

A BEHAVIORAL SCIENCE OF MENTAL LIFE: COMMENTS ON FOXALL'S "INTENTIONAL BEHAVIORISM"

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ABSTRACT: According to Foxall (2007), simple acts may best be explained in terms of behavior of the organism as a whole, but complex behavioral patterns, usually described by mental terms, can only be explained by neurocognitive psychology, in which the mind is conceived as an internal mechanism. This proposed division of psychological labor is faulty, first because there is no distinct dividing line between simple (non-mental) and complex (mental) behavior, and second because behavioral psychology alone or neurocognitive psychology alone can describe *both* simple and complex behavioral patterns. The neurocognitive approach to the mind is based on a science of efficient causes. A post-Skinnerian behavioral approach to the mind, "teleological behaviorism," is based on a science of final causes. Teleological behaviorism studies mental life itself while neurocognitivism studies its underlying mechanism. Both are required for a complete understanding of the mind.

Key words: cognition, efficient cause, final cause, mental life, mind, Skinner, teleological behaviorism

Consider the following problem: You are a casino owner and one of your roulette wheels is several years old. You want to make sure that it is completely fair—that when the wheel is spun, the ball has a 1/38 chance of falling into any of the 38 holes. In theory there are two ways you could go about it. You could take the wheel to a shop where they will test its balance, the trueness and equal smoothness of the wooden sides, the height and stiffness of the barriers between the holes, their curvature, depth, and hardness, etc. If the wheel passes all tests, there could still be some overlooked imbalance, some unevenness. In theory, your task would never end. In practice, you would say, at some point, that it doesn't matter anymore, that no gambler could possibly take advantage of the minute imbalances that remain.

A second method would be to look at the video tapes (that casinos typically take) of the play at the table, count the number of times the ball falls into each hole, and divide by the number of spins. You might compare the distributions of

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these relative frequencies over the first and second years of the wheel's life to their distribution over the last year to see if there were any changes. Because the wheel is old, it may be going out of balance, and probabilities changing, while you are observing it. But let us assume that, as you count, the relative frequencies of the ball landing in each hole all approach $1/38$ as they did when the wheel was new. However, no matter how tightly the distribution of relative frequencies was grouped around $1/38$ across holes, you could not be sure that the wheel was completely fair. As with the first method, at some point (if the relative frequencies closely approximated the ideal probabilities) it would not matter; no player could possibly take advantage of whatever imbalance remained.

I have no idea which method casinos actually use or if they use either, but let us consider another question: Which method is more fundamental? Which gets at "true" probabilities? *Probability* is an abstract concept, not something you can point to. Proponents of the first method would say that the probabilities the casino owner is trying to determine are abstract properties of the wheel (along with those of the ball and the croupier), and that the first method, taking the wheel to the shop, is getting at the fundamental probability. Probability may be seen as a property of the wheel just as its shape and color are properties. According to proponents of the first method, the relative frequencies obtained by the second method would be mere reflections of the fundamental probabilities which reside in the wheel itself.

Proponents of the second method might say that the probabilities are abstractions of the *behavior* of the wheel (along with that of the ball and the croupier) and that the second method, looking at the wheel's history and spinning the wheel to observe its current behavior, determines, as closely as can be determined, the true probabilities. These roulette-wheel behaviorists (let us call them) would say that the wheel, the ball, and the croupier constitute the mechanism behind the probabilities (in Aristotle's terms, their material and efficient causes), not the probabilities themselves; the probabilities themselves do not inhere anywhere in the wheel, they inhere in the wheel's observable behavior. Behaviorists would see the wheel's probabilities as abstractions of the wheel's behavior just as a parabolic-like arc is an abstraction of the behavior of a baseball after being hit by a bat. You would not expect to find parabolas inside a baseball and you would not expect to find probabilities, as such, inside a roulette wheel.

Now let us turn from physics to psychology. There are two methods by which mental events such as a person's *intentions* may be studied, analogous to the two ways of determining the probabilities of the roulette wheel. One way is to observe the person's behavior and infer from your observations what the inner mechanism must be to have given rise to that behavior. This method is much like trying to infer the program of a computer by typing its keys and observing what appears on the screen. Such an endeavor may be helped by observing events actually going on inside the nervous system using MRI machines or, by analogy, to events measured directly in the brains of other species.

Another way to study mental events such as intentions is by teleological analysis (Rachlin, 1992, 1994). This method is analogous to the second method of

determining the true probabilities of the roulette wheel—observation and analysis of patterns of behavior (including verbal behavior) over time. The fundamental meanings of mental terms, claims the teleological behaviorist, are these observable patterns; they exist on what Dennett (1978) and Foxall call the *personal level*.

Importantly, *both* methods are valid ways of coming to understand *both* simple and complex behavior. The first method provides a description of behavior (simple or complex) in terms of its efficient causes; the second method provides a description of behavior (simple or complex) in terms of its final causes. You cannot apply one method to non-mental behavior and another to mental behavior (as Foxall recommends) since the line between the two cannot be determined in advance of choosing a method of analysis. Rather, between the mental and non-mental there is a fuzzy no-man's-land that will lie in different places depending on your method of analysis and what use you are making of that analysis.

Foxall believes that much human behavior, especially verbal behavior, is too complex to be explained without resorting to the first method—analysis on the *sub-personal* level. It is conceivable that Foxall is correct. There may be some categories of behavior that are not amenable to teleological analysis—but Foxall provides no examples of such behavior. Instead, his examples are all of the sort that would be unjust if they were used to criticize a casino owner using the second method. For example, a critic of the second method might argue as follows: “Assume you were observing a completely balanced wheel. You observe the wheel’s behavior for 10 spins and it lands in hole #10 twice in those 10 spins—certainly possible. You would conclude that the probability of the ball landing in the hole is 1/5 whereas, we assumed, it is actually 1/38. Your method, since it may lead to false conclusions, is a poor one.” The casino owner would naturally claim, in response, that 10 spins are insufficient to determine true roulette-wheel probabilities; many more spins are needed. If the ball landed in hole #10 20,000 times in 100,000 spins, the casino owner would indeed conclude that the wheel was biased and (even though the merest shred of uncertainty remains) would never allow that wheel in his casino, regardless of what laboratory tests might say. The casino owner’s knowledge of the probabilities, based on extensive observation of the behavior of the wheel as a whole (analogous to Skinner’s [1938] analysis of “the behavior of the organism as a whole”), trumps even the manufacturer’s knowledge because the casino owner who used the second method has observed the probabilities directly and *knows* them as far as they can be known.

Here is one of Foxall’s examples of a situation in human life that he believes cannot be explained in terms of the behavior of the person as a whole. Foxall says:

Take. . .the couple who found themselves married because they went through the motions of a Jewish wedding ceremony, they with all the other participants thinking that they were engaged in an elaborate joke, only to discover that they were, in fact, married. (p. 10)

Foxall’s point is that although their behavior (during and immediately preceding the ceremony) indicated in every way that they *intended* to get married, the couple, by assumption, never did really intend to get married. Therefore

intention cannot be identified with behavior; behavior, in Foxall's example, is not a reliable guide to intention. The behaviorist's answer is, of course, that the brief period of the wedding is insufficiently long to determine the couple's true intentions, just as 10 spins is insufficiently long to determine the true probability of the roulette wheel. Let us extend this time period. Suppose, 6 months prior to the wedding, both members of the couple swear eternal love to each other and tell each other, as well as all their friends and relatives, that they intend to get married (mere verbal behavior Foxall might say). Invitations are sent out, a hall is hired, the wedding takes place (why a *Jewish* wedding?), they go on a honeymoon (all the while swearing eternal love), buy a house, have children, grandchildren, great grandchildren, act lovingly to all of them and each other, and eventually die. In all of this time, from the time they meet to the time they die, not a word is said about not intending to get married. Yet, according to Foxall, it is conceivable that one or both of the members of this couple never really did intend to get married; some mechanism within them or some spiritual state within them was switched off instead of on. I think the reader will agree that in no way is such a scenario possible. It is impossible, not because the internal connections between their intentions and their actions got crossed up, but because it is *logically* impossible for a person to freely act in one way over a long period of time and yet *intend* to act in another way (see Rachlin, 2005, for an application of this argument to all of mental life, including sensations and perceptions). To say that a couple might act in one way for a long period of time yet at the same time be in a mental state incompatible with their actions is equivalent to saying *A* and not-*A* are both true. Our intentions are *in* our long-term patterns of behavior. There will always be a residue of uncertainty about a person's true intentions, including your own true intentions—but, like the uncertainty about a true probability, that residue may be reduced by further behavioral observation.

As another example of the supposed inadequacy of behavioral analysis of mental terms Foxall says: "A person does not come to understand that he is nervous because he sees his hands shaking and hears his voice quavering" (p. 11). Yet these *are* ways in which we discover that we are nervous. If a person comes to understand that he is nervous by other than (in-principle) publicly observable means, he could be wrong. For Foxall, it would be impossible for a person to be nervous and not realize it or not nervous but believe that he is, yet such misunderstandings frequently occur—along with misperceptions of our own happiness, grief, and love. If a man has, throughout his married life, beaten his wife and abused his children, he does not love them deep down—and this would be the case even if an MRI were to find the supposed love center of his brain lighting up as brightly as the sun.

Foxall believes that behavioral analysis is useful in understanding, predicting, and controlling simple, non-mental acts where a discriminative stimulus and an immediate environmental reinforcer can be found for each act. I agree with Foxall that, for certain acts, where no immediate, or even delayed reinforcer exists in the environment (acts of self-control—refusing a second dessert, for example—epitomize this category), it is not helpful to invent immediate *internal* reinforcers

(e.g., Bandura, 1986). I also agree with Foxall that it is useful to explain such acts in mental terms. We differ, however, regarding whether those mental terms must stand for entities inside our heads or whether they refer primarily to patterns of overt behavior of whole organisms. To understand, predict, and control the mental life of human beings, Foxall advocates using a method analogous to taking the roulette wheel to the shop and testing its mechanism, whereas I advocate using a method analogous to analyzing the behavior of the machine as a whole (wheel, ball, croupier, and all) as it functions in the world.

The issue is put by Foxall in terms of the opacity versus transparency of mental terms and the essential privacy versus the essential non-privacy of mental states. For Foxall, mental states are immediately there inside the person, as she is behaving, in the form of states of a mechanism; those mental states act as efficient causes of her behavior. The behavior she and you observe is merely the output of those states. A person *desires* to buy a loaf of bread. She *believes* that the bakery is across the street. The coincidence of *belief* and *desire* give rise to an *intention* to cross the street, then she finally crosses the street. Her *intention*, according to Foxall, is an internal state that is the product of the interaction of two other internal states, her *desire* and her *belief*. All three of these states, he supposes, are instantiated in her brain, either as separate mechanisms or perhaps distributed across brain structures. In any case, for Foxall, the job of the psychologist who wants to *explain* mental states (as opposed to predicting and controlling behavior) is to determine the nature and operation of these wholly internal mechanisms. Creating plausible computer programs that would produce observed outputs given the observed inputs and discovering the actual physiological mechanism underlying these programs is, according to Foxall, what the psychology of mental life is all about.

For teleological behaviorism, the *belief* that the bakery is across the street and the *desire* for a loaf of bread consist of two overlapping behavior patterns. Some particular acts—such as crossing the street at this moment—belong to both patterns. In the same way, in music, some particular notes may belong to two overlapping melodies. Foxall believes that analysis of mental events in terms of final causes and the behavior of the organism as a whole is simply unscientific, yet modern microeconomics makes use of final causes in the form of individual utility functions or discount functions which enable economists to predict behavior under one set of constraints (for *constraints* read *contingencies*) from observation of behavior under another set of constraints. Becker (1996) has applied this method to explain prejudice, addiction, susceptibility to advertising, and other complex human behavioral patterns normally supposed to be based on mental states. Baum (2005), Green et. al. (1994), Heyman (1996), Hiney (1992), Rachlin (1989, 2000), and others have applied it to addiction, judgment, decision making, self-control, social cooperation, and altruism.

When Jane says, “I intend to go to the movies tonight” she is merely, claim Foxall and the philosophers he cites, reporting the state of an internal mechanism, a state *private* to her. That is, her intention is inside of her (at a *sub-personal* level) and hidden from outside view. However, she herself has access to it by a process

of introspection or internal reflection. The truth or falsity of her utterance “I intend to go to the movies tonight” might be altered by substituting “cinema” for “movies” because she may not know that cinema = movies, so she may intend to go to the movies but not intend to go to the cinema. Because of the invalidity of making such substitutions, Jane’s statement is said to be opaque. Such opacity is not the case with statements by observers. “Jane went to the movies last night” is just as true or just as false as “Jane went to the cinema last night” regardless of whether or not Jane, or the observer, knows that cinema = movies. Statements of states of the world, as opposed to statements of states of a person’s mind, are said to be *transparent*. Foxall is correct in saying that teleological behaviorism attempts to make the mental vocabulary transparent, hence amenable, to scientific study. Jane’s statement “I intend to go to the movies” would not, for the teleological behaviorist, be a report of a private event inside Jane; Jane’s access to her own mental states may be better than those of an outside observer only by virtue of the fact that she has observed more of her own behavior than others have—she is always there when she behaves—but other people may view her behavior more objectively than she can. Jane’s close relatives, and possibly her therapist, may have a better conception of her mental states, including her intentions, than she has herself.

For the teleological behaviorist Jane’s statement of her intention to go to the movies constitutes evidence (by no means decisive) by which an observer (or Jane herself) could come to believe that she will indeed go to the movies. That evidence may usefully guide their behavior—otherwise why make the statement? If Jane says she intends to go to the movies, looks in the paper for show times, makes sure she has the admission price in her purse, asks a friend to go with her, and has frequently gone to the movies in the past in situations like this one, then most likely she does really intend to go to the movies. How can we be more sure? We can wait and see if she actually does go to the movies, but even then we cannot be 100% sure what her intention really was. She might have told her mother that she was going to the movies but really intended to go out with her boyfriend and then, when he didn’t call, gone to the movies. We could learn this by further extension of the duration of observation of Jane’s overt behavior including her verbal behavior (what she said to her boyfriend, for example). The crucial questions *Why is she saying this now? What larger purpose is being served by making the statement?* are simply ignored by Foxall and those philosophers. In preserving the privacy of mental states they seem to have forgotten about the *function* of mental terms as people use them in their lives. It is as if, in their conception, people report their internal states simply for the sake of reporting them.

Jane’s intentions are highly complex, but real life is complex. Even physics, with all its precision, cannot predict the path of a leaf as it falls from a tree. We are very far from a comprehensive teleological and behavioral account of real-life, everyday mental events. But, even with the several extant methods of looking into people’s heads, we are infinitely further from a neurocognitive account of such events. For example, we are currently not able to distinguish the neurocognitive difference between Jane’s strong intention to go to the theater and her strong

intention to go to the movies, even though the difference between her behavior in the two cases would be clear and distinct.

The causal basis of teleological behaviorism is Aristotle's concept of *final cause*. In Aristotelian terms, the 1/38 probability is the *final* cause of the behavior of a balanced roulette wheel. This does not mean that the 1/38 probability reaches back in time to efficiently cause the outcome of each spin; it means that the probability is a useful abstract description of the behavior of the wheel over a very large number of spins. It is useful because if the wheel is imbalanced an observant gambler can win a great deal of money (at the casino owner's expense) by betting on the numbers on one side of the wheel rather than the other. We tend to think of causes in terms of efficient causes like one billiard ball hitting another, but final causes, for Aristotle, are patterns into which particular actions fit. The melody is the final cause of the individual notes played, and the symphony is the final cause of the melody. It is in that sense that the mental state is the final cause of the individual act. This is why the example of a final cause put forth by Foxall as indicative of my conception of final causation is so egregiously wrong. According to Foxall: "It is a travesty to say that the death of millions of Japanese civilians was a (or *the*) final cause of the physics research on atomic structure initiated by Rutherford and his colleagues" [p. 19; italics in original]. To say this would indeed be a travesty. But I did not say it, I do not mean it, and it does not follow from anything I did say. Rutherford and his colleagues might have done their research in order to help humanity, to support their families, to win the Nobel prize, for some or all of the above reasons, or just for fun. To discover their intentions you would have to have observed their behavior over an extended duration. Failing that, you might consult the historical record of their actions, read their correspondence, or talk to people who knew them well. The final cause of their research is not some purported distant consequence of it (on the same conceptual level as the research), as in Foxall's example, but the wider pattern of their behavior into which their research fits. By analogy, the final cause of a rat's individual bar-press is not eating an individual pellet of food but the relationship over time between bar-pressing and food (the *contingency*).

Foxall's notion that complex human behavior patterns may be understood only as outputs of minds located wholly within our bodies is common in modern Western philosophy, to the extent that it is often taken as a truism—but this idea is by no means necessary or universal, even by the standards of modern philosophy (Stout, 1996). The ancient Greek philosophers do not seem to have thought this way; Aristotle believed that analysis of behavior in terms of final causes (at the *personal level*) was more scientific, because more abstract and universal, than analysis of behavior in terms of internal mechanisms. The idea that the *mental* must be *internal* is a philosophical leftover from Saint Augustine's and Saint Thomas Aquinas's reconciliation of Greek philosophy with Christian thought and Descartes's reconciliation of Christian thought with renaissance science (Kantor, 1963; Rachlin, 1994). This idea is incompatible with a behavioral science of the organism as a whole. The sooner we get it out of our heads the better.

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