

Tokens, Types, Causes and Criteria: A Response to Kwek on the Malfunction Problem

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Note: To provide context, I have included below the abstract for the paper “The Malfunction Problem and the Functional Individuation of Biological Traits” by Adrian Kwek to which I am responding. My comments follow that.

Abstract for Adrian Kwek’s paper

Systemic theories of biological functions hold that a biological trait tokens function is its causal contribution to the overall capacity of its containing system. Coupled with the common view that biological traits are functionally individuated, systemic theories incur the problem of denying the possibility of malfunctions. Amundson and Lauder offer an influential solution to the malfunction problem by rejecting the claim that all biological traits are functionally individuated. Instead, they argue from the practice of functional ascription in anatomy that many biological traits are anatomically physically as opposed to functionally individuated. Their solution, however, is limited and they themselves admit to the existence of many important biological traits that are functionally individuated. I propose a reading of their solution that enables a systemic theorist of biological function to accommodate the twin everyday phenomena of malfunctioning biological trait tokens and biologists functional individuation of biological traits.

Comments

I am going to start very nearly at the end of Kwek's paper and work backwards. What is potentially innovative in the paper arrives both late and somewhat suddenly, and receives expression in only a handful of lines. By taking the end as a starting point, I hope to clarify what precedes it, and in so doing attempt to understand what is at stake in the malfunction problem, which wasn't clear to me upon finishing the paper. We are told that it is a theoretical problem, a difficulty facing theorists of biological function and are provided a solution that makes possible the endorsement of a systemic theory of function. But what are these theories about? Do they detail causal relations among biological traits, tokens, types and functions? Or are theories of biological function in the business of showing how biological traits get classified? And if both, what is the relationship between the two and how does this bear on Kwek's paper?

Kwek's solution to the malfunction problem comes out of an alternative reading or interpretation of Amundson and Lauder's 1994 paper; it is a proposal of how to understand their project. So it is worth keeping the question in mind what Kwek offers that is novel or new over and above Amundson and Lauder's original proposal. Kwek's "reading proceeds on the basis of the model of how etiological theories classify [biological trait] tokens." Etiological theories avoid the malfunction problem because of the *way they classify* tokens as belonging to a particular trait, such as being a heart; namely, in *virtue of their history*. The crucial passage follows:

Etiological theories thus recognize a distinction between the way by which a token qualifies as a member of a type and the type itself. The type being a functional type does not entail that tokens belong to the type by way of actually currently performing the function. Instead, the way that the token belongs to the type is by way of having a history of the right sort [...] History, being independent of function, would then ensure that the token still has that function when it is not currently performing it. [...] The malfunction problem only arises when the way by which a token enters a functional type is functionally [...]

What exactly is going on here conceptually? The above distinction is earned, I take it,

by showing how, or that, an etiological model of classification recognizes the role history plays in understanding functional types. But what exactly is this etiological model and how does it form the basis of Kwek's rereading of Amundson and Lauder?

One possibility is that observing or apprehending how etiological theorists classify biological traits provides an insight into the malfunction problem. On this reading, the way in which these theorists see things provides a perspective from which the distinction between the way by which a token qualifies as a member of a type and the type itself becomes apparent. It would be possible, on this interpretation, for etiological theorists to be more or less wrong about how to carve up the world while still providing a useful vantage point from which the solution to the malfunction problem can be apprehended. A second possibility is that the way in which etiological theorists classify biological trait tokens is in some way right; that is, their method of classification isn't simply a goad to a good idea, but rather is the right way to divide things up, at least in this particular area.¹

Setting this issue aside, what are we to make of the distinction Kwek points to? I must confess that I find it a little hard to follow, largely because the relations among the various entities is unclear or conceptually muddled or something. To start with, the passage above refers to tokens *belonging* to types rather than, say, instantiating types; tokens are said to *possess* functions; and a token's belonging to a type confers a function. This, to my ear, odd way of putting things makes it hard to understand how the etiological method of classification helps solve the malfunction problem. The belonging-to relation between tokens and types makes it possible for tokens to belong to types in *certain ways*, and the etiological insight is that tokens belong to traits *by way of* having a history of the right sort. This talk of there being a way that tokens belong to types creates a strange dichotomy of alternatives. On the flip-side of the suggestion that tokens belong to types by way of a particular history is the idea that tokens can *enter into* a type in virtue of having a certain functionality. That these are distinct, mutually exclusive possibilities for Kwek

¹I won't go into what the term right might mean. The point is only that, on this second reading, the content of the etiological theorists' method is significant and not simply the inspiration it provides to view a problem afresh.

is made clear by the assertion, which I find frankly puzzling, that history is “independent of function.”

This way of expressing the problem seems maladroit or misleading because it suggests that types can come to acquire tokens through two different methods or processes (and that the malfunction problem only occurs when the method of acquisition is of the non-historical variety). That would be a very queer metaphysical picture of biological traits, one in which types come to possess tokens by various means and then confer functions. Part of the strangeness here is the insertion of what seems to be a temporal element where tokens, playing the role of biological free agents, are snatched up by types. This strangeness or difficulty seems related to the issue of how to understand the role played by the etiological model of classification in the overall argument; that is, the issue of whether the model provides a good system for pointing to real things in the world or, instead, simply offers a helpful way to think through the malfunction problem. If the latter is the right spirit in which to understand Kwek’s argument, then there needn’t be anything metaphysically fishy going on.

Of course, Kwek doesn’t endorse the etiological theory in the rereading of Amundson and Lauder, though the interpretation proceeds “along the same lines” in the sense that it offers “a way in virtue of which tokens belong to a functional type, a way that is neither historical nor functional, and thus incurs neither the problem of first time functions nor the malfunction problem.” This way involves a “similarity relation between a current token and other current tokens of a functional type with respect to connectional, structural or developmental properties,” though earlier in the paper Kwek uses the term criteria in lieu of properties. This may be a small thing, but in the Amundson and Lauder paper criteria are taken to be classificatory and properties are spoken of as causal.

Which brings us to a closer, but by necessity brief, look at the Amundson-Lauder proposal. The stated purpose of the 1994 paper is that a “non-purposive concept of function [...] is crucial to certain research programs in evolutionary biology” (Amundson and

Lauder 1994, 443).² The paper is particularly concerned with the practice of anatomy, with the pair arguing that “[i]t is simply false that anatomists require purposive concepts in order to properly categorize body parts.”³ In the end, Amundson and Lauder “are more pluralistic than most philosophical commentators on function.”⁴ So while Kwek is critical of Amundson and Lauder for their failure to “ameliorate the malfunction problem” because the scope of their solution is “too narrow,” it is fair to ask in a more general way what the malfunction problem is and what a solution to it would look like. Kwek’s desire to endorse “a systemic theory of function” doesn’t sound terribly pluralistic, so might it be the case that this paper is after something quite different, perhaps something more ambitious, than what Amundson and Lauder were after?

As noted at the outset, Kwek’s solution to the malfunction problem is given briefly, and that is at least partly to do with the constraints of time and space inherent in this forum. A more detailed account of the relationship between biological trait types and tokens, along with some clarification about what is meant by tokens belonging to types in particular ways, would go some way toward illuminating just what is at stake in the malfunction problem and how effective Kwek’s proposal is in solving it.

²Amundson, Ron, and George V. Lauder. “Function without purpose.” *Biology and Philosophy* 9, no. 4 (1994): p. 443.

³Ibid., p. 458.

⁴Ibid., p. 465.