

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Transactions of the Nebraska Academy of
Sciences and Affiliated Societies

Nebraska Academy of Sciences

1976

Functional Analysis: Some Recent Philosophical History

David W. Paulsen

University of Nebraska at Omaha

Follow this and additional works at: <https://digitalcommons.unl.edu/tnas>

Paulsen, David W., "Functional Analysis: Some Recent Philosophical History" (1976). *Transactions of the Nebraska Academy of Sciences and Affiliated Societies*. 410.
<https://digitalcommons.unl.edu/tnas/410>

This Article is brought to you for free and open access by the Nebraska Academy of Sciences at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Transactions of the Nebraska Academy of Sciences and Affiliated Societies by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

FUNCTIONAL ANALYSIS: SOME RECENT
PHILOSOPHICAL HISTORY

DAVID W. PAULSEN

Goodrich Program and Dept. of Philosophy and Religion
University of Nebraska at Omaha 68132

1. *Introduction.* A standard treatment of functional analysis (“functionalism”) among philosophers of science has recently come under attack by a new variety of “functionalist” in the philosophy of psychology.¹ Jerry Fodor, the chief proponent of this new approach, challenges the view that functional statements can be eliminated in favor of causal (nomological) statements. He supports his position by providing the outlines of a functional analysis of mental concepts which he believes illuminates the mind-body problem. In particular, Fodor holds that his version of functionalism clarifies how a materialist may avoid adherence to the reductionist thesis that mental concepts can be eliminated in favor of physical concepts.²

Fodor’s criticism of the “standard view” of functional analysis is blunted, however, in two ways. (a) The parallel between the standard treatment and Fodor’s variant breaks down in a crucial manner. Consequently, even if he establishes that functional statements as he construes them cannot be eliminated in favor of causal statements, he has not yet shown that functional statements as construed by the standard view are ineliminable. (b) Many of the virtues of Fodor’s account, particularly as it avoids reductionist solutions to the mind-body problem, can be obtained without recourse to the troublesome concept of a function.

2. *Fodor’s Account.* According to Fodor, a complete explanation in psychology consists of two parts: a functional analysis and a mechanistic or causal analysis.³ A phase one theory provides a functional characterization of “internal states” of an organism such as memories, motives, needs, drives, desires, strategies, beliefs, etc. solely in terms of the way in which they function in producing behavior. Such theories attribute only those properties and degree of complexity to internal states of an organism necessary to account for some part of its behavior and make no reference to neurophysiological conditions or structures.⁴ An example of such a phase one theory is the use of concepts like memory trace, long-term memory and short-term memory in order to account for human memory evincing behavior.⁵ Such a theory does *not* provide a causal explanation, it is asserted, although it may provide the basis for predicting human behavior given sufficient knowledge about stimulus conditions.⁶

A phase two theory, on the other hand, may well provide a causal explanation for behavior by postulating a mechanism capable of producing this behavior. A neurological theory, for instance, may be developed which

introduces a physiological condition responsible for the memory capacities of human beings characterized by the memory hypothesis which is cast in functional/psychological concepts. Whether there is such a mechanism is itself an empirical question.

The two types of theory are brought together by showing them to be "functionally equivalent," i.e. by establishing that the behavioral consequences of the mechanism postulated by the phase two theory are the same in relevant respects as the behavior which characterizes psychological states in the phase one theory.⁷ How this functional equivalence is to be demonstrated in any specific case is not clearly indicated, but Fodor is sure that there is no way of translating 'Ψ and Φ are functionally equivalent' into Ψ and Φ are each causal conditions for B" (where 'Ψ' is replaced by some functional/psychological expression, 'Φ' by some neurophysiological description and 'B' by some description of behavior).⁸ Such a conclusion follows directly from the claim that the connection between functionally characterized internal mental states and behavior is not causal. Both phases of the theory are necessary for an adequate psychology, and neither is eliminable. A functional analysis is, therefore, a necessary and ineliminable part of any respectable scientific explanation of human behavior.

The consequences of Fodor's account for the theory of mind emerge when we consider the character and connection between phase one and phase two theories. He illustrates the relationship by pointing to the difference between describing a device as a *valve-lifter* and speaking of it as a *camshaft*.⁹ To say that something is a valve-lifter is to describe it in terms of its function, and for this reason it is inappropriate to ask "What does a valve-lifter consist of?" where this is a request for a specification on physical parts. The term 'camshaft,' however, comes from our physical object vocabulary. Camshafts consist of rods, springs and atoms. It follows from similar considerations that no reductionist account of the mind-body relation is possible. As in the valve-lifter/camshaft example, psychological (i.e. functional) states are not susceptible to reduction in the sense of microanalysis in terms of physical components.

Furthermore, just as there may be different kinds of physical objects which provide a mechanism for lifting valves, so too there may be different mechanisms functionally equivalent to some psychological state described by a phase one theory. It may even be the case that certain psychological states can be realized both by neurophysiological and electronic mechanisms. Hence, even if a certain neurophysiological mechanism is found to be functionally equivalent to a psychological state or process, no reduction is available, as it would remain possible that some other neurological or electronic mechanism could equally well realize it.

3. *The "standard view."* Although philosophers of science have sometimes cited functional analyses in psychology (e.g. by mentioning that Freudian psychology treats symptom formation as functioning to avoid anxiety), proponents of the standard view more usually focus on the methods promoted by sociologists such as Merton or anthropologists such as Malinowski and Radcliffe-Brown, who utilize functional analysis in strictly social contexts.¹⁰

Characteristically, these functional analyses are seen as attempting to provide explanations for certain social or cultural items in terms of the role (function) they have in satisfying certain basic needs (functional prerequisites) necessary for the survival or viability of a social group. The functional analyses proffered by social scientists are measured against the requirements for explanation inherent in the covering law model. According to this model statements describing items to be explained must follow deductively from a set of premises which include general empirical laws as well as statements of particular facts.¹¹ In order to fulfill these requirements it is necessary to reconstruct functional analyses by replacing functional statements with causal (nomological) statements. For example, Radcliffe-Brown's suggestion that totemic rites among certain Australian tribes have the social function of supporting a body of cosmological ideas which enable the tribe to survive is recast as asserting that totemic rites are traits causally sufficient for maintaining states necessary to the continued survival of the tribe.¹²

Examination of such reconstructions, however, often leads to the conclusion that the functional analysis given provides an inadequate explanation. The social account may fail the deductivity requirement because the item to be explained (in the example above, totemic rites) is only one among a number of possible ways in which a social need can be satisfied (i.e. one among a number of functionally equivalent items). Alternatively, it may be unacceptable because claims about the needs (functional prerequisites) of the social group in question cannot be reformulated as general empirical laws. For these reasons, the standard view holds that functional analyses of social phenomena have usually not been scientifically respectable (meaning in part that they do not satisfy the requirements of the covering law model of scientific explanation). Rather, they are thought to have at best a heuristic role in directing inquiry to possible self-regulative aspects of social systems.¹³

Furthermore, success in eliminating functional statements in biology in favor of statements about homeostatically controlled systems are held by the proponents of the standard view to offer hope that functional analyses in the social sciences can be rendered scientifically respectable by reconstructions which locate social items within a causal analysis of the social group as a self-regulating system.

4. *Criticism.* (a) Fodor's account of functional analysis and that offered by the standard view appear to clash over the issue of whether functional statements can be eliminated in favor of causal statements, and further whether they can be "scientifically respectable" even if they cannot be eliminated. This conflict dissipates, however, if we note crucial differences between the kinds of analyses which are considered functional.

For the standard view functional analyses in psychology are typically found when an attempt is made to account for some recurrent piece or pattern of behavior (e.g. hysterical paralysis) by pointing out its function in the larger system of a person's psychological states (e.g. how it relieves unconscious anxiety about being drafted).¹⁴ In contrast, Fodor is concerned with a functional analysis *not* of behavior itself, but rather of the psychological states lying behind behavior.

For the standard view a functional analysis purports to provide a "functional explanation" of an item which can be identified and individuated in a relatively unproblematic way (i.e. an item which is "observable") such as totemic rites or hysterical paralysis. Fodor, however, construes a functional analysis as what might more appropriately be called a "functional description." The objects of functional analysis for him are theoretical constructs which are described in terms of their behavioral (i.e. observable) manifestations, though they are not themselves directly observable. He is not concerned with explaining these psychological states.

The standard view demands reconstruction of functional statements by means of causal (nomological) statements precisely because they purport to provide explanations. Proponents are not committed to the view that the different kind of statements indicating the relation between terms in a theory and its evidential or observational base must be eliminated in favor of causal statements. Indeed, they take pains to point out that many of the theoretical terms used by social scientists are faulty because they have not been adequately related to observational or operational concepts. Fodor appears to be talking about "functional analysis" in a way in which other philosophers of science talk about "correspondence rules," "coordinative definitions," "partial definitions" or "bridge principles."¹⁵ Construed in this way, there is no substantive conflict between Fodor's account of functional analysis and that offered by the standard view. Proponents of the standard view are willing to acknowledge the importance of operationalizing psychological concepts in terms of behavior, admit that statements providing this connection cannot be eliminated in favor of causal statements and agree that such statements are a necessary part of any respectable scientific theory. Such admissions, however, leave untouched their claim that functional explanations need to be recast in causal language.

(b) The advantages provided by Fodor's use of the concept of functional

analysis do not spring from their analogy with other uses of the confusing concept of a function. The important difference between describing something as a valve-lifter and describing it as a camshaft, need not be construed as obtaining because the first is a description in terms of function and the second is not. It is, after all, not obvious that the relationship between being a valve-lifter and valve-lifting behavior is similar to that between long-term memory and the behavior which manifests it. What is important in such an example is not the specific difference between a functional description and a non-functional description, but the fact that we have two different and conceptually distinct alternative descriptions provided for the same object.

As applied to psychological explanation, Fodor's insights are captured without recourse to a discussion of functional analysis by views like those of Donald Davidson who offers a version of the Contingent Identity Theory of Mind which capitalizes on the notion of alternative descriptions of the same event.¹⁶

According to such theories, mental and physical language are treated as providing different concepts for the purpose of individuating events. It is possible, however, to determine in some cases that the events, states or processes described in terms of one vocabulary are contingently identical with those described in the other. Nevertheless, it is argued, there may be no psychophysical laws or definitions and hence no prospect of reducing mental concepts to physical concepts.¹⁷

This theory shares a further asset and also a liability with Fodor's account. First, it allows us to understand why difficulties arise concerning "causal" statements cast in terms of psychological expressions and descriptions of behavior. We fault the statement that the soporific material that a man ingested caused him to fall asleep because the generalization of which it is an instance is not a genuine causal law. It is not a causal law because of the definitional connection between 'soporific power' and 'putting people to sleep.' It remains possible, of course, that under another description of the material ingested we would have an instance of a genuine causal law.¹⁸ A similar situation may exist when the connection is conceptual as when the terms of a psychological theory are cashed out by means of descriptions of behavior. There may be no causal laws connecting psychological states with behavior when these states are described in psychological terms, although there could be such laws when these states are given alternative descriptions in a neurophysical vocabulary.

Second, Fodor is candid about the difficulties that arise when we try to determine functional equivalence. They spring from problems about the concept of having consequences that are the same in relevant respects. These are some of the same difficulties that arise when we try to spell out

conditions for individuating events, since events under descriptions are distinguished in part by having the same or different causes and effects or consequences.

FOOTNOTES

1. The classic statement of what is called the "standard view" in this paper can be found in Carl Hempel, "The Logic of Functional Analysis," available in several places, e.g. *Readings in the Philosophy of the Social Sciences*, ed. May Brodbeck, New York: Macmillan 1968, pp. 179-210. The "new variety" of functionalism can be found in Jerry A. Fodor, *Psychological Explanation*. New York: Random House 1968, esp. pp. xiii-xxi, 107-119, 136-145; and Jerry A. Fodor, "Functional Explanation in Psychology," *Readings in the Philosophy of the Social Sciences*, op. cit., pp. 223-238.
2. It should be noted that the standard view of functional analysis is logically independent of the reductionist thesis.
3. "Functional Explanation in Psychology," op. cit., p. 236.
4. *Ibid.*, p. 233.
5. *Psychological Explanation*, op. cit., p. 108. Another example of such a phase one theory presumably would be the use of a theory of generative grammar to account for human language-learning and -using behavior. Cf. Noam Chomsky, *Language and Mind*, New York: Harcourt, Brace and World, 1968, p. 23.
6. "Functional Explanation in Psychology," op. cit., p. 233.
7. *Psychological Explanation*, op. cit., p. xx.
8. *Ibid.*, p. xx, p. 118-119, 142-145.
9. *Ibid.*, p. 113, "Functional Explanation in Psychology," op. cit., p. 237.
10. Hempel, "The Logic of Functional Analysis," op. cit., *passim*.
11. Carl Hempel, "Aspects of Scientific Explanation," *Aspects of Scientific Explanation and other Essays*, New York: Free Press, 1965, pp. 333-489.
12. "The Logic of Functional Analysis," op. cit., p. 189.
13. *Ibid.*, pp. 195-210.
14. Gustav Bergmann, "Purpose, Function, Scientific Explanation," *Readings in the Philosophy of the Social Sciences*, op. cit., p. 220.
15. Carl Hempel, "On the 'Standard conception' of Scientific Theories," *Minnesota Studies in the Philosophy of Science*, Vol. iv, eds. Michael Radner and Stephen Winokur, Minneapolis: Univ. of Minn. Press, 1960, p. 146. Also Hempel, Carl, *Philosophy of Natural Science*, Englewood Cliffs, N.J.: Prentice-Hall, 1966, pp. 72-25.
16. Donald Davidson, "Mental Events," *Experience and Theory*, ed. Lawrence Foster and J. W. Swanson. Cambridge: Univ. of Mass. Press, 1970, pp. 79-101.
17. In another sense, any identity theory might be considered ontologically reductive.
18. See Donald Davidson, "Actions, Reasons and Causes," *The Journal of Philosophy*, LX (1963), pp. 696-699 for a further discussion of this point. The analogy between mental states and dispositional concepts such as soporific power is developed in David Armstrong, *A Materialist Theory of the Mind*. New York: Humanities Press, 1968. Armstrong's treatment of mental states as dispositions to behave, i.e. states of a person apt for the production of certain sorts of behavior, has much in common with Fodor's treatment.