

Function, Functional Status, and the Primacy of the Collective: A Reply to Garson
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Justin Garson’s reply to “Function by Agreement” is a clear and compelling analysis of many ideas that form part of my perspective on biological functions. It is also an excellent point of departure for fruitful discussion. In his piece, Garson aims to accomplish three tasks. First, he seeks to clarify the distinction between my perspective and Robert Cummins’ ‘functional analysis’ approach (1973, 1975) – a theory with which my own admittedly has many similarities. Second, he asks why any differences benefit the sociology of knowledge, as I claim they do. Last, he offers a spirited defence of the etiological theory, a perspective that undergoes criticism in my original argument.¹

Consequently, responding to Garson’s piece requires me to articulate further my understanding of what function entails, expand my thoughts on why existing philosophical accounts are not fully satisfactory, and clearly explain the relevance of the sociology of knowledge and science studies. In summary, I comprehend function as a social institution – a convention produced by concerted social practice – rather than an ontologically independent quality or property of living things. Eliminate the collective and with it goes function. This in contrast with Cummins’ view, which while friendly to social contingency, ultimately does not escape a naturalistic grounding of function. In a sense, it is too timid concerning the ‘reality’ of functions and the role of social communities. Because of its condition as an institution, function should be studied as a status enabled and sustained by a group of social agents. The sociology of knowledge and science studies are relevant insofar as they have developed and refined the methodological and analytic tools to carry out such studies. Succinctly, function ought to be explored by way of the social practices that render particular things *functional*, and the social collective is the focus of foremost importance.

Considering Functions

After a brief summary of the function question in the philosophy of biology, Garson offers a tripartite classification of function theories.² The theories are distinguished according to stances on the ‘reality’ of functions. According to this scheme, irrealists hold that “parts of organisms don’t really have functions,” (2014, 77) realists argue that “functions can be given a respectable biological foundation,” (2014, 77) and conventionalists believe that “functions are real, but relative to our epistemic practices” (2014, 78). This characterisation is useful for sorting out philosophical perspectives, and accurately represents each group’s overall argument. However, it suffers from one difficulty: the definition of ‘reality’ – vital to the distinctions – is unclear. I presume that the definitions of irrealism and realism follow an understanding of ‘reality’ as self-standing existence. That is, to suggest functions are ‘real’ is to posit that they have a “quality of ontological independence from human social practice.” (Schyfter 2014, note 2) For realists, this means that functions are natural properties and can be given natural-causal explanations. For irrealists, this means that functions must be heuristic devices –

¹ Key texts in the etiological theory include Wright 1973, Millikan 1989 and Neander 1991a.

² For other overviews, see Neander 1991b and Perlman 2009.

useful but not of the organism. For conventionalism, however, the situation is considerably more uncertain. This uncertainty is a crucial issue, because it underlies my understanding of biological function and its distinction from the functional analysis approach.

Conventionalists, Garson argues, believe that “whether a trait has a function, and which function it has, depends on the community of researchers who investigate it” (2014, 78). Insofar as Cummins and fellow ‘functional analysis’-types take the community into account, the perspective and my own are very alike. Nonetheless, there exist a number of important differences that follow from distinct disciplinary traditions. The most important of these concerns the ‘reality’ discussed by Garson. In his piece, he correctly notes that conventionalists believe functions are real, though relativized by epistemic practice. Garson also correctly notes that my position has some realist commitments. However, the types of ‘reality’ to which Cummins and I subscribe are not interchangeable.

For Cummins, the attribution of function to a particular component begins at a “capacity of a containing system” (1975, 193). That overarching capacity is the foundation of the functional analysis, and it is *of the organism*. That is, it is ontologically independent from human social practice. Functions are analytical products but ultimately hinge on an ability that the living thing *has*. In this sense, Cummins is a ‘naturalistic realist’ (a somewhat unpolished term, but sufficient here). For me all capacities – dispositions, propensities, abilities, and most importantly, functions – are social institutions. Not one of these is of the organism; all are products of collective epistemic practices. Stated simply, function is not ‘out there’ in any form. For Cummins and company, function ultimately rests on a capacity that is ‘out there.’ While the fragmentation of the containing system and the attribution of capacities to constitutive components is socially contingent, all rest on an overarching system and principal capacity that are not born of the collective.

Institutional Realism

My stance on the ‘reality’ of biological functions might be termed ‘institutional realism.’ Functions, like all other social institutions, are ‘real’ insofar as practitioners engage with them and are behaviourally and epistemically influenced by them. However, this institutional reality depends upon the concerted acts of mutually-susceptible social agents (Barnes 1983, Bloor 1997). Functions are like the monetary value given to notes and coins. A £5 note has no value outside the collective that recognises it as worth a particular amount. The value of the note rests on members of the group acting with and speaking of that note as one having value – for instance, by accepting it in exchange for products. In referring to its value, agents constitute the referent.

Using Barry Barnes’ terminology, value is “bootstrapped” into existence (1983); using J.L. Austin’s, value is “performed” (1962). Should those agents suddenly cease all acts of value-reference, the note would lose its value. Crucially, the ontological dependence of value on the collective does not indicate an inferior or less consequential reality, simply a *distinct kind* of reality. Biological functions exist and operate as does value – as products of collective human practice. ‘Naturalistic reality’ is relevant only to the extent that there

exist things of the world independent from human scientific study. All observations, claims, analyses, classifications and understandings of such things are the result of scientific work; that is, they are products of social practice.³ Cummins' capacities, upon which functional analyses rest, are heuristics employed to make sense of, and bring epistemic order to, supremely complex biological entities and phenomena.

This distinction makes Garson's classification of my perspective as 'conventionalist' somewhat inaccurate. If we accept ontological independence as the defining characteristic of functional reality, my argument does not fall under the same heading as that of Cummins and other functional analysis theorists. While it might be tempting to move my perspective under the 'irrealist' label, that classification is also unsatisfactory, because I do grant a reality to function. Ultimately, the problem is that this kind of reality is not one recognised by the tripartite scheme.⁴

Thus Cummins and I speak of and examine different kinds of reality. As a result, we understand biological functions as resting on different groundings. The functional analysis perspective looks to naturally-existing capacities; the sociology of knowledge perspective looks to the social collective. Garson correctly notes that Cummins contributes a concern for conventional practices and social contingency. So too do Hardcastle (1999) and Griffiths (1993). Nonetheless, these proponents of 'functional analysis' do not evade a naturalistic grounding. In addition to (but also as a consequence of) our divergent understandings of the reality of functions, there exist important methodological differences.

Irrealists

Like the irrealists and realists, Cummins and other conventionalists put forward a definition of what function *is*. Drawing on Garson's overview, irrealists define function as a fiction; realists as an ontologically independent quality that can be explained naturalistically-causally; and conventionalists as a real property subject to conventional interpretations. For all three, the target and stopping-point of enquiry is a definition of function. For the sociology of knowledge and science studies, such a definition serves instead as a beginning. Recognising function as a social institution implies that a comprehensive understanding of function follows from social scientific enquiry into particular scientific communities and practices. Defining what function *is* can never be anything more than a framework for empirical investigation. The 'functional analysis' perspective, as a conventionalist one, ought to imply a similar role for definitions of function. After all, if functions are shape by conventions – if they are socially contingent – full understanding of function demands study of the collective. This methodological implication has important consequences for the second and third aims in Garson's reply.

³ The literature on this topic is very extensive. An important foundational text is Bloor 1976. A useful summary of key arguments is provided by Barnes, Bloor and Henry 1996.

⁴ Another problem with the classification of my work as "conventionalist" is that like the etiologists, I believe functions can be given causal explanations. The difference is (again) the *type* of causality involved. Etiologists put forward *natural*-causal explanations, while the sociology of knowledge puts forward *social*-causal explanations. See Bloor 1976.

Recall that Garson asks what relevance the sociology of knowledge and science studies have here, and includes a strong defence of the etiological perspective. Interestingly, these two elements of his argument point to the same crucial topic: the end-goal of this work. This end-goal is tied to the role of definitions discussed earlier. Garson, like most other philosophers of biology, argues that biological function is a teleological “nightmare,” an archaic remnant that has little place in present-day scientific practice. The etiological theory, he writes, is motivated by a desire “to solve the problem of final causation” (2014, 80). Insofar as that theory successfully banishes teleology by recasting function in natural-causal terms, it accomplishes its target. Defining function is a stopping-point because doing so achieves the sought-after goal. In defending this perspective, Garson brings to the fore a crucial difference from the sociology of knowledge and science studies.

Ultimately, resolving the teleological “nightmare” is not a relevant enterprise for these fields. Rather, the goal is to examine just how knowledge claims concerning biological function are developed, evaluated, promoted and accepted; that is, how knowledge about biological functions is constructed and why it takes the form it does. Etiological theories do not provide for this enterprise, because they accept evolutionary theories as given, rather than as epistemic products themselves subject to social scientific study. My focus is not *function*, but the manner in which particular things are rendered *functional* by science.⁵ Teleological discourse is not a failing to correct, but a particularity that lends understanding to social scientific studies of biological knowledge-making. As such, defining function triggers further study.

One final point deserves consideration. Garson argues that etilogists are pluralistic about function, in that biological function, mathematical function, artefact function, and other varieties of function are distinct. The natural-causal explanation posited by the theory is one relevant to biological functions, but not other kinds. My perspective is also pluralistic, but for different reasons. ‘Function’ as deployed in biological research and in technological artefact construction differ because the communities and their work differ.⁶

Developing an understanding of living nature and fabricating technological products are not interchangeable aims, and the types of epistemic practices involved are similarly different. Thus while the framing of function as a social institution applies to all varieties of function, the subsequent empirical research reveals how and why types of function diverge. This is the reason why examining synthetic biology is worthwhile, as the field straddles both the life sciences and engineering (Schyfter, Frow and Calvert 2013), and its artefacts (and their functions) are not self-evidently of one category or another. The empirical messiness of the case study challenges us to re-examine existing arguments about function. It is an instance of function in-the-making.

⁵ This follows from Martin Kusch’s communitarian epistemology, in which he draws a distinction between *knowledge* and *knowledgeable* persons (2002).

⁶ Elsewhere I have examined technological functions. See Schyfter 2009.

In Closing

By way of closing, a review is useful. Garson's reply draws attention to the similarities between Cummins' 'functional analysis' approach and my own, which uses the sociology of knowledge. As I argue here, the key difference rests on different varieties of functional 'reality.' Where Cummins and others look to biological capacities, I turn to the social collective. Functions are certainly 'real,' but real in the form of social institutions. This difference is linked to other important distinctions. Unlike philosophers of biology, my concern is not with the teleological "nightmare" implied by function-talk; I am instead interested in the making of knowledge and the particularities of biological practice. As such, definitions for me can never be an end (as they are for most of the philosophers Garson and I discuss). Definition is a necessary point of departure for empirical investigation. Thus, Cummins and I differ in our varieties of 'realism,' our end-goals, and the methodological commitments those end-goals imply. These contrasts are perhaps unsurprising, given our disciplinary differences. Nonetheless, I believe that philosophical and sociological perspectives can engage in compelling and fruitful dialogue regarding function.⁷ Science studies can give to the ongoing debate an understanding of function as *status*, rather than property, and in doing so draw attention to the primacy of the collective.

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⁷ This includes debate concerning the relationship between organismic and artefactual functions. See Schyfter 2009, and Kroes and Kroes 2009.

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