any theory of counterfactuals could be used to fill in the details.

My suggestion is that an etiological theory of function also attributes modal force to claims about function. It has been pointed out that function attributions have *normative* force (Davies, 2001, 2009; Hardcastle, 2002; McLaughlin, 2009; Millikan, 1989, 2002; Neander, 1991a, 1991b): doing *F* is a function of *x* if and only if it is true that if *x* is under normal conditions, then it *should* or *ought* to do *F*. My heart malfunctions when it does not pump blood though it should or ought to do so. The auxiliary “should” or “ought” can be regarded as expressing modal force. Then an etiological theory can be thought to analyze claims about function with modal force, not relying on any theory of counterfactuals, but in terms of the evolutionary history of a trait.

An etiological theory of function can be thought to analyze what a trait *should* or *ought* to do ( $\Box Fx$ ) in terms of what it did in fact ( $Fx'$ ,  $Fx''$ , . . . where

$x'$ ,  $x''$  are tokens earlier than  $x$ ). A human heart should or ought to pump blood because the fact that it pumped blood contributed to the survival of our ancestors. The notion of function in this sense of what a trait ought to do does not imply that the trait has the capacity to do so. This is consistent with the phenomenon of malfunctioning. As Nanay points out, certain tokens belong to trait type  $T$  if and only if they are homologues that have been selected for doing the same thing, which has contributed to the survival or reproduction of the ancestors of the organisms with these tokens. This way of individuating trait types does not use the notion of function in the sense of what a trait ought to do, though it might implicitly make reference to another notion of function. According to Cummins (1975), the function of a thing is its capacity which contributes to a capacity of its containing system. Sea turtles use their flippers to dig nests in sand, which contributes to their reproduction and so is a function of the flippers in Cummins's sense. However, digging in sand is not an etiological function of turtle flippers, since they have not been selected for doing so (cf. Gould and Vrba, 1982; Millikan, 2002). It has been pointed out that Cummins's notion of function does not attribute normative force to claims about function (Millikan, 2002; Neander, 1991a). What ought to be done is beyond the scope of Cummins's notion. This notion of function can be used in order to explain trait type individuation, by appeal to which etiological functions are to be explained. The way of individuating trait types above is available to an etiological theory of function without running into circularity (cf. Griffiths, 2006; Neander, 2002; Rosenberg and Neander, 2009). Thus, Nanay's "trait type individuation objection" fails.

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