

Functional and Intentional Action Explanations

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1. People as puppets.

Functional explanation in the social sciences is the focal point for conflict between individual and social modes of explanation. Explained functionally, a person's action seems determined by the needs of her society. While the agent thought she was acting for reasons, the functional explanation reveals the hidden strings of the puppet master. Intentional action explanation thus seems to conflict with a functional explanation. In *Semantics and Social Science*, MacDonald and Pettit argued that in the face of such conflict, we should always prefer explanations that appeal to an individual's intentions. To deploy a functional explanation is to cease regarding ourselves as agents, and this is impossible (MacDonald and Pettit 1981: 125-126).

This argument against functional explanation turns on a pair of claims: (i) that functional explanations and intentional action explanations explain the same thing and (ii) that they are incompatible. These claims are independent. Two explanations may have the same object and yet be compatible. For example, suppose a bridge collapses as an overloaded truck crosses it. One explanation of the event might appeal to the weight of the truck. A second explanation might look to a standing condition of the bridge, say a structural defect or design flaw. These are distinct explanations of a single event, and yet they are not in conflict. To address the people-as-puppets objection, then, we need to understand what it is for two explanations to explain the same thing, and the conditions under which explanations with the same object conflict. Clearly, no advance could be made without adopting some model of explanation. This essay will deploy the erotetic, or "why-question" view of explanation. Among theories of explanation with currency, the erotetic

view has the most articulate and fine-grained analysis of the explanandum. Since the people-as-puppets objection gains power from a precise characterization of the explanandum, this view of explanation underwrites the strongest form of the objection to functional explanation in social science. Moreover, little or no work has been done to apply the erotetic view to intentional action or functional explanations. The arguments in the second and third sections of this essay therefore have independent interest.

The erotetic model of explanation is widely understood, if not widely accepted, so the initial presentation may be brief. Bromberger (1966) and Hempel (1965) both suggested that an explanation is the answer to a why-question. Van Fraassen (1980), Garfinkel (1981), Lipton (1991) and others have argued that the internal structure of why-questions suffices for a full model of explanation. Questions of the form "Why *P*?" implicitly contrast the topic, *P*, with one or more foils. A foil describes an event, event property, object, or state of affairs that did not obtain. On analysis, why-questions have the form "Why *P* rather than *Q* (or *Q'*, *Q''*, ...)?" We will call the set of sentences including the topic and foils the "contrast class." A why-question presupposes that the topic is true and the foils are false. An explanation answers the why-question by discriminating between the topic and foils. That is, it describes some difference between them in virtue of which the topic obtained and the foils did not. When asking a why-question, one has a more-or-less definite view about what sort of differences will constitute a relevant answer. In science and ordinary life we deploy a variety of criteria of relevance. For example, the two answers, canvassed above, to the question "Why did the bridge collapse, rather than remain standing?" exhibit different criteria of relevance. Both answer the question by describing a causal condition of the event. Mentioning the truck presumes that the question seeks

a proximate cause. Mentioning defects in the bridge's construction presumes that the relevant answer is some standing condition in virtue of which the bridge could collapse under this weight.

The people-as-puppets objection arises when a single action is subject to both functional and intentional action explanations. In the relevant sense, then, two propositions explain the same thing if and only if they have the same topic. As we have already seen, two explanations may have the same object without conflicting. Two explanations can conflict only if they are answers to the same question, and a why-question is defined by its foils and relevance criteria, as well as its topic. So, two answers conflict only if they satisfy the same relevance criteria and address the same contrast class.¹ In the example of the bridge, above, the two causal accounts do not conflict because they satisfy different relevance criteria. They answer different why-questions.

The people-as-puppets objection thus presupposes that functional and intentional action explanations are answers to the same question. The issue therefore turns on the logical form of these explanations. What are the foils and relevance relations of intentional action explanations? What is the logical structure of a functional explanation? Finding answers to these questions will occupy us in the next two sections.

2. Intentional Action Explanations

Let us elicit the features of intentional action explanations from an example. Imagine that we are sitting at *Everybody's Bar and Restaurant* observing Smith and Jones at a nearby table. Jones orders coffee, and you ask why. Here are three possible answers (suppose that all are true):

1. Jones wanted coffee and believed that by ordering it he could get some.

¹ Also, the answers must be logically consistent. We will assume throughout that this condition is satisfied.

2. It is too early in the morning to start drinking whiskey.
3. Smith did not have any money.

While the second and third answers may seem odd, there are circumstances in which they are appropriate. Suppose we often had witnessed Jones ordering whiskey at *Everybody's*. The order of coffee seems anomalous, and you want to know why he ordered coffee rather than whiskey on this occasion. Under these circumstances, (2) could be a satisfactory answer. Alternatively, suppose we are wondering why Jones, rather than Smith, ordered coffee. Answer (3) could be an appropriate answer to this question.

Answer (1) is a paradigm intentional action explanation because it cites the agent's reasons or motivations for the action. In asking questions that give rise to intentional action explanations, we want to know what made the action attractive to the agent, what she was trying to achieve by doing it, and so on. It is thus plausible to say that the relevance criterion for an intentional action explanation is that the relevant answer must describe the agent's reason, plan, motive, desire, or intention. Reasons can discriminate between topic and foil only if the contrast class is constructed in the right way. The criterion of relevance thus imposes several restrictions on the contrast class. First, the topic must be a description of an intentional action. If it turns out that the event, as described, was unintentional (E.g., Jones was swatting a fly, not signaling the waiter), then there will be no reason for "ordering coffee."

The third answer, above,

3. Smith did not have any money.

was interpreted as an answer to the question

- Q3. Why did Jones, rather than Smith, order coffee?

This question has an intentional action as its topic. Nonetheless, question Q3 and its answer do not form an intentional action explanation at all. In the absence of an elaborate story about the context, none of *Jones'* motives would discriminate between his ordering coffee and Smith's ordering coffee. Therefore, in addition to the restriction on the topic, we need a restriction on the foils that can figure in intentional action explanations. The difference between Q3 and the others we have been considering is that the foil of Q3 is not something Jones might have done. Thus, an obvious restriction on foils is that each foil must describe some action that the agent could have done, but did not do. Notice that not just any alternative action generates an intentional action question. The question

Q* Why did Jones order coffee (today) rather than going to the bank yesterday?

is quite absurd. A person does not have occurrent motives for doing something yesterday. The paradigm cases of intentional actions are deliberate actions, where the agent contemplates alternative actions and chooses among them. In such cases, the appropriate alternatives are those among which the agent chose. This paradigm is a bit misleading, since not all intentional action is deliberate in this sense. Thus, explanation should not be limited to those alternatives actually envisioned by the agent. Moreover, even where the action is deliberate, the agent need not have actually called all of the relevant alternatives to mind. The subtleties of this issue are beyond our present scope, so let me boldly suggest the following restriction. The foils for an intentional action why-question must be actions that are appropriate for the agent under the circumstances. A foil is "appropriate under the circumstances" if the alternative is (i) one that the agent had in mind, or (ii) suggested by the intentional action description deployed in the topic, or (iii) customarily or normally expected under those circumstances. Roughly, the alternatives are things that one would expect an agent doing *that* in *this* context to contemplate or envision as alternatives. Other

restrictions on the contrast class of intentional action why-questions are certainly required.

However, we have elicited enough structure to address the question of this essay.

3. Functional explanations

The distinguishing feature of a functional explanation is its relevance criterion. To say that humans have toes in order to balance while walking upright is to explain the presence of toes by something that toes do. In general, the relevant answer tells us what role the item has in a larger system. Functional explanations are function statements that answer why-questions. A crucial prerequisite to understanding functional explanations, then, is to understand functional statements. I will argue (§3.1) that the two conceptions of function prevalent in philosophical discussions are complementary. We will see (in §3.2) that, as a result, there are at least two forms of functional explanation.

3.1. Pluralism about function statements

Talk of function arises in a variety of domains. It is most robust in biology, where the effects of an organ can be identified and the cost of dysfunction is high. In social theory, early functionalists, such as Durkheim, Radcliffe-Brown, and Malinowski, conceived of social function in direct analogy with biological function. Society is an organism, and institutions contribute to its flourishing or survival. The analogy proved problematic. Later functionalists, such as Merton and Parsons, eschewed it entirely. Philosophical work on the concept of function has yielded two ways of understanding function statements. The first relies heavily on evolutionary theory and is most comfortable in biology. The second arose out of reflection on psychological functions and is, perhaps, the most promising way to understand social function.

We will call the first conception of function the "etiological" conception because it relies heavily on the evolutionary history of the item in question. This conception was developed by

Wright (1972; 1976), Ruse (1971; 1973), Millikan (1984), Neander (1991), and others. The central idea is that the functions of an entity are those for which it was selected. For example, fish have gills in order to extract oxygen from water. According to the etiological conception, this statement about the fish's gills commits us to an evolutionary story about the fish's ancestors. The ancestors with gills had greater fitness in their environments than those without them. To say that they had greater fitness is to say that more organisms survived to adulthood and reproduced than their competitors. In general, the functions of an organ are those effects or capacities that caused it to be present in current populations. Michael Ruse tidily summarized the etiological conception by saying "if A has function F , then A is an adaptation and doing F is adaptive" (Ruse 1981).

Several details of the etiological view are important for our discussion. First, we need to distinguish between the organ and its function on one hand, and the organism with its capacities on the other. Only whole organisms can be fit in a given environment. To say that an item has a function is thus to say that there is some phenotype of which the item is a part. According to the etiological view, the organ is present in the phenotype because the organ had some disposition that made ancestors of the organism more fit. Not every organ will effect fitness directly. Most will be hidden from the eye of selection as sub-systems. The functional parts of an organism's sub-systems are present because of their contribution to the organism's capacities, and those capacities make it more or less fit in its environment. On the full analysis, then, we need to speak of the organism with its *capacities*, and the organ with its *functions*. This distinction may be generalized outside of the biological domain by talking of the capacities of a system and functions of an item within that system.

The second detail arises from the conception of fitness. Natural selection requires differential survival and reproduction among a population of similar organisms. Within a

population, organisms will differ with respect to many capacities. Differences in their capacities can cause differences in the rate of survival and reproduction in a particular environment. Where a difference in fitness is correlated with the variation in a certain capacity, there is a selection pressure on that capacity. Under these circumstances, organisms are selected for that capacity. It is only against this background that the dispositions of organs are *adaptations* and thus only against this background can an organ have a function.

Finally, an adaptation must be a heritable trait. The etiological conception of function holds that the function of an organ is the contribution it made to the fitness of the organism's ancestral population. There must, therefore, be a causal link between the organism's possession of the organ and its ancestors' possession of similar organs. In biology, the causal relationship is instantiated by the underlying genetics. This feature is important because it limits the way in which the etiological conception of function may be extended to non-biological cases. This conception can only be applied where there is a causal relationship of heritability. The point of Millikan's definitions of "reproduction" and "reproductively established families" is to characterize this relationship in a way that will make the etiological conception of function applicable to linguistic entities (Millikan 1984).

The close connection with evolutionary theory gives much strength to the etiological conception of function. Ironically, therein lies its main weakness. The etiological conception entails that an organ without selection history has no function. Thus, in its inaugural use, a beneficial organ is not functional. For example, imagine that Swampman is spontaneously created from a flash of lightning in the organic soup of Dismal Swamp. He walks, eats, and terrorizes the local town. According to the etiological view, his organs have no functions because he has no ancestors. Moving from science fiction to science, some evolutionary biologists have found the

conception of an *exaptation* useful. An exaptation is an effect that is useful to the system, but past systems were not more fit because they contained it. The exaptation is present for some other reason. Perhaps it is required by physical or "engineering" constraints, or perhaps it was adapted to some other purpose. It is not unreasonable to think that exaptations are important for evolutionary theorizing (Gould and Lewontin 1979).

To avoid this problem, we might try to conceptualize functions without an appeal to selection history. Robert Cummins (1975; 1983) has been the primary champion of this alternative. For Cummins, function statements arise out of the attempt to analyze and explain the capacities of a system. Suppose we are trying to understand the operation of a given system. A natural way to proceed is to analyze the system into component parts and demonstrate how its capacities are nothing more than the operation of its components. On the "system" conception of a function, the function of an item is simply the contribution it makes to the capacities of the whole system. The system conception accommodates those examples that are problematic from the etiological point of view. If Swampman is able to extract energy from his surroundings, say by eating leaves, then this is one of his capacities. On examination, if it turns out that he has an organ that extracts component sugars from vegetable matter, then the function of that organ is to digest food. His lack of selection history is irrelevant.

The system conception of function, however, has difficulties of its own. It implies that something can have the function *F* only if it actually does *F*, or at least *can* do *F*. The system view thus fails to capture those cases where an organ has a function but cannot perform it. For instance the function of John's toes is to help him keep his balance, even if he has been wheelchair-bound since birth. According to the system conception, John's toes can have no function since they never contribute to his capacities. The advantage of the etiological conception

over the system conception is that only the etiological conception can capture this "normative" character of function. Functions are what an item is supposed to do, given its past contributions to fitness, regardless of whether it can do so now.

In the light of these complementary strengths and weaknesses, I would like to follow Preston (1998) and others in arguing for a pluralist view of function. We should recognize *both* etiological functions and system functions. I would like to suggest that there are two overlapping sets of criteria for the application of a function statement. Both conceptions of function concern the contributions that parts make to the capacities of a larger system. Thus, any function statement has to satisfy two criteria:

An item of type *A* has the function *F* in system type *S* only if

1. *A* is a part of *S*
2. *A*'s doing *F* contributes the capacity of *S* to do *C*.

A system, for our purposes, is a relatively stable collection of parts with the capacity to do something that is not possessed by any part individually. Biological organisms are such systems, as are bureaucracies, churches, information processors, and so on. System and etiological functions may be distinguished by adding further clauses. In addition to (1) and (2), the system conception of function demands that:

3. *A* has the disposition to do *F*.

As we saw above, an etiological function may or may not satisfy (3). An etiological function does have to satisfy two further criteria:

4. *A* is a heritable trait.
5. Ancestors of current *S*-type systems where *A* did *F* were more fit in their typical environments than *S*-type systems where *A* did not do *F*.

3.2. Heterogeneity of functional explanations

A functional explanation is a functional statement that answers a why-question. If a function statement is to provide a relevant answer, the contrast class and relevance criteria of the why-question must be constructed in the right way. Functional statements are about the parts of a system, and there are two kinds of why-question we might ask about the parts of a system. We might ask why the item is present in the system, or ask why it has its dispositions. One can imagine the second sort of question arising when one is looking at the whirring and spinning parts of an unfamiliar mechanism. It is natural to point at a part and ask: "Why is it doing *that*?" The system as a whole has certain capacities, and we want to understand how the parts contribute to these capacities. So, we ask about the activities of the parts with the hope of an answer that says how the activity contributes to the whole. In other words, the criterion of relevance is that the answer must be a function statement.

Let us call this sort of why-question a "disposition question." The topic of a disposition question describes a part of the system, *A*, and its disposition, *F*. The question asks why *A* is doing *F* rather than anything else. So, the foils for a disposition question are alternative dispositions. For example, suppose we are trying to understand how the shifting mechanism in a bicycle works. Among its parts is an arm that holds a small gear. The gear engages with the chain. The arm moves up and down as the gears are shifted. One may ask: "Why does the arm move this way?" Appropriate foils for this question would include the proposition that the arm moves in some other way (say, left and right) or that it does not move at all. The answer is that the movement of the arm keeps the chain tight as it moves across the gears. This answer characterizes the function of the item in the sense that it tells us how the dispositions of the arm contribute to the capacities of the system (changing gears). Notice that the answer can

discriminate between topic and foil only if the foil is not functionally equivalent to the topic. If moving left and right would also keep the chain tight, then keeping the chain tight would not explain why the arm moves up and down rather than left and right. Disposition questions thus presuppose that the elements of the contrast class are not functionally equivalent.

The answer to a disposition question will satisfy at least criteria (1), (2), and (3) for functional statements. The topic is a part of the system and its disposition, and the question presupposes that the item makes some contribution to the system's capacities. Since a disposition question asks why the part is doing something, it also presupposes that the item has the disposition to do *F*. Thus any answer to a disposition question will be a function statement of some kind. Notice that disposition questions are neutral between system functions and etiological functions. The answer has to satisfy conditions (1), (2) and (3), and it may also satisfy (4) and (5). Whether the answer to a disposition question is an etiological or system function depends on empirical facts about the system, not on the presuppositions of the question.

Answers to disposition questions explain why the item is doing what it does, but they do not explain why the item is there in the first place. Thus, we might ask:

Why does *S* have *A*?

We will call questions like this "item questions." Questions about items are quite familiar in biology. Why hearts? Why kidneys? Again, relevant answers characterize the item's contribution to the system. As writers on functional explanation have pointed out, it is difficult to see how the effects of an item might account for its presence in the system without postulating some kind of backwards causality. The erotetic model looks hopeful here, since it does not demand that the answer to a why-question always describe an efficient or proximate cause of the topic.

When asking an item question, we want to know why the item is present rather than some alternative item.² The topic is a description of a part, *A*, of a system, *S* and the foils are parts that the system might, but does not, have. The interesting foils are items that would be functionally equivalent to *A* in *S*. By satisfying conditions (4) and (5), an etiological function statement discriminates between the topic and the foil by telling us how items like *A* got into systems like *S*. Etiological function statements are therefore candidate answers to item questions. The special characteristics of etiological function statements impose restrictions on the contrast class for item questions. Not just any item — even functionally equivalent items — can be taken as foils. For example, there is no functional answer to the question of why humans have brains rather than silicon-based computers in their heads. No etiological function statement can be an answer because no fact about the evolutionary history of humans is relevant to this topic and foil. Silicon CPUs just were not a possibility for us. This suggests that the truth of the topic and the falsehood of the foil must have some common cause in the evolutionary history of the system and that this common cause discriminates between topic and foil (cf. Sober 1986).³ The common cause requirement is most clearly satisfied where both the topic and foil describe traits that, at some point in history, were in free variation in systems of type *S*. For example, it is the case that present-day llamas are able to survive at high altitudes because their hemoglobin has a particular

² We could also ask why the item is present rather than absent. For reasons that need not detain us, I doubt that this kind of why-question is answerable by a function statement.

³ Sober argued that *all* contrast classes have a common cause that discriminates between topic and foil. Barnes (1994) provides some compelling arguments against Sober. What Barnes shows, however, is that some why-questions do not presuppose a common cause. This essay claims only that *some* why-questions do presuppose a common cause, and therefore is not touched by Barnes' arguments.

property.⁴ Call this altitude enhancing property H . Suppose that among the ancestor population of llamas there was variation with respect to this trait. Some llamas had hemoglobin with H , others with H' . As long as the population remained at low altitudes, there would be no selection pressure on this trait. When llamas began to occupy niches at high altitudes, those with H were more likely to survive and reproduce than those with H' . There is a common cause of the fact that contemporary llamas have H and do not have H' : their ancestors with H were more fit than those with H' . Against this background, we can give a functional answer to the question of why contemporary llamas have H (rather than H').⁵

Let us return to functional explanations in the social sciences. As mentioned at the outset, early functionalists thought of social functions as analogous to biological functions. The analogy is problematic, and the foregoing analyses show why. Organisms have selection histories. We can therefore ask both item questions and disposition questions about their organs and answer both with etiological function statements. Societies, by contrast, do not appear to have heritable traits, nor do they exhibit differential survival and reproduction in the relevant sense.⁶ If they do not, then social institutions do not have etiological functions. This would mean that we could not raise item questions in the social sciences. We could not functionally explain why an institution or

⁴ The example is taken from Neander (1991).

⁵ Common cause requirement does not demand that the topic and foil must both have been present in ancestors of the present system. It requires only that the events in the evolutionary history of the system be causally relevant to the foil. That is, for a prospective foil B , there has to be some event E such that $\text{pr}(\sim B \mid E) \neq \text{pr}(\sim B)$.

⁶ They might, of course. If the notion of a meme turns out to be empirically useful, for example, then so much the better for functionalism in the social sciences.

practice exists. Even without a social analogue of heritability, there is some use for functional analysis in the social sciences. Social institutions can have system functions. Disposition questions about social systems, at least, can be raised and answered.

4. Functional explanation with no strings attached

The good news for functionalists is that there is at least one genuine form of functional explanation in the social sciences. The bad news is that disposition questions are precisely those that threaten to conflict with intentional action explanations. Section 1 distinguished genuine conflict between explanations from non-conflicting explanations of a single object. Sameness of topic alone is not sufficient for conflict between explanations. Two explanations can conflict only if they are answers to the same question. Our question, then, is whether functional explanations and intentional action explanations have the same topic, foils, and relevance relation.

One might think that functional explanations do not conflict with intentional action explanations because they aim at different levels of description. Functional explanations presuppose that the element in question is part of a larger system. In the social sciences, the system is a social organization of some kind, such as an institution, corporation, family, community, or even the whole culture. Functionalists analyze social systems into roles and relationships. By contrast, an intentional action explanation concerns the actions of a particular human being. Conflict seems to be avoided by a difference in topic. The problem with this response is that functional explanation cannot rest at the level of social roles and relationships. As Homans (1964) argued, functionalism cannot dispense with people. Roles have no dispositions. A functional analysis can identify the role, but a functional explanation has to go further. For instance, we might ask why the police have the disposition to arrest members of the underclass. This might be answered by appeal to the role of the police in contemporary society. Unless the

function statement were true of actual police officers with their dispositions to act, the claim would be vacuous. We cannot, therefore, think that the abstractions of functional analysis drive a wedge between functional and intentional action explanation.

There are, moreover, at least some cases where functional explanations and intentional action explanations clearly have the same topic. In *Wayward Puritans* (1966), for example, Erikson gives functionalist explanations of many actions by members of the Massachusetts Bay Colony. Nutini and Roberts' *Bloodsucking Witchcraft* (1993) functionally explains the actions of people affected by an infant's death in rural Mexico. Close analysis of these explanations is beyond the scope of this essay, but in these and many other examples one finds functional answers to why-questions about what a person is doing. Moreover, where the topic is an intentional action, functional and intentional action explanations may have the same contrast class. As we saw above, the foils of an intentional action explanation must be alternative actions that were appropriate for the agent under the circumstances. While the contrast class of a functional explanation is not restricted in this way, in a particular case the contrast classes may be coextensive. Therefore, why-questions giving rise to functional and intentional action questions may ask about the same thing in a robust sense: functional and intentional action why-questions can have the same topic and foils.

Conflict between functional and intentional action explanations is prevented by their distinct relevance criteria. Why-questions that give rise to intentional action explanations demand answers that describe the agent's reasons. Functional statements could satisfy this criterion of relevance only where the function is "manifest," that is, a function recognized and intended by the agents (Merton 1957). Manifest functions are unproblematic, since the function *is* the agent's reason (or part of it). If the action contributes to the capacities of the agent's social system, and if

she is not aware of the contributions, then the action's function is latent. By hypothesis, describing a latent function cannot answer an intentional action why-question. A latent function can answer a disposition question about the society, since the question asks after the effects of the action on the larger system. Therefore, even where the topic and foil are identical, intentional and functional explanations are answers to distinct why-questions.

Proponents of intentional action explanations therefore have nothing to fear from functional explanations. A human action can, and generally does, have both effects on the social system and particular motivations. Like any other event, human action can be studied from a number of theoretical perspectives. One advantage of the erotetic model of explanation is that it permits us to sort real from apparent conflicts among theoretical viewpoints. For a hundred years, functional explanations have seemed to eclipse the intentionality of human action. If the above arguments are correct, then the appearance of conflict is an illusion created by a bad model of explanation.

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