GORDON FOXALL ON INTENTIONAL BEHAVIORISM

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ABSTRACT: “Intentional behaviorism” is Gordon Foxall’s name for his proposal to mix the oil of mentalist language with the water of empiricist behaviorism. The trouble is, oil and water don’t mix. To remain scientific, the language of behavioral science must remain non-mental. Folk psychological ascriptions of belief and desire do not explain the patterns of behavior identified by behavior analysis; they merely describe these patterns in less scientific language. The underpinnings of these patterns, if not intentionality, must be sought in physiology, particularly neurophysiology. Intentionality is an aspect of language, not the world. If we find it in the world, it is because we have put it there.

Key words: intentionality, design stance, brain science, behavior analysis, cognitive science, folk psychology

Introduction

Gordon Foxall’s prose is dense, prolix, and jargon laden. His high-flying abstractions are usually not tethered to reality by examples, and he is writing about difficult matters. So, his thought is often hard to discern. But as best I can make out, his main line of argument runs somewhat as follows. Some forms of behavior cannot be explained in behavior-analytic terms. To explain them we must use the language of belief and desire. Since this mentalist language has well-known epistemological limitations and logical defects, the problem for the radical behaviorist is how to justify it.

Taking a cue from the early work of Daniel Dennett, Foxall proposes to solve this problem by grafting scientifically dubious ascriptions of belief and desire onto scientifically rigorous discussions of stimulus, response, and reinforcement. In other words, he proposes developing a hybrid science that will use folk psychology to make up for the shortcomings of behavior analysis. I find this proposal questionable, and I think it is a misreading of Dennett, who has a more defensible doctrine.

Dennett’s view, and mine, is that to go beyond both behavior analysis and folk psychology we must turn to brain science. Doubting that intentionality can be found in the brain, however, Foxall says that to seek it there is to confuse the personal with the sub-personal level of analysis. In Foxall’s view, Dennett confuses these levels when he falls in with the cognitive psychologists and computationalists. I agree with Foxall that processes in the brain cannot be literally described using intentional idioms, but Dennett’s endorsement of these idioms is
heavily qualified. Also, it remains true that functional brain science holds the key to behavior, if not intentionality.

Intent on intentionality, which he finds at the personal level, Foxall says that we must seek an explanation for it at the super-personal level of social psychology. About this, he might be right. Intentionality is most at home in language, the means whereby human beings, who are social animals, coordinate their efforts in order to cope better with each other and a common world. Intentionality is primarily a feature of our ways of talking and thinking about the world; it is not a feature of the world. It also belongs to states of mind, but only insofar as they are expressible, or describable, in language. The thought and its verbal expression, or description, are two aspects of one thing.

**Dennett’s Intentional Stance**

In proposing intentional behaviorism as a model for scientific analyses of behavior, Foxall cites and summarizes Daniel Dennett’s *Content and Consciousness*. Since my reading of that book differs from Foxall’s in subtle but important respects, I give my own summary below, so that you can compare it to his.

In *Content and Consciousness* Dennett focuses on attributions of what medieval philosophers called *intentionality*, meaning belief, desire, and the like. For reasons that we will review in due course, Dennett acknowledges that ascriptions of intentionality are unscientific, or at least non-scientific, so he cautions against drawing conclusions from them about what exists. But Dennett also justifies attributions of intentionality on two grounds: (1) they can facilitate prediction of behavior, and (2) they can guide research into its underlying causes. In Dennett’s apt phrase, they provide a “heuristic overlay.” So, they have utility even if they tell us little about reality.

In *Brainstorms*, a set of essays on the themes of *Content and Consciousness*, Dennett illustrates his meaning by considering chess-playing computers. Taking toward these machines an attitude that Dennett calls the *intentional stance*, their human opponents act as if the machines have *desires* (to attack their queen) and *beliefs* (that their own queen is under attack). Opponents do not literally believe these “as-if” attributions, but they help to predict what the machines will do—attack your queen and protect theirs.

If we want to know what states chess-playing machines are actually in, we must assume what Dennett calls the *design stance*, which is that of the engineers who, having built and programmed the things, know how they work. Ascriptions of intentionality give no information about design. Nor, since computers can be made of a variety of materials, does knowledge of their design yield information about their physical attributes. To get these we shall have to join the physicists in the *physical stance*.

Dennett takes a similar view of *folk psychology*, meaning ascriptions of belief and desire to human beings and other animals. Consider the maze-running rat. It has returned to where it found food. We therefore say that it remembers where it
was fed and we predict that it will return again when it is hungry. By thus talking of the rat’s memory and hunger we take the intentional stance toward it, and doing so helps us predict its behavior.

Many people think that our mentalist language also conveys information about the rat’s design. In fact, says Dennett, it tells us only that the creature does what leads it to food. If we also want to know what enables it to do that, we shall have to ask the physiologists. They, in their turn, will try to discover what we want to know by (1) studying the functional structure that has been built by evolution into the rat’s brain and body, and (2) by studying how the rat’s own experiences have modified this structure.

Why do ascriptions of intentionality not convey information about design? Two reasons—one epistemological, the other logical. Begin with the first. When on the strength of the rat’s past history alone we speak of its “memories” or “hunger,” we merely point out a pattern in its behavior—its practice of returning to where it has been fed. No doubt, this pattern depends on some structure in the rat’s constitution. But the words “memory” and “hunger” do not identify that structure in empirically definite terms, so it remains indeterminate. That fact has caused many people to believe that memories and desires are invisible and intangible states of incorporeal spirits.

Because we empirically-minded folk no longer believe in incorporeal spirits, we think that the required structure must consist of parts of the animal’s body. But talk of memory and desire still does not specify these parts. To discover them requires investigating the rat’s anatomy and physiology. That inquiry has already begun, of course, and it is now running all-out in laboratories everywhere. For millennia, however, nobody had much idea as to which parts of the rat’s brain, muscles, and glands might be implicated in its behavior. In that state of ignorance, hunger and memory were merely hypothetical constructs having functional—but not existential—meaning. That fact caused empirically-minded behaviorists to eschew speculations about underlying causes in order to concentrate on behavior.

Now the problem of logic. Although the language of beliefs and desires has existed for millennia, it is notoriously marred by failures of two laws of reasoning, substitutivity of coextensive terms and existential generalization. From “Mark Twain wrote Huckleberry Finn” it follows by substitution that Sam Clemens wrote Huckleberry Finn, because Mark Twain was Sam Clemens. And from “Jones rode a horse” it follows by existential generalization that there was a horse that Jones rode, because you cannot ride a horse that does not exist. However, from “Smith believes that Mark Twain wrote Huckleberry Finn” it does not follow that Smith believes that Sam Clemens wrote Huckleberry Finn because Smith may not know that Mark Twain was Sam Clemens. And from “Jones wanted a horse” it does not

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1 Hypothetical constructs, which are S-R or R-R patterns, should not be confused with intervening variables, which are intermediaries between the S and the R of S-R patterns.
2 It is sometimes supposed that behaviorists opposed investigation into underlying causes. Not so. Watson and Skinner merely opposed unverifiable speculation about underlying causes. Remember: They did not have fMRI and PET.
follow that there was a horse that Jones wanted, because you can desire a horse that does not exist. In these contexts, the laws of logic fail.

Dennett’s Harvard mentor, Willard Quine, explained these failures by saying that words such as believe and desire cause referential opacity. The idea embodied in Quine’s metaphor is roughly as follows: Although the sentence “Smith believes that Mark Twain wrote Huckleberry Finn” refers directly and transparently to Smith, it denotes Mark Twain only opaquely and indirectly as the person named Mark Twain. This ambiguity creates doubt as to whether the belief is about the person or his name. Apparent reference to non-existing entities (e.g., desire for the perfect wife) creates similar puzzles. How can the perfect wife be desired if she does not exist?

For the scientist who wants both to know what he is talking about and to be sure that what he says about it has clear and true meaning, these ambiguities and puzzles are disquieting. This disquiet led the younger Quine to join his senior colleague Skinner in embracing behaviorism and trying to reduce the use of mentalist talk in science, if not ban it altogether.

**Uses and Limits of the Intentional Stance**

Dennett, Quine’s pupil, cheerfully acknowledges that mentalistic concepts are unscientific, but he thinks that, deployed carefully, they can be useful in spite of their defects. Besides, he says, we have (as yet) no good idea how to get along without them.4

That assessment is supported by the following reasoning. As just observed, folk psychology has been around a long time, and it is deeply rooted in our ways of talking and thinking. Furthermore, it promises to remain so for the indefinite future, maybe for as long as there are human beings. Such a persistent pattern of thought and talk would not have survived if it lacked use, and it would not have use if it had no correspondence with reality, however rough.

Dennett therefore goes to some trouble to point out the uses of folk psychology. As already noted, there are two—predicting behavior and guiding inquiry into underlying design. First, prediction: Suppose Smith has been told both that Mark Twain wrote Huckleberry Finn and that Mark Twain is Sam Clemens. We can usually expect Smith to agree that Sam Clemens wrote Huckleberry Finn. Of course, that prediction could be proved wrong. Smith might have forgotten

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3 Other philosophers describe referentially opaque terms as intensional, meaning that they are not extensional—in other words, not referential. Confusingly, intensional does not mean the same as intentional, although one uses intensional (i.e., non-referential) language to ascribe intentionality, the essence of which is putative, but not always actual, reference. The whole business is a terminological mess. I shall not here try to sort it all out. Instead, I shall stick to referentially opaque and referentially transparent, and I shall adopt John Searle’s construal of intentionality as aboutness, or reference. Thus, the rat’s desire for food is about food, and its memory of location is about location.

4 Actually, I think this was pretty much Quine’s attitude too, but I will not pursue the matter here.
what he was told or be too addled to put 2 and 2 together. So, there are exceptions to the rule.

As this example shows, the reliability of ascriptions of intentionality is limited by their dependence on an idealization—the agent’s rationality—that does not always hold in practice. No matter. As we know from physicists’ talk of perfect vacuums and frictionless surfaces, idealizations can serve as useful models from which to plot variations. Economics, the most highly developed of the social sciences, already makes good use of the concept of an ideally rational and informed agent. There is no reason why psychologists should not make similar use of this concept. In fact, some already have.

Besides, our urgent practical need to predict the behavior of human beings and animals who might mean us harm or do us good cannot await the completion of logically rigorous empirical science. So, grant that a perfected science might one day enable prediction of every tot and tittle of behavior. Dennett says that, in the meanwhile, we must make do with intentionality. While waiting for behavioral science to develop superior tools, we may with a good conscience use the tools at hand.

This highly qualified conclusion is reinforced by the fact of a second employment for the intentional stance—guiding scientific inquiry into functional design. As Plato noted twenty five hundred years ago, function presupposes structure. So, identification of reasonably well-defined forms of behavior can direct efforts to discover their biological bases.

Thus, suppose we find that damage to our rat’s hippocampus has destroyed its ability to locate food. Then we have discovered a region of the rat’s brain that is essential to its memory. Or suppose that the starved rat declines to eat. If its amygdala has been damaged, we have an explanation of its lack of desire. The methodological rule is: find a function; look for a mechanism. Take the thing apart and see what makes it tick. In short, do some reverse engineering.

The values of prediction and reverse engineering are not to be sneered at. So, although Dennett agrees with Quine that ascriptions of intentionality are scientifically defective and themselves in need of explanation, he does not conclude with Skinner that folk psychology is dispensable. Instead, he cites the writings of Charles Taylor in support of the opinion that neither Skinner nor anybody else has ever been able to adhere, in practice, to the strict canons of radical behaviorism; behavior analysts have always tacitly, if unconsciously,

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5 One explanation of this limitation is that the assumption of rationality is primarily normative; it tells us how people ought to behave in order to achieve their ends. But behavior is not always optimal; so, this normative language is not always descriptive. But since natural selection favors the survival and prosperity of human beings who conform to the norms of rationality, the language of intentionality is frequently descriptive, and that is enough to make it useful. The extension of intentional idioms to creatures without language is provided for by noticing their behavioral and structural similarities to us.

6 For examples, I think of Richard Herrnstein and his pupils—now distinguished scientists in their own right—Howard Rachlin and George Ainslie.
imported intentional notions into their descriptions of behavior. They have done so because they could not otherwise have made sense of it.7

These reflections suggest to Dennett that folk psychology is a useful, if scientifically imperfect, way of thinking. So, he concludes that we are entitled to use it with a good conscience, at least until we are presented with better science. He could add that we might still find intentionality useful even after there is better science. We do not always need the most precise and accurate statements of the facts; for some purposes, loose and vague formulations will serve. Thus, we still say “The sun rises” rather than “The horizon falls,” although we know very well that the apparent movement of the sun is caused by the rotation of the Earth. As long as our unscientific way of talking misleads nobody, harping on its inaccuracy would be pedantic.

Foxall’s Ambiguities

Foxall thinks that he agrees with Dennett’s position, but I do not think that he understands it as I do. For Dennett as I understand him, ascriptions of intentionality are merely a “heuristic overlay” on behavioral science; for Foxall, if I understand him, the intentional stance has to be incorporated in behavioral science to render the latter complete.8 What leaves room for doubt is the language in which Foxall formulates his thesis. Early and often, for example, Foxall says that the main justification for ascribing intentionality is that it is necessary to “complete” behavior analytic accounts, which it does by providing “explanations”

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7 To illustrate the point, Dennett and Taylor say that recognizing the rat’s behavior in the maze as a search for food is attributing intentionality to it by construing it in relation to a goal. The implication is that, without the attribution of intentionality, the rat’s behavior would be indistinguishable from random activity. This is a complicated point that I cannot take space here to discuss adequately. The short, and least satisfactory, reply to it is that the behavior analyst can always notice increases in the frequency of returning to a spot without reading this as search behavior. A more satisfactory reply is that what Skinner often called functional analysis does not preclude teleology, or goal direction; it incorporates it. One must not confuse radical behaviorism with physicalism and assume, as Dennett and Taylor appear to, that behavior analysts seek to reduce actions to motions by eschewing descriptions of behavior that are not phrased in purely physical terms, so they are devoid of functional significance. Skinner, who was not out to reduce psychology to physics, never cared whether the rat depressed the lever with its nose, its tail, or its paw. What mattered was that the lever got pressed as a result of the rat’s agency. If it did, food was dispensed on schedule. That intentional idioms might also have been used informally by the observing experimenter does not detract from the value of more precise description.

8 It is, of course, possible that Foxall’s reading of Dennett is more accurate than mine, or that I have misread Foxall—but neither of us is interested primarily in textual exegesis, so I shall not engage in it here. Dennett, especially the early Dennett, is a very clear writer; I recommend that you read him yourself. In the meanwhile, I have said what I think Dennett thinks, and that will suffice for present purposes. If I have misunderstood Foxall, he can correct me when he replies to this commentary.
that behavior analysts “cannot” offer. All of the words I have flagged are questionable.

First, what is meant by “completes”? Does Foxall believe that there are gaps in behavior analysis that must be filled with mentalist language? Is he proposing to make up a shortage of non-mentalist explanations by putting mentalist explanations in their place? Second, what is meant in this connection by “explain”? Is Foxall advocating the creation of a kind of hybrid science in which the defects of radical behaviorism are to be made up by resort to out-and-out mentalism? Is he saying, in other words, that behavior analysts need two sorts of explanations—inadequate behavior-analytic explanations and better mentalist explanations? How, exactly, does he think an explanation phrased in referentially opaque and empirically indefinite language will meet the need for, or improve on, an explanation stated in logically transparent and empirically determinate terms?

Finally, what does Foxall mean by saying that some forms of behavior “cannot” be explained in behavior-analytic terms so “must” be explained using the terminology of folk psychology? How does he construe this necessity? Does he think that the forms of behavior in question will always require explanations involving attributions of irreducible intentionality? Or does he think merely that present behavior-analytic explanations are wanting? Does he mean, in other words, to imply that the deficiency is inherent in the case rather than a temporary shortfall that will be made up by continued inquiry? As far as I can tell, Foxall does not ask these questions, much less answer them.

To see why I think he should entertain them, consider one of the three kinds of “behavior” that, according to Foxall, eludes the net of behavior analysis. What Foxall describes as continuity of behavior—meaning what might better be called persistence—can be demonstrated by the rat that goes back to the spot in the maze where it previously found food. How is the rat’s return to be explained? Although Foxall professes allegiance to the methods of radical behaviorism, he says that Skinnerian talk of reinforcement won’t do the job; if we want to understand “continuity” we must employ the idioms of folk psychology. In short, we must talk about the rat’s memory.

Why won’t talk of reinforcement suffice? Not being able to follow Foxall’s reasoning on the point, I must guess. Perhaps he thinks that explaining the rat’s return by saying that it has been reinforced tells us merely that the rat’s returning has increased in frequency or become more likely, which does not also say what has made that happen. In short, talking of reinforcement indicates a pattern but does not explain it. To explain it, we need ascriptions of intentionality; we need to

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9 This is a surprising choice. If I were looking for something behavior analysts could not explain, I would focus on behaviors such as getting married or entering into a contract. These elude easy analysis because they can be done in a variety of ways according to a variety of social conventions. So, there is at least a plausible argument that they will always elude the behavior-analytic net. I think that this argument can be answered by identifying such forms of behavior disjunctively. Thus, getting married is doing A, B, or C; entering into a contract is doing X, Y, or Z. Here, however, is not the place to develop this answer.
HOCUTT

say that the rat’s return was reinforced by food because it desires food and remembers where it has found food.

The trouble with this reasoning is that describing the rat’s persistence in these folk-psychological terms is still not explaining it, merely describing it in a different way. Once detected, the existence of a pattern, which is general, can be cited to explain a particular action falling under it; but the pattern, the general fact, is not itself explained by identifying it in different language. Thus, we can explain why the rat returned to a particular site on a particular occasion by saying either (1) its returning has been reinforced by previous feeding, or (2) it remembers where it has been fed. The second statement cannot explain the first, however, because it is merely an alternative way of describing the same event.

One wonders whether Foxall has forgotten the implication of his own observation that Skinner was a follower of Ernst Mach, the positivist. As such, Skinner was always clear that he was not explaining reinforcement schedules, merely discovering them. In other words, he was seeking not causes but regularities. In that methodological respect, Skinner’s work was comparable to that of Isaac Newton, who famously eschewed “hypotheses” in favor of laws. Newton made no attempt to say why bodies obey his law of gravity; he was content merely to state that law in precise language. Skinner made no attempt to say why the behavior of animals is reinforced by food; he wanted merely to describe patterns of reinforcement in more precise language.

The point in both cases was to increase precision and accuracy for the sake of prediction and control. The fact of attraction between bodies had been known long before Newton, but only in the vaguest terms. Newton’s achievement was to describe the facts with sufficient precision to guide technology. Skinner’s job was similar: Provide better statements of the facts. Look for causes later.

In suggesting that behavior analysts need folk psychology to help explain what they cannot, Foxall seems to me to resemble a critic who advises Newton that he could complete his physics by acknowledging the workings of God’s will. Actually, Newton—who wrote reams of theology—made this claim himself. Fortunately, more attention has been paid to his physics than to his piety. Theology is no improvement on physics, and, despite its indispensability, folk psychology is no scientific improvement on behavior analysis.

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10 That is why Skinner proposed to define folk-psychological terms by replacing them with more precise language, a proposal that has been the source of much confusion. For philosophers, defining terms is finding synonyms, verbal equivalents; for Skinner it was making the language more apt. Failure to note this important difference has led some people to misread Skinner as a logical behaviorist who thought he was spelling out the ordinary meaning of mental language in behavioral terms. Not so. He was intent on replacing mental with behavioral idioms because he thought the latter scientifically superior.

11 Of course, Skinner was not much of a mathematician—but Richard Herrnstein, who discovered the matching law, was, and so are his pupils mentioned earlier, Howard Rachlin and George Ainslie.
Why labor the point? Because bad money drives out good. As Skinner predicted, and the practices of cognitive psychologists confirm, attributions of intentionality tend to displace other forms of description and analysis. When they do, behavioral science gives way to folk wisdom that fancies itself to be a new and superior science—viz., “cognitive science.” Never mind that the mentalist language of this new “science” still suffers from the defects that behavioral analysis was created to remedy. Never mind, either, that this “science” bases many of its speculations on introspective phenomenology, which is intellectual sand. Such problems are not allowed to stand in the way of the ongoing construction.

Foxall may think that he addresses these problems when he urges us to base our mentalist hypotheses on, and derive them from, behavior-analytic accounts to keep them close to the empirical data—but these metaphors are not helpful. Recall our example. The rat has gone back to a previous source of food. We conclude that he remembers it. Have we based our hypothesis on, or derived it from, our observations? No. What we have done is identify a pattern of behavior and postulate an undefined capacity as an explanation for that pattern.

If derive means deduce, neither the pattern nor the postulate was derived from the behavior. To be sure, we got to the pattern by reasoning “The rat returned to this spot, so maybe he remembers it”—but this was an induction of a general rule from a particular case. For explanations, we need deductions of particular cases from a rule. Thus, to explain the rat’s behavior we reason in the reverse way, saying “The rat remembers where he got food, so he is back again.” The first line of reasoning entitles us to claim that our hypothesis was arrived at by generalizing from the data, but it is misleading to say that our hypothesis was derived from these data. Rather, the hypothesis was devised to explain the data.

The conclusion? Like behavior-analytic accounts, ascriptions of intentionality merely pick out patterns, only in looser, more familiar language. Once picked out, the pattern can explain individual acts on particular occasions—but using the terminology of folk psychology does not explain the patterns themselves; it merely identifies them in a folksier (so less scientific) idiom. To suggest that we can improve on behavior analysis by grafting folk psychology onto it is to say that we can go forward by taking a step backward.

**Levels of Analysis**

My own opinion coincides with Dennett’s: To go forward we need physiology, particularly its subdivision, neurophysiology. Thus, to understand why a rat is able to remember where it was fed we must study the workings of its brain, and to understand why the rat desires to be fed we must look to the chemistry of its

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12 I depend here on Hempel and Oppenheim’s famous hypothetico-deductive model of scientific explanation.
glands. In other words, we must descend from the personal to the sub-personal level and seek explanations in functional design.¹³

Foxall goes in the opposite direction. He says that to explain the intentionality that is observed at the personal level we must ascend to a super-personal level. This, he adds, is the level of analysis that is employed in social psychology, which is concerned with the interactions of whole persons, not like physiology with the functioning of internal parts of persons.

It is unclear whether Foxall means by taking this line to argue that behavioral science has no use for physiology. Is he saying, for example, that the workings of the brain are irrelevant to behavior? I doubt it. That proposition strikes me as so preposterous I cannot imagine him agreeing with it. Charity compels me to seek another interpretation. So, I surmise that what Foxall means to reject is not the study of physiological underpinnings but the expectation of finding intentionality in those underpinnings. If so, he is not declaring physiology irrelevant, he is merely declaring a certain approach to physiology misguided.

What approach is that? The one employed by cognitive psychologists and computationalists. As Foxall sees them, both make the mistake that Bennett and Hacker, in *Philosophical Foundations of Neuroscience*, call the mereological fallacy. This fallacy consists in ascribing to parts of animals attributes that are defined only for whole animals. We make sense if we say that Smith believes such and so, but we produce ill-formed gibberish if we say that Smith’s brain believes such and so. Our brains don’t think; we do. To suppose otherwise is to make what Gilbert Ryle called a category mistake.

Foxall believes that Dennett makes this category mistake when he falls in with the cognitivists and computationalists. Cognitivists make the mistake when they talk of “mental modules” and “a language of thought,” which they mistake for brain modules and a computer program. Computationalists make it when they tell us that the computer brain thinks and perceives by transforming internal representations of sensory information into bodily commands. Dennett, who was also a pupil of Ryle, renounces the idea that the brain, or any of its parts, literally has beliefs and desires. He also ridicules as “Cartesian materialism” attempts to combine folk psychology with brain science and computer technology—but he also holds that the intentional idioms of the cognitivists and computationalists are pardonable if they are not taken literally.

Foxall fears that, in thus defending the friends of sub-personal intentionality, Dennett has tried to eat his cake and keep it too. I am not sufficiently familiar with Dennett’s later writings to confirm or disconfirm Foxall’s fear. I suspect that Dennett would defend himself by declaring that he is merely recognizing the utility of metaphors and fashions of speech that are harmless if not taken literally, but I

¹³ Rats are not persons, but I assume Foxall counts them as such for present purposes, and so shall I. It is an interesting and important question how far the analogy can be taken. At the end, I shall return to the question of attributing mental states to infra-human animals such as rats.
have promised not to pursue exegetical questions further. So, I am prepared for the sake of the argument to stipulate that Foxall’s critique of later Dennett is well placed.

Proceeding to the question of substance, I am also prepared to agree that cognitivists and computationalists are mistaken if they think they explain behavior by ascribing intentionality to brains and computers. You do not explain how a rat remembers something by saying that its brain, or the computer in his head, does it for him. As Bennett and Hacker insist, you merely take a term defined for one sphere and use it in a sphere for which it lacks application. The intentionality ascribed to whole agents cannot be explained by ascribing it to their parts.

To say so is, however, not to deny that brain structures and processes are needed for mental functioning. I, for one, am fully convinced of the contrary. We will never fully understand the causes and conditions of behavior until we learn how the brain enables and underlies it. In fact, I am convinced that thinking, perceiving, believing, and desiring just are events or processes in, and conditions of, brains—as the Morning Star just is the Evening Star and solid objects just are conglomeries of molecules. Still, it remains true: The brain is not an intentional system, and it probably does not much help to think of it as one.

Similar caveats and qualifications apply to the idea that the brain is a computer, so a kind of thinking machine. Against this idea, John Searle has reminded us, with his famous “Chinese Room” thought experiment, that computers do not compute. Rather, it is we who compute using them. What computers do is transform received patterns of energy called inputs into logically equivalent patterns of energy called outputs, all in accordance with the machine’s construction and program. These internal transformations are, however, done entirely mechanically and mindlessly, without a modicum of understanding. The inputs and outputs mean something to the computer’s user, but not to the computer.

Searle and Dennett both state this fact by saying that the computer is merely a syntax machine, the operations of which lack semantics. Thus, the thing converts “p&q” into “q&p”—or, with the right program, a sentence in Chinese into one in English. But the symbols it transforms mean something only to those of us who understand the propositional calculus—or the Chinese language. If the brain is a computer, the same thing may be said about it. Given sensory information, the brain yields motor output after neurological transformation—but the brain does not think; we do.

Nevertheless, I am prepared to believe (with Dennett and others) that brains can be regarded as computers of a sort. More precisely, they can be regarded as complicated combinations of several sorts of computers that have been stuck together by evolution. Some of these “computers” (e.g., the hippocampus) have highly specialized functions. Others (e.g., the cerebral cortex) appear to be general-purpose devices. Some (e.g., the thalamus) “communicate” and “cooperate” with the rest; some (e.g., the amygdala) operate more or less independently. We will need to keep all of that and more in mind if we are to understand the biological underpinnings of behavior. Still, Searle is right to deny that computers think, and Bennett and Hacker are right to deny that brains think.
The explanation of this truth is that what makes events in our brains to be acts of perceiving, thinking, believing, and desiring are not their \textit{physiological} properties but their \textit{behavioral} connections. Suppose I see a bear. What makes the events in my brain count as \textit{seeing a bear} is not (1) that these events occur in my occipital lobes, but (2) that they are caused by my having laid eyes on a bear and (3) that they cause me to make haste in the opposite direction. Considering their centrality, the events in my occipital lobes may be said to \textit{constitute} my seeing, but only because they have the required external cause and behavioral effects.

If the point is not yet clear, consider the philosophical distinction between mental \textit{acts} and their \textit{objects}. Again, suppose I see a bear. My \textit{act} of seeing occurs in my head, as a series of events in my brain involving my eyes, my occipital lobes, and related structures. However, the bear—which is the act’s \textit{object, content, or meaning}—is not in my head. It is in the woods outside my head; it is in front of, not behind, my eyes. When I see the bear my attention is directed toward it. This directedness is what medieval philosophers called the act’s \textit{intentionality} and Searle calls its \textit{aboutness}. The point I want to emphasize here is that although my act of seeing is in my head, what it is about—its reference, or meaning—is not.

This simple and (I hope) obvious fact has a stunningly important implication: Although I believe that thoughts, perceptions, and the like are brain processes, I do not believe that we can expect neurophysiologists ever to be able to look into our heads and tell just what we are thinking, perceiving, or feeling; for—with a few notable exceptions—our brain processes do not come flagged with a banner declaring their meaning.\footnote{Among the exceptions are the firings of neurons specialized to respond to angles, lines, and motion. Also, of course, various parts of the brain do appear to have specialized functions. Thus, events in the occipital lobes are signs of vision, real or imagined.} The scientist with fMRI or PET will be able to observe these processes, but if he wants to know their meaning he is going to have to find out what caused them and how we are behaving in response to them.

Thus, to take just one example, observing activity in the amygdala might enable a neurophysiologist to guess that some emotion is being felt, but that datum alone will not enable him to tell whether the emotion is, say, fear or lust. If he wants to know which it is, he will have to look, not inwardly to what is going on in the brain, but outwardly to its causes and consequences.

The moral of the story? With the qualifications just noted, Foxall is essentially right: Intentionality is a personal (not a sub-personal) matter, and it is to be sought not in the brain but in the larger world. Saying so is, however, not saying that brain physiology is irrelevant, and it most certainly is not. Much behavior analysis can be done without bringing in brain science, just as much chemistry can be done without bringing in physics. But if we want to complete the story of behavior, we will need physiology to do it.
Intentionality as a Feature of Language

Which still leaves intentionality. If it cannot be understood by descending to the sub-personal level of analysis, at what level can it be understood? That, I take it, is Foxall’s question. In answer, Foxall says that to understand intentionality we must ascend to the super-personal level of social psychology. I suspect that he might be on to something here. Unfortunately, in 55 pages of text that grows more turgid with each turn of the page, I can find no place where Foxall spells his idea out. Having mentioned it, he does little or nothing to explain it. So, I am going to offer my own theory.

My hypothesis is that intentionality is primarily a feature of language, which is inherently social. The most important clue to the mystery is also the most obvious—viz., the fact that attributions of belief and desire incorporate clauses specifying what philosophers call propositional, or sentential, attitudes. Thus, suppose we say “Smith believes that Sam is wicked” and “Jones desires that Mary marry him.” To those who know the conventions of English, these italicized clauses give the content, or meaning, of the belief and desire which they describe; they indicate what these states of mind are about. Knowing no equally good explanation, I therefore conclude that the aboutness, or intentionality, of these states of mind belongs primarily to the verbal clauses that specify their content or meaning.

My claim turns the usual presumption on its head. According to Searle, intentionality is an “intrinsic” property of states of mind and belongs to their verbal expressions only derivatively. Thus, Sam’s belief that he saw a bear has primary intentionality, while the sentence describing Sam’s belief has only secondary intentionality. In my view, Searle has put the cart of intentionality before the horse of language. The truth is that the intentionality of states of mind is parasitic on the intentionality of their verbal expressions and descriptions, not the other way around.

The most persuasive reason for thinking so is the existence of strong empirical support for the hypothesis, advanced earlier, that states and acts of mind are conditions of, or processes in, the brain. As we have seen, however, brain processes considered just as such lack intentionality; to find the intentionality that is ascribed to states of mind we must look to the objects that cause them and the behavior that they elicit. Searle’s refusal to identify acts and states of mind with the corresponding brain states and processes amounts to psycho-physical dualism, though he claims to reject that too.

A second reason for disagreeing with Searle is the fact that his talk of intrinsic meaning has no meaning. As the great semioticist Charles Peirce emphasized, meaning is not a property, like shape, that belongs to objects and events considered by themselves; it is, rather, a relation, like marriage, that ties objects together. In particular, meaning, or significance, is a three-term relation between a sign, the thing signified, and an interpreter. Though often omitted from consideration, the interpreter is as essential as the other two terms. Thus, smoke means fire if and
only if there is someone to interpret it. Smoke can exist without someone to discern it, but its meaning would, in that case, be merely potential, not actual.

The same reasoning holds if we shift from natural to conventional meaning. The English word “fire” also means fire, but only to those who are familiar with the conventions that govern the word’s use and interpretation. Speakers and writers of the English language depend on these conventions to relate the word to the thing that it denotes. Thus, Sam declares that the building is on fire. In the absence of somebody to interpret Sam’s words, however, they would, again, have no actual—merely potential—meaning.

A third consideration is that there is no problem finding intentionality in language because it is right on the surface, for all who know the language to see. George says “I saw a deer” or “I want a hot fudge sundae.” Because we know the language, we know what George’s seeing and wanting are about; their intentionality is obvious. Of course, this intentionality is merely obvious (not inherent) in the words; it belongs to them only by virtue of the social conventions that govern their use and provide for their interpretation. Knowing these conventions, we understand the words, which would be meaningless without them. Words also lack intrinsic meaning; all meaning is relational.

Searle believes otherwise because he agrees with Descartes in holding that beliefs and desires are private states of mind known first and best by whomever and whatever has them, human being or rat. But this prejudice, which is plausible regarding verbally articulate human beings, is untenable in the case of creatures that lack a capacity for real language. If the thoughts and desires of these creatures are to be identified, we must do it for them; lacking language, they cannot do it themselves. Thus, it is we, not Fido, who interpret his bark and wagging tail to mean that he has recognized his master and is glad to see him.

Of course, imputations of intentionality to dumb animals have to be taken with a grain of salt. Who can know what Fido is really thinking? Does the question even make determinate sense? This problem is not limited to brutes like Fido; similar questions arise when we try to make sense of the behavior of human beings who have diminished verbal capacities. Consider small children. They do not know, and cannot say, what they think or want until Mama tells them. For that matter, much the same is true of many adults. Grown-ups suffering from neuroses, psychoses, dementia, or low IQ are often unable to articulate their beliefs and desires in adequate words. Again, it has to be done for them, and again, the imputations of meaning must always be made with caution—for who can tell what Baby, or Grandma, or Dufus is really thinking? Does the question even make clear sense?

Admittedly, the rest of us are usually capable of saying what we believe and desire, but it is a mistake to think that we must first discover it by introspecting, and then express our discovery in words. More often, we express ourselves in deeds or words before we discover what we mean. I think that this is so because the meaning is to be found in the words and deeds, which do not have meaning until somebody has realized and expressed it. So, we do not usually know what we think or want until we have said it.
Here, in the indeterminacy of meaning, is the source of the puzzle that philosophers call the problem of other minds. This puzzle is usually misconstrued as the problem of deciding whether other creatures and human beings have thoughts and desires like ours. So construed, it is a pseudo-problem that exists only for those who think, like Searle, that thoughts and desires have meanings that, being irreducibly private, cannot be adequately expressed in public words. The problem of other minds vanishes once we realize that the intentionality of thoughts and desires exists only in the language people use to express themselves or to describe others.

Of course, realization of that fact will not guarantee the correctness of our readings of anybody’s words or any animal’s deeds. But that is so only because talk of correctness in this context has such meaning as it has on the condition that the measure of correctness is success in predicting more words and deeds, not identifying the mysterious workings of ineffable “minds.” We sometimes accomplish the former task; we shall never square the latter circle. Within the limits set by the relevant conventions and laws of nature, words and deeds mean whatever their interpreters take them to mean. Therefore, questions about meanings are not so much requests for the facts as ruminations about how best to construe the facts, so as to respond to them more intelligently. As Quine famously argued, it is not clear that questions about meaning always make determinate sense.

I conclude that Foxall’s unexplained claim might be right: The explanation of our ascriptions of intentionality must indeed be sought at the super-personal level of analysis, where human beings in communities interact with each other in ways that can be studied by social psychologists and anthropologists whose job is to discover the relevant conventions and customs. The main reason for believing this is that, in the final analysis, intentionality can best be understood by looking not to private beliefs and desires but to their expression or description in language, which is a social institution.

Summary

Although I am not at all sure that I have read Gordon Foxall’s ambitious but difficult essay correctly, he seems to me to have reasoned somewhat as follows. Agreeing with Daniel Dennett that there is no avoiding the intentional stance, Foxall disagrees with Dennett as to why this is so. In his early work, Dennett treated our need for the idioms of folk psychology as a regrettable, if long-standing, expedient justified by the fact that using them helps us predict behavior and guide research into basic causes. He warned us, however, not to suppose that these idioms tell us anything about design.

In his later work, Dennett appears to have thought that the task of finding underlying causes might be aided by treating the brain as a computer and talking about it as if its operations and states had intentionality. Still, he has always warned that these attributions of intentionality are not to be taken literally. Foxall seems to share with cognitive psychologists the idea that our need for the idioms of
folk psychology is inherent in the deficiencies, or shortcomings, of behavior analysis as it is pursued under the austere strictures of radical behaviorism, so it can be corrected only by adding mentalist talk of beliefs and desires to behavior analytic talk of stimulus, response, and reinforcement.

However, unlike the cognitivists and computationalists, who go whole hog in ascribing intentionality to brains, Foxall wisely resists attempts to locate intentionality at the sub-personal level of analysis. In Foxall’s view, which I share, intentionality exists only at the personal level, in individual beliefs and desires. Having said so, however, Foxall adds that the intentionality we find at the personal level can be understood only by rising to the super-personal level of analysis employed in social psychology, which has to do with the ways in which social animals interact. Unfortunately, Foxall gives no details, so what he has in mind is anybody’s guess.

My guess is that attributions of intentionality belong to the language in which they are expressed or described, and although the attributions are to individuals, the language is social. This unorthodox hypothesis is reinforced by the fact that meaning is a three-term relation between sign, signified, and interpreter—not an intrinsic property of mental states. The hypothesis, which locates meaning in interpretation, has the advantage that it can be reconciled with the theory that states of mind are brain states by another name. Also, the problem of other minds dissolves as soon as we note that intentionality is merely linguistic—an observation that can help us to understand why, as noted in the beginning, attributions of intentionality suffer the epistemological and logical defects that make them unacceptable to behaviorists.

Bibliography