

ABOUT ABOUTNESS: THOUGHTS ON INTENTIONAL BEHAVIORISM

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ABSTRACT: The rationale, scientific necessity, and character of intentionality ascriptions (assertions that attribute beliefs, expectations, wishes and such to certain systems) remain unresolved issues in the philosophy of mind and psychology. Foxall's proposed resolution (2007), which he calls "Intentional Behaviorism" (IB), is that intentionality ascriptions should be tied to the experimental analysis of behavior, nervous systems, and evolutionary considerations. Foxall's tone of scientific pluralism and attention to academic philosophy and psychology are steps in the right direction. However, I remain skeptical about IB's adequacy as a philosophical underpinning of psychology. My skepticism stems from IB's a-ontological character (which ignores the nature of intentionality, a major issue in psychology), pragmatist inclination (which invites relativism), and adoption of the linguistic view of intentionality, where intensionality is the defining criterion of intentionality. The linguistic view forces us either to restrict intentionality to humans, a deal-breaker for animal cognition psychologists, or to talk of mental language, a deal-breaker for operant psychologists. Also, an emphasis on extensionality, which is about logical validity and not soundness, fails to capture the emphasis of scientific psychology on evidence as a rationality criterion. Finally, if IB presupposes or entails linguistic anti-nativism, it is unlikely to appeal to evolutionary psychologists. IB would thus be better off by abandoning the linguistic view of intentionality.

Key words: intentional behaviorism, intentionality, intensionality, extensionality, linguistic view, cognitive psychology, operant psychology, cognitivism, radical behaviorism, evolutionary psychology, pragmatism, correspondence, experimental analysis, scientific pluralism

Foxall's (2007) thought-provoking paper on intentional behaviorism (IB) has rekindled qualms that I have had for nearly a quarter of a century. These qualms, like the paper, have to do with attributions of thoughts (beliefs, doubts, expectations, wishes, etc.). What is the rationale for such attributions? What is the nature of that which they attribute? Do they help or hinder our understanding of behavior? How do they fit within a scientific outlook? What role does language play in them? Do they apply only to humans, or also nonlinguistic creatures like

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dogs, cats, chimpanzees, and human infants? What about computers, which are linguistic but inorganic?

Two features of the paper have made me somewhat more optimistic about the possibility resolving these qualms. On the one hand, there is Foxall's tone of scientific pluralism, a most refreshing change. Perhaps it is time cognitivists and radical behaviorists engage in a more constructive dialog and collaborate in a joint effort to achieve a more encompassing understanding of behavior, although not necessarily in the form of the all-too-easy and ultimately incoherent eclecticism of cognitive-behavioral theory. On the other hand, there is the paper's high scholarly level, in particular its attention to academic philosophy and psychology. When discussing these issues, psychologists seldom pay due attention to academic philosophy, and philosophers to academic psychology. Foxall, in contrast, delves into the technical details of both disciplines in an honest effort to make the best of them. This strategy, I believe, is far more promising than just dismissing either discipline as irrelevant to the other (or worse, pretending to reduce one to the other, as is often the case). The issues are too hard to afford disciplinary chauvinism. To be sure, the strategy complicates the analysis considerably, but I see no other way (although it need not result in such a difficult read either).

Alas, despite these pluses, I have my misgivings about IB. Before I express them, let me sketch my understanding of Foxall's main proposal. Its central technical bit is the *intentional* character of thoughts (hence the "I" in "IB"). The term is not to be taken in its ordinary sense of "purposeful," "willful," "deliberate," or "planned," as in my intended pun in the title, although these senses certainly relate to the more general one Foxall adopts (intending is just one form of intentionality, like believing, expecting, and wishing). Rather, "intentional" here refers to "being about" or, less intuitively, "being directed" at something or "having content" (hence the terms "aboutness" and "directedness," often used to refer to intentionality). An attribution or ascription of intentionality is an assertion where a certain system is said to think (believe, expect, doubt, suspect, guess, wish, etc.), as in "the dog believes that the cat is up the tree," "the cat believes that the dog will go away," "I think that my wife is intelligent," and so on. A non-intentionality ascription, in contrast, is one that makes no such reference to thoughts at all. Instead of saying "The dog believes that the cat is up the tree," one says "The dog has come to bark at the tree whenever the cat is there," or "The cat has come to wait until the dog leaves," or "The cat-in-the-tree activates neurons in the dog's sensory cortex, which in turn activate neurons in the dog's motor cortex, which in turn makes the dog bark at the tree."

Foxall's main claim is that a proper understanding of behavior cannot be achieved through purely behavioral accounts that appeal only to learning, purely cognitive accounts that appeal only to intentionality ascriptions, or purely physiological accounts that appeal only to brain processes. A proper understanding of behavior requires the three sorts of accounts, inserted in an evolutionary framework. Either sort of account in and of itself will not do.

Intentionality ascriptions, then, are not to be taken as mere convenient shorthands for purely behavioral or physiological processes. That is to say, Foxall

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rejects the assumption that the ascriptions can be properly translated into purely behavioral or physiological ones. Nor does he mean the ascriptions to replace behavioral or physiological ones. Rather, he submits intentionality ascriptions as “the derivation of another level of explanation in order to facilitate understanding and prediction” (p. 47). The ascriptions thus represent another “layer of interpretation” (p. 48) above and beyond purely behavioral or physiological considerations. Purely behavioral accounts constitute the “super-personal” level, while purely physiological accounts constitute the “sub-personal” level. Intentionality ascriptions constitute the “personal” level. Such ascriptions “[do] not discover anything new but tells another story about the theories and findings produced by operant [and cognitive] psychology [and physiology].” In this sense intentionality ascriptions “[extend] the scope and relevance” of purely behavioral or physiological ones (p. 48).

Foxall summarizes IB in a figure (p. 40). As I understand it (the figure is not noted, much less explained in the paper), the arrows from “Environmental superstrate (contingent reinforcer–behavior link)” and “Neural substrate (afferent–efferent link)” to “Intentional ascription of intentionality” represent “regulate and supplement” (I am unsure what “intentional ascription of intentionality” means, but I assume it just means “intentional ascription” or “ascription of intentionality”). Intentionality ascriptions are to be regulated (justified, interpreted, delimited, and explained) by and supplemented with considerations about behavioral processes involved in contingencies of reinforcement, as well as their underlying physiological processes (afferent–efferent relations). I thus interpret IB as a philosophy where psychology consists of intentionality ascriptions that are regulated by and supplemented with the psychology and physiology of learning (operant as well as respondent). Foxall intends such regulation and supplementation to be purely methodological (explanatory) and linguistic (logical), devoid of any ontological considerations about the nature or even existence of intentionality.

There are far more details to this outline than I can possibly discuss in this short commentary, so I will be very selective, focusing on what I see as the fundamental issues. My first misgiving arises from IB’s “a-ontological” character (e.g., pp. 77, 44, 47). In this, Foxall follows Dennett (1969), who speaks of the “ontological blindness” (p. 22) or “ontological neutrality” (p. 90) of his proposal, and Searle (1983), who qualifies his proposal as “non-ontological” (p. 16). I also anticipate that many (if not most) cognitivists and radical behaviorists will sympathize with this strategy. Of course, I have no problem with temporarily setting ontological considerations aside to focus on methodological and linguistic issues. However, many disagreements in psychology are ontological and cannot be adequately resolved in a purely methodological and/or linguistic manner. To be sure, methodological and linguistic considerations are crucial, but ontological considerations are equally crucial. Such disagreements leave an ontological residue that must be addressed in addition to the methodological and linguistic differences.

Thus, cognitivists who lean toward philosophical functionalism conceive the mind as an inner causal nonphysical (but physically realizable in multiple ways)

intermediary between environmental inputs and behavioral outputs. Radical behaviorists conceive the mental as purely behavioral in nature. Mind–brain identity theorists conceive the mind as purely physiological in nature. These ontological differences seem to me to be largely irresolvable through purely methodological and/or linguistic considerations. The differences will only be resolved by bringing ontological considerations to the foreground as integral to the inquiry.

Ontological considerations undoubtedly complicate the inquiry. Perhaps this is why Dennett, Searle, and Foxall avoid them. This avoidance, however, strikes me as so much sweeping under the rug as anything else. Besides, ontology is like quicksand: the more one struggles against it, the faster one sinks into it. Ontological considerations have a knack for recurrence, and the more we try to resist them, the stronger they become. We might shout to the four winds that we are being a-ontological, but more likely than not our shout is masking an implicit ontological commitment (I shall give an example of this towards the end of the commentary). Then, any philosophy of psychology that dispenses with ontological considerations will be deeply deficient in the best case, deceiving in the worst. Sooner or later, methodological and linguistic considerations have to be supplemented by ontological considerations if we are to have a robust philosophy of psychology.

A second misgiving I have about IB is that I am unsure exactly what Foxall means by “layer of interpretation” and “another story.” These expressions strike me as too metaphorical to convey a minimally clear and precise sense of the role of intentionality ascriptions in a scientific understanding of behavior. Foxall’s use of “story,” in particular, reminds me of hermeneutical theories of scientific interpretation, where scientific accounts are mere narrations and truth is in the eye of the beholder. Such relativism lurks in Foxall’s seeming acceptance of radical behaviorism’s repudiation of truth by correspondence and pragmatistic emphasis on truth as expediency (pp. 6, 51). However, as I have expressed it somewhere else (Burgos, 2003, pp. 41-42), pragmatism about truth seems to me to be the worst theory of truth for science (of course, insofar as science is a search for truth, which it may not be after all—a most intriguing possibility; see Laudan, 1977). Pragmatism leads to a relativism that is seriously at odds with an emphasis on science as the best way of knowing.

Besides, pragmatism is incompatible with how Foxall conceives intentionality, and this is my third misgiving: he appears to adopt the linguistic view of intentionality. In this view, a certain logical condition is the defining criterion for intentionality. The condition in question is *non-extensionality*, which Foxall discusses in the paper (pp. 4-6), although he does not use that term. Nor does he use a less awkward and more standard term: “intensionality,” with an “s.” On the linguistic view, then, intensionality is necessary and sufficient for intentionality.

Before I discuss intensionality (which will bring me to my fourth misgiving), let me explain why adopting the linguistic view of intentionality is problematic for IB. Searle (1983), against what Foxall seems to suggest (on p. 2 he places Searle in

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the same camp as Chisholm and Dennett), rejects the view, arguing that intentionality and intensionality are tenuously related, if related at all:

One of the most pervasive confusions in contemporary philosophy is the mistaken belief that there is some close connection, perhaps even an identity, between intensionality-with-an-s and Intentionality-with-a-t. Nothing could be further from the truth. Intentionality-with-a-t is that property of the mind (brain) by which it is able to represent other things; intensionality-with-an-s is the failure of certain sentences, statements, etc., to satisfy logical tests of extensionality. The only connection between them is that some sentences about Intentionality-with-a-t are intensional-with-an-s. . . .The belief that there is something inherently intensional-with-an-s about Intentionality-with-a-t derives from a mistake which is apparently endemic to the methods of linguistic philosophy—confusion of features of reports with features of the things reported. (Searle, 1983, p. 24)

The disanalogy between intensionality and intentionality propounded by Searle stems from his view that the mind is nonlinguistic in nature. In this view, extensionality is not to be contrasted with intentionality-with-a-t, as Foxall does, following the linguistic view. Rather, extensionality is to be contrasted with intensionality-with-an-s. Extensionality and intensionality are properties of linguistic items (sentences, statements, assertions, claims, propositions, etc., whether written or uttered). If mental states are nonlinguistic in nature, they cannot have any linguistic properties. Hence, they cannot be intensional. They can only be intentional, a nonlinguistic property. Searle thus maintains a sharp distinction between language and mind, even if he explains the latter in terms of the former:

By explaining Intentionality in terms of language I do not mean to imply that Intentionality is essentially and necessarily linguistic. On the contrary, it seems to me obvious that infants and many animals that do not in any ordinary sense have a language or perform speech acts nonetheless have Intentional states. Only someone in the grip of philosophical theory would deny that small babies can literally be said to want milk and the dogs want to be let out or believe that their master is at the door. (Searle, 1983, p. 5)

The nonlinguistic character of intentionality arises from Searle's view that intentionality is a property of the brain, and brain functioning is nonlinguistic in nature (he famously rejected the Turing-machine view of the brain as a symbol processor through his Chinese-room thought experiment; see Searle, 1980, 1984). As Foxall reminds us (pp. 27-28), this invites the mereological fallacy. However, one need not follow Searle as far as that. One can coherently accept his disanalogy between intensionality and intentionality without viewing intentional states as brain states. Intentional states could be viewed as states of *whole organisms*.

By making intensionality the defining criterion of intentionality, the linguistic view implies that intentionality is linguistic in character. This implication leaves us with two options. One, restrict intentionality to creatures that possess an overt articulated language, which is to say language-using humans. Two, admit

intentionality in creatures that lack such a language, which include human infants. The first option, however, will be unappealing to psychologists in the area of animal cognition, where ascriptions of intentionality to nonhumans are ubiquitous. To avoid this consequence, Foxall would have to choose the other option. He seems to do this when he discusses the nature of learning (pp. 16-18). However, this implies that creatures that lack an overt articulated language nonetheless have a sort of covert, mental language. Talk of mental language is a trademark of cognitivism, and thus a deal-breaker for operant psychologists. In either option, Foxall loses half of his target audience. His pluralistic tone thus seems unlikely to rally a critical mass of cognitivists and radical behaviorists behind a common scientific cause (if indeed this is his goal; if it is not, IB is much less interesting than I had thought).

The implication for Foxall's seeming acceptance of Skinner's pragmatism is this. In the linguistic view, intentional states are sentences, literally, albeit in the language of mind. Hence, only sentences can be the truth bearers. There is only one account of truth where sentences are the truth bearers: truth as correspondence (although there are versions of this account where the truth bearers are nonlinguistic in nature). The linguistic view thus commits one to an account of truth as correspondence, which is seriously at odds with the radical behaviorists' repudiation of this account and adoption of an account of truth as expediency.

There is a further reason why adopting the linguistic view makes IB an improbable philosophical underpinning of psychology, which brings me to my fourth misgiving. The reason becomes apparent when intentionality is examined more carefully. Again, intentionality is the lack of extensionality. The lack of extensionality is the failure to pass the "logical tests of extensionality" to which Searle refers in the above quotation. One test is inter-substitutivity of co-denoting expressions. Sentences that fail this test are "referentially opaque" and sentences that pass it, "referentially transparent." The other test is existential inference, which Foxall takes to be deeply related (perhaps identical) to intentional inexistence. However, I disagree.

As he correctly notes, intentional inexistence is at the core of Franz Brentano's theory of intentionality (although Brentano never used the term "intentionality"). Foxall (following others) interprets Brentano in this regard as saying mainly, if not only, that "the things referred to in an intentional sentence do not necessarily exist" (p. 5). This interpretation, however, is severely truncated. No doubt there is something about non-existence here, but such is largely orthogonal to Brentano's notion of inexistence. The following oft-cited text strongly suggests that by "inexistence" he meant more than just "nonexistence":

Every mental phenomenon is characterized by what the Scholastics of the Middle Ages called the intentional (or mental) inexistence of an object, and what we might call, though not wholly unambiguously, reference to a content, direction towards an object (which is not to be understood here as meaning a thing), or immanent objectivity. Every mental phenomenon includes something as object within itself, although they do not all do so in the same way. In presentation something is presented, in judgment something is affirmed or

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denied, in love loved, in hate hated, in desire desired, and so on. This intentional in-existence is characteristic of exclusively of mental phenomena. No physical phenomenon exhibits anything like it. We can, therefore, define mental phenomena by saying that they are those phenomena which contain an object intentionally within themselves. (1874/1973, pp. 88–89)

There is a lot more going on in this quotation than I can discuss here. The point I wish to make about it is that by “inexistence” Brentano primarily meant “in-existence,” which does not refer merely to the fact that beliefs may be about objects that do not exist. Rather, he meant very much what medieval philosophers did, that the object of a mental act existed *within the mental act*. In-existence, then, is not non-existence, but existence-*in*. The intended object (the object about which the mental act is) itself is part of the mental act. For instance, if I believe that my wife is intelligent, she, the intended object, is not outside but part of (internal or “immanent” to) my belief about her. My wife *qua the intended object* thus exists *in* my belief, and we know this for certain (very much in the same sense we know for certain that we are experiencing a pain, or a color or sound sensation). Whether or not a different object that is represented by or corresponds to my wife exists outside of my belief, Brentano (following the British empiricists) claimed we could not know for certain.

The possibility of non-existence outside of mental phenomena (or, worse, persons), then, seems largely orthogonal to Brentano’s notion of intentional in-existence. The implication is clear: the existence of an object is guaranteed by just thinking about it, only that such existence is mental (i.e., intentional) and we are thus certain about it. In Foxall’s Hobbit example (p. 5), then, I am certain that Hobbits exist just by believing that they are at the bottom of my garden, only that they exist *mentally*. Whether other objects that correspond to the Hobbits *qua* intended objects exist outside of my belief (or me) is a moot issue.

I thus analyze Foxall’s example as follows. One thing is my belief that there are Hobbits at the bottom of my garden, quite another, the sentence “I believe that there are Hobbits at the bottom of my garden.” Here we have the distinction between language and mind again (which Brentano too made). The belief is mental and, hence, nonlinguistic, whereas the sentence is linguistic. Intentional in-existence in Brentano’s sense refers to the Hobbits’ existence in my belief *qua* mental and hence nonlinguistic act. In Brentano’s sense, then, the Hobbits do exist, albeit mentally, as part of my belief. Failing the test of existential inference, in contrast, is a logical property of the sentence “I believe that there are Hobbits at the bottom of my garden.”

I thus disagree with Foxall that the sentence fails the test (and hence, is intensional, and hence intentional) because it refers to “imaginary creatures that have no existence other than fictional” (p. 5). In order to explain why, I need to make a further clarification. Foxall argues thus: “when I say ‘I am going to drive my car to Scotland,’ there has to be a car which I shall drive” (p. 5). Fair enough, but what if I say “*I believe* that I am going to drive my car to Scotland”? Does this sentence *imply* that there has to be a car which I shall drive (and a place called “Scotland” to which I shall drive)? Clearly, the answer is “no.”

The reason has to do with my emphasis on the term “imply” above: passing the test of existential inference has little to do with *actual* existence because the test requires only a *valid*, not a *sound*, inference. The elementary logical distinction between validity and soundness is thus crucial for the extensionality–intensionality distinction and its relation to intentionality. A valid argument is one whose conclusion *necessarily* follows from its premises, *regardless of whether the premises are actually true*. That is to say, the conclusion *could* not possibly be false if the premises *were* true. If the premises *were* true, the conclusion *would necessarily* be true. The pluperfect subjunctive indicates that the premises *need not be actually true for validity*; they are taken only as *hypothetically* true. For instance, the argument “All cats are astronauts and Socrates is a cat; therefore, Socrates is an astronaut” is valid, despite the fact that both of its premises (and conclusion) are actually false. Actual truth, then, is irrelevant to validity—so much so that the argument “Some humans are psychologists and José is human; therefore José is a psychologist” is invalid, despite the actual truth of its premises and conclusion.

In the case of existential inference, and using Foxall’s example, the argument would be this: “There are Hobbits at the bottom of my garden; therefore, there is some x such that x is at the bottom of my garden.” This argument is valid, so its premise passes the test. However, the argument “I believe that there are Hobbits at the bottom of my garden; therefore, there is some x such that x is at the bottom of my garden” is not valid, so its premise fails the test.

More formally, let G denote the predicate “are at the bottom of my garden,” h denote “Hobbits,” x a variable, the \exists the existential quantifier (“at least one x exists”), and \rightarrow the conditional (“if. . ., then. . .”). The argument $Gh \rightarrow (\exists x)(Gx)$ is valid, so Gh passes the test. Now let B denote the predicate “believe,” a denote me, and p denote the belief that there are Hobbits at the bottom of my garden, so that the expression Bap means “I believe there are Hobbits at the bottom of my garden.” The inference $Bap \rightarrow (\exists x)(Gx)$ is not valid, so Bap does not pass the test. Interestingly, the argument $Bap \rightarrow (\exists x)(\exists y)(Bxy)$ is valid. That is to say, from “I believe that there are Hobbits at the bottom of my garden” one can validly infer “there is some x and some y such that x believes y .” I shall return to this consideration towards the end of the commentary.

More simply, from “Hobbits exist” one can validly infer “Hobbits exist.” That is to say, if H denotes the predicate “is a Hobbit,” $(\exists x)(Hx) \rightarrow (\exists x)(Hx)$ is obviously a valid inference (i.e., $p \rightarrow p$ is a tautology). However, from “I believe that Hobbits exist” one cannot validly infer “Hobbits exist.” That is to say, if p denotes the belief that Hobbits exist, $Bap \rightarrow (\exists x)(Hx)$ is not a valid inference. The reason is that the statement “Hobbits exist” has to be symbolized by a propositional constant (p) in the antecedent, which conceals its internal logical structure. The same sentence is symbolized differently in the consequent, in a way that represents its internal logical structure. Hence, Bap does not pass the test of existential inference, not because Hobbits do not actually exist, but because the sentence does not allow for a valid inference of the existence of Hobbits.

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A sound argument, in contrast, is a valid one whose premises are actually true (e.g., “All humans are mortal and José is human; therefore, José is mortal”). The key point is that the test of existential inference is strictly logical in that it only requires validity. Soundness is irrelevant to the test (as well as the other extensionality test, substitutivity). Hence, the sentence “Hobbits exist” passes the test because one can *validly* infer from it that Hobbits exist. That is to say, *if* it *were actually* true that Hobbits existed, it *would* necessarily be true that Hobbits existed, regardless of whether they actually exist. That Hobbits do not actually exist makes the inference *unsound*, not invalid. However, the test requires validity, not soundness. The same applies to “I am going to drive my car to Scotland” versus “I believe that I am going to drive my car to Scotland.” The first sentence passes the test not because the expressions “my car” and “Scotland” denote actually existing objects, but because the sentence permits a valid inference of their existence. The second sentence fails the test because it does not permit such an inference, even if my car and Scotland actually exist. Actual existence, then, is irrelevant to intensionality or extensionality.

The problem of all this for IB is that supposedly IB is intended as a philosophical underpinning of psychology qua *empirical* science. However, what matters in the empirical sciences is soundness (validity plus actual truth), not just validity. Only formal sciences, like pure logic and pure mathematics, are primarily concerned with validity. Soundness is irrelevant in formal sciences. Pure mathematicians and logicians are rarely, if ever, concerned with the actual truth of their premises when they derive theorems. Physicists, astronomers, chemists, and biologists, in contrast, are far more concerned with soundness. Validity in and of itself is irrelevant to them. No scientist would give any serious consideration to the argument “All Martians are smart and Baralipton is Martian; therefore, Baralipton is smart,” despite its validity.

Psychologists too are more concerned with soundness than just validity. By taking intensionality as the defining criterion of intentionality, IB emphasizes validity over soundness. For this reason, IB has more logical than empirical import, and thus fails to capture the psychologists’ concern for actual truth (whether they conceive it as expediency, coherence, correspondence, or redundancy). The problem can be seen most clearly in the following consideration. Again, from “Hobbits exist” one can validly infer the existence of Hobbits, so the sentence passes the test of existential inference. The sentence “I believe that Hobbits exist” does not pass the test because it does not allow us to validly infer that Hobbits exist. Now consider the following sentence, which expresses a meta-belief: “I believe that Mary believes that it is going to rain.” From this sentence, one cannot validly infer that Mary’s belief or Mary exists, so the sentence does not pass the test of existential inference. Hence, it is not logically justified to believe in the existence of beliefs, at least not in this way of applying the test (but see below). This outcome obtains in other sciences. From “I believe that electrons have a negative charge” one cannot validly infer “Electrons exist.” From “I believe that Earth moves in an elliptical orbit around the Sun” one cannot validly infer “Earth exists” or “the Sun exists,” and so forth.

The implication is clear: the test of existential inference logically precludes one from believing the existence of any intended object whatsoever. However, this does not stop psychologists from believing in the existence of beliefs (and believing subjects), or physicists from believing in the existence of electrons, or astronomers from believing in the existence of planets. Are they being irrational? No, because logical validity is not the primary criterion for rationality in science. It is reasonable to believe in the existence of beliefs (and electrons, and atoms, and neurons) because the *evidence* strongly indicates such existence and there is no compelling evidence against it. To be sure, the evidence is not conclusive, but no evidence is.

In empirical science, then, evidence that makes arguments sound, instead of logical validity *per se*, is the primary rationality criterion. Identifying intentionality with intensionality, as the linguistic view does, renders the psychologists' belief in the existence of beliefs irrational. To this extent, such identification is seriously at odds with the way many, if not most, psychologists see their subject matter. This outcome casts further doubts over the adequacy of IB as a philosophical underpinning of psychology.

Actually, psychologists could supplement their evidential rationale with a logical rationale to justify intentional realism (the thesis that intentional states really exist). As I claimed earlier, one can validly infer the existence of believing subjects and beliefs from intensional sentences if one applies the test of existential inference to the sentence *as a whole* rather than part of it (just the part that expresses the belief itself). From "John believes that Hobbits exist" one can validly infer that John and his belief about Hobbits exist. Here, the test is applied to "John believes that Hobbits exist" as a whole, not just "Hobbits exist." One is thus logically entitled to believe in the existence of beliefs and believing agents.

In psychology, of course, such rationale would be secondary to the presence of evidence for and absence of evidence against existence claims. In the philosophy of mind, however, where there is far more emphasis on validity in and of itself, the rationale takes a prominent place. In particular, it makes the proposals of Dennett, Searle, and Foxall more ontological than what they claim. By considering existential inference as somehow relevant to intentionality (whether or not as a defining criterion), these authors make an ontological commitment to the existence of intentional states. As Dennett (1969) has expressed it, they might "not *suppose* that there *are* any actual phenomena (thoughts, beliefs, desires) for Intentional sentences to be about" (p. 22). However, their proposals *entail* and thus are ontologically committed to such existence.

Let me finish with a fifth concern: IB is unlikely to appeal to evolutionary psychologists. The reason is that many, if not most, of them are linguistic nativists; that is to say, they consider language to be innate (yes, linguistic nativism is entirely compatible with selectionism; e.g., Pinker & Bloom, 1990). IB cannot remain neutral on this issue because of the adoption of the linguistic view of intentionality. The problem is that both possible positions will have the same effect: again, IB loses half of its target audience. If IB presupposes or entails

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linguistic nativism it will scare operant psychologists away. If IB presupposes or entails linguistic anti-nativism it will be dismissed by evolutionary psychologists.

All in all, then, IB does not strike me as an adequate philosophical underpinning of psychology that truly appeals to cognitivists, radical behaviorists, and evolutionary psychologists alike. I am intrigued by Foxall's suggestion that intentionality ascriptions be closely tied to evidence from the experimental analysis of behavior and nervous systems within an evolutionary framework. To me, it appears to be a step in the right direction. However, his heavily linguistic take on intentionality has implications that are likely to be as divisive as other philosophies of psychology such as cognitivism and radical behaviorism.

Perhaps a more promising way is to abandon the linguistic view and take intensionality as neither necessary nor sufficient for intentionality. There can be intensionality without intentionality. The sentence "Possibly Hobbits are vegetarian" is not an intentional ascription but fails the test of existential inference (and hence is intensional) because it does not entail "Hobbits exist." There can also be intentionality without intensionality. The sentence "John looked at Satan" is an intentional ascription (although it lacks the particle "that"; see Searle, 1983, Chapter 2), but it passes both extensionality tests. Let a , b , and c denote "John," "Satan," and "the Devil," respectively, and L the predicate "looked at." The inference $Lab \rightarrow (\exists x)(\exists y)(Lxy)$ is valid (again, even if Satan does not actually exist), so the sentence passes the test of existential inference. The sentence also passes the substitutivity test with respect to "John looked at the Devil," because the inference $(Lab \ \& \ b = c) \rightarrow Lac$ is valid (if John looked at Satan, then John looked at the Devil, regardless of whether or not John is aware that Satan and the Devil are one and the same entity).

I can sympathize with the methodological motivation of the linguistic view. As Quine (1960) put it, let us "[carry] the discussion into a domain where both parties are better agreed on the objects (viz., words) and on the main terms concerning them" (p. 272). To follow this sort of recommendation facilitates the inquiry (although Quine endorsed the linguistic view). However, one can follow their spirit without going to the dubious extreme of viewing intensionality as the defining criterion of intentionality (and thus demeaning the distinction between language and mind). One could just take intensionality as an *indicator* of intentionality. Intensionality does not define, but only *suggests* the presence of, intentionality.

The divisive consequences of the linguistic view can be forestalled by clarifying that intensionality need not be the only indicator of intentionality. There are other, equally reliable indicators that are nonlinguistic (e.g., certain sorts of nonlinguistic behavioral patterns). In this manner, one can ascribe intentionality to humans and nonhumans without having to talk of a mental language, although such talk is not prohibited either. Cognitivists should be allowed to endow any organism (whether human or not) with a mental language if they choose to, but no one should be *forced* to do it. Nor anyone should be forced to restrict ascriptions of intentionality to humans either, nor ascribe intentionality to nonhumans. This is the

sort of situation that a truly pluralistic philosophy of psychology should seek. Whether it can be coherently attained remains to be seen.

References

- Brentano, F. (1973). *Psychology from an empirical standpoint*. London: Routledge. Work originally published in 1874.
- Burgos, J. E. (2003). Laudable goals, interesting experiments, unintelligible theorizing: A critical review of relational frame theory. *Behavior and Philosophy*, 31, 19-45.
- Dennett, D. C. (1969). *Content and consciousness*. London: Routledge.
- Foxall, G. R. (2007). Intentional behaviorism. *Behavior and Philosophy*, 35, 1-55.
- Laudan, L. (1977). *Progress and its problems: Towards a theory of scientific growth*. Berkeley, CA: University of California Press.
- Pinker, S., & Bloom, P. (1990). Natural language and natural selection. *Behavioral and Brain Sciences*, 13, 707-784.
- Quine, W. V. O. (1960). *Word and object*. New York: Wiley.
- Searle, J. R. (1980). Minds, brains, and programs. *Behavioral and Brain Sciences*, 3, 417-424.
- Searle, J. R. (1983). *Intentionality: An essay in the philosophy of mind*. Cambridge: Cambridge University Press.
- Searle, J. R. (1984). *Minds, brains, and science*. Cambridge, MA: Harvard University Press.