The Behavior Analyst 2000, 23, 191–202 No. 2 (Fall)

Behavioral Pragmatism: No Place for Reality and Truth

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The current article begins by reviewing L. J. Hayes's claim that pragmatism relies on a correspondence-based truth criterion. To evaluate her claim, the concept of the observation sentence, proposed by the pragmatist philosopher W. V. Quine, is examined. The observation sentence appears to remove the issue of correspondence from Quine's pragmatist philosophy. Nevertheless, the issue of correspondence reemerges, as the problem of homology, when Quine appeals to agreement between or among observation sentences as the basis for truth. Quine also argues, however, that the problem of homology (i.e., correspondence) should be ignored on pragmatic grounds. Because the problem is simply ignored, but not resolved, there appears to be some substance to Hayes's claim that pragmatism relies ultimately on correspondence as a truth criterion. Behavioral pragmatism is then introduced to circumvent both Hayes's claim and Quine's implicit appeal to correspondence. Behavioral pragmatism avoids correspondence by appealing to the personal goals (i.e., the behavior) of the scientist or philosopher as the basis for establishing truth. One consequence of this approach, however, is that science and philosophy are robbed of any final or absolute objectives and thus may not be a satisfactory solution to philosophers. On balance, behavioral pragmatism avoids any appeal to correspondence-based truth, and thus it cannot be criticized for generating the same philosophical problems that have come to be associated with this truth criterion.

Key words: realism, truth, behavioral pragmatism

The idea that scientists are primarily concerned with understanding the natural world is taken by most to be axiomatic. Not all scholars are entirely convinced that this is the case, however. The philosophical tradition known as pragmatism, for example, questions the apparently obvious idea that science is concerned with developing an increasingly accurate picture of the universe as it really is (see Goodman, 1995). Pragmatists, it is commonly believed, are not concerned with the nature of reality, but with successful working. For a pragmatist, a statement or theory gains truth value if it helps an individual achieve some practical goal; whether or not the statement or theory reflects an ontological reality is seen to be irrelevant from the pragmatist's perspective (Barnes & Roche, 1997). In contrast to this view of pragmatism, L. J. Hayes[1] (1993) has argued that upon close scrutiny pragmatists are in fact very concerned with the nature of reality. The current article begins with a detailed summary of her argument. Subsequently, Quine's concept of the observation sentence is examined. This "mainstream" pragmatist concept is then used to evaluate the accuracy of Hayes's claim that pragmatists are concerned with the nature of reality, and as a result the accuracy of the claim is found to be somewhat ambiguous. Quine's concept of the observation sentence, however, also appears to raise a problem. In the second half

This paper is dedicated to Yvonne. I missed you all those years, my love.

An earlier version of the current work was presented at a Guest Speaker's Seminar in the Department of Psychology, University of Nevada, Reno. I thank Linda Hayes, Steve Hayes, Kelly Wilson, Yvonne Barnes-Holmes, Bryan Roche, and two anonymous reviewers for their many useful and constructive comments on earlier versions of the current work.

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[1] In the current article I will be citing both L. J. Hayes and S. C. Hayes, but the former will be cited far more frequently than the latter, and thus inserting the initials L. J. for every appropriate citation would be rather unwieldy. Consequently, I will simply cite Hayes in the former case, but always refer to the latter author as S. C. Hayes.

of the article, therefore, a behavior-analytic version of pragmatism is offered that aims to address both the claim made by Hayes (vis-a-vis pragmatism's concern with reality) and the problem raised by Quine's concept of the observation sentence.

HAYES ON REALITY AND TRUTH

One- and Two-Universe Systems

According to Hayes (1993), all human enterprises may be divided into just two categories: one-universe and two-universe systems. Hayes argues that one-universe systems resist description, and that they underlie the mystic traditions. In other words, one-universe systems may be hinted at or implied (e.g., through Buddhist koans), but they cannot be spoken about directly. One cannot speak *about* another universe, in a one-universe system, because in doing so one creates a two-universe system (i.e., the universe of speaking and the universe about which one speaks).

Beyond the oneness, about which one cannot speak, there are ways of talking about the universe; what Hayes calls conventional two-universe philosophies. Under the rubric of conventional philosophy, Hayes lists the idealisms, including subjective idealism and solipsism, in which the existence of the knower is not questioned, and thus the knower constitutes reality in these positions. Hayes also lists more elaborated or extended forms of idealism, in which the existence of the knower is denied. Instead the knower is considered to be an aspect of some sort of deity. If the deity can be spoken about this constitutes a two-universe system, but if the deity cannot be described, such a position may be categorized as a one-universe system.

Hayes also lists the realisms as examples of conventional philosophy, which she subdivides into naive and not-so-naive realism. For the former, the universe exists independently of the knower and can be known, more or less, as it actually is. This is the commonsense view of the world, and Hayes points out that few technical philosophers subscribe to this view. The latter, not-so-naive realism, constitutes the position to which most technical philosophers of this genre subscribe. According to this position, the universe exists independently of the knower, but it cannot be known as such. According to Hayes, the knower's involvement serves to differentiate the many positions falling into this category. In some cases the knower gains knowledge from sources other than experience or learning (e.g., innate or extranatural sources; Kant). Objective idealism is similar in certain respects (Plato and Hegel). What unifies these positions, according to Hayes, "is the contradictory proposition that we cannot know the world as it actually is because our knowledge of the world as it actually is does not correspond to what we know about it" (1993, p. 37).

Hayes also points out that other realists accept that knowledge of the world is gained via contact with the world, and because such contact differs across knowers, and because no one has contacted the universe in its entirety, the known world has the stamp of each knower's particular experience and thus differs from the world as it actually exists. From this point of view, knowing is the issue, not existence, and epistemology is the focus, not ontology.

According to Hayes, if this type of not-so-naive realist assumed that knowing was not *about* anything—that speaking was not referential—this position might be considered an example of a one-universe system, and as such ontological concerns would be irrelevant. Hayes argues, however, that for most realists "knowing is something knowers do with respect to things other than themselves" (1993, p. 37). Consequently, despite the reluctance of the not-so-naive realist to deal with ontological issues, the ontological reality of the universe is implicated whenever epistemological issues with respect to

it are addressed in this way. In effect, Hayes believes that even for the not-so-naive realist, what he or she says about the universe is judged to be true to the extent that it corresponds to the universe as it actually is. At this point, Hayes fleshes out her thesis by focusing on the issue of truth.

Truth

Hayes deals first with correspondence-based truth. She argues that there are several problems with correspondence as a truth criterion when interpreted from a two-universe perspective. Specifically, Hayes considers three possible types of correspondence, and points out fundamental problems with each type.

1. Correspondence between ontological reality and description. Hayes begins by pointing out that if correspondence, as a truth criterion, implies formal similarity between the words spoken and the thing spoken about, this requirement cannot be fulfilled. The word *horse,* for example, bears no formal resemblance to an actual horse. In effect, if the universe is conceptualized as something *about which we speak* and not the *speaking itself,* correspondence, interpreted as formal similarity, eludes us.

2. Correspondence between ontological reality and observation. In addressing this type of correspondence, Hayes points out that to observe the universe as it actually is would require that we contact the universe in such a way that our anthropological, biological, cultural, and personal histories do not contribute in any way to what we know about the universe by way of that contact. If these histories participate in any act of observation they will influence how the universe is observed, and thus direct or uncontaminated contact with the universe becomes impossible (e.g., which animal observes the world as it actually is—a human, a bat, or a fly?). To observe the universe as it actually is would require that observing be considered a power, not an act. "A power exerted by an entity that is itself changeless—incorruptible" (Hayes, 1993, p. 39). As Hayes rightly points out, this is not a doctrine that sits easily with modern science. "There are no such entities from a scientific perspective; and from a psychological perspective, there is no knowledge in which knowers do not participate and which is not colored by that participation" (Hayes, 1993, p. 39).

3. Correspondence between observation and description. In considering this third type of correspondence, Hayes points out that what a person observes is not known until some form of report is provided, *and that report is a description.* In effect, an event occurs (e.g., a red light), which is observed (i.e., an individual notices the red light), and a report or description of that observation is then made (e.g., the person states "I saw a red light"). Only when the report occurs can we know what the person observed. From this perspective, it is impossible to compare an observation with a description of an observation because in order to do so, one must first convert the observation into a description, with the result that one is no longer comparing a description with an observation, but a description with another description. Hayes therefore concludes "that the only things that can correspond as a means of determining truth are what we say about the universe and what we say about the universe. What we say now is true if it corresponds to what we have said, or conversely, what we have said continues to be true if it corresponds to what we say now" (Hayes, 1993, pp. 39–40). Clearly, conventional philosophy, as Hayes points out, would not be satisfied with this particular view of truth.

Hayes acknowledges that some realists are clearly aware of the problems surrounding the correspondence truth criterion (i.e., those problems arising from the three types outlined above), and have therefore adopted a pragmatic truth criterion in which the truth of a proposition is based on its usefulness.

In short, pragmatists deny any connection between correspondence and truth. Hayes, however, takes issue with this denial.

Pragmatism and correspondence-based truth. Hayes correctly points out that pragmatists take the view that theoretical statements are deemed true or false based on demonstrable effects in the domain of practical affairs. Utility at the level of practical affairs is required, Hayes argues, because it is only at this level that the truth criterion may be applied unambiguously. Hayes asks, for example, "how do we know ... when we have achieved the goal of greater understanding? What does greater understanding look like?" (1993, p. 41). In contrast to the nebulous nature of "greater understanding," Hayes points out that we know when our beliefs have served a more mundane purpose by observing a specific outcome directly. For instance, we know that a spot remover has removed a spot when we see the spot removed. Only in the domain of practical affairs, Hayes suggests, may the usefulness of a proposition be evaluated, because only in this domain may we compare the correspondence between what we believe and what actually exists. At this point Hayes concludes that utility-based truth also depends on a correspondence between what we say about some feature of the universe and that feature itself. For example, the statement that "spot remover removes spots" is useful (i.e., true) because the statement is confirmed when we observe the actual removal of spots by spot remover.

For Hayes, therefore, pragmatism surrenders ultimately to correspondence-based truth, and thus the philosophical problems that Hayes suggests arise out of this truth criterion also emerge out of pragmatism. Furthermore, insofar as Hayes is correct, there is an inherent verbal inconsistency in the pragmatist's appeal to both utility and correspondence as truth criteria.

QUINE ON OBSERVATION SENTENCES

Is Hayes correct in asserting that pragmatism relies ultimately on correspondence as a truth criterion? In addressing this question, some of the writings of the pragmatist philosopher W. V. Quine (e.g., 1960, 1974, 1990) seem most pertinent. There are, of course, many other pragmatist philosophers (see Goodman, 1995), but Quine is generally considered to be mainstream. Furthermore, and perhaps more important, Quine's concept of the *observation sentence* is concerned with the truth value of statements made about publicly observable events, and thus this concept bears directly upon Hayes's claim that the truth of a statement, even for the pragmatist, is confirmed by the observation of actual events.

According to Quine, an observation sentence is deemed to be true when most members of a language community could, in principle, compare the sentence to a particular event and agree that it was correctly used in the presence of that event. In Quine's own words, "A sentence is observational insofar as its truth value, on any occasion, would be agreed to by just about any member of the speech community witnessing the occasion" (1974, p. 39). For example, the observation sentence, "Spot remover removed the spot," is true in English, if the present situation contains the stimuli that were present when normal speakers of English learned this expression. Quine considers observation sentences to be critical for the acquisition of language because their appropriate use can be easily checked with the practices of the verbal community. Furthermore, Quine argues that the semantical nature of the observation sentence means that it can be used by scientists to resolve theoretical disagreements. Again, in Quine's own words,

> Observation sentences are sentences on which scientists can reach agreement when they are trying to reconcile their theories, and they are

> sentences that can be socially checked against their occasions of utterance when we are picking up a language. Because of this semantical trait of observation sentences it is they that are learned most readily, affording the entering wedge in the acquisition of one's language. Observation sentences are the gateway to language, as to science. (1974, p. 40)

Because Quine suggests that scientists may resolve their theoretical disagreements by appealing to observation sentences, one might easily conclude that Hayes's claim is in fact correct (i.e., that utility-based truth depends ultimately on a correspondence between what the pragmatist says about some feature of the universe and that feature itself). To draw this conclusion, however, would be to misunderstand Quine's concept of the observation sentence. Quine deliberately combined the separate concepts of observation and description into the single concept of the observation sentence so that the issue of correspondence between observation and description (i.e., Hayes's third type of correspondence) could be circumvented:

> I propose that we drop the talk of observation and talk instead of observation sentences, the sentences that are said to report observations. . . . No matter that sensations are private, and no matter that men may take radically different views of the environing situation; the observation *sentence* serves nicely to pick out what witnesses can agree on. (Quine, 1974, p. 39)

For Quine, therefore, there is no separation, conceptually, between the observation (i.e., the private sensation or the different views of an event) and the descriptive sentence; these two elements participate in a single conceptual unit, and thus questions pertaining to the correspondence between the observation and the sentence are rendered meaningless.[2] Accordingly, when scientists employ observation sentences as a means of resolving theoretical disagreements, the issue of correspondence simply does not arise. From this perspective, therefore, Hayes is incorrect to argue that a utility-based truth relies ultimately on correspondence between description of the feature and the feature itself (or the observation of the feature). However, the issue is not so clear cut. In his treatment of observation sentences, Quine openly admits that "homology" (an issue that arises when one assumes correspondence between observation sentences and ontological reality) creates a problem for his analysis, and it is to this issue that we now turn.

As outlined earlier, an observation sentence is deemed true when, on any occasion, it would be agreed to by almost any member of the language community witnessing the occasion. As Quine points out, this definition of the observation sentence relies on what he refers to as "joint witnessing" (1974, p. 41). In attempting to pin down exactly what this term means, he suggests that a more precise definition would "speak of witnesses subject to receptually similar impingements" (1974, p. 41). In doing so, however, Quine admits that this definition raises the problem of homology. This problem refers to the fact that the physical receptors of different organisms are far from homologous, and thus one cannot argue that agreement between two individuals occurs only when their respective receptors are similarly affected by the event about which they agree. Quine summarizes the problem as follows:

> Receptual similarity was defined . . . in terms of how close the class of all the receptors that were activated in one episode came to matching the class of those activated in another episode. At that point we were thinking of the episodes and the receptors as all belonging to one subject. But now we have appealed to receptual similarity between episodes a and a' of two subjects. The subjects share no receptors, so it is no longer a question of matching the two classes of receptors on the score of their sharing most of their members. It becomes a question rather of how nearly homologous, anatomically, most of the members of one class are with those of the other. Vagueness mounts, since the receptors of different subjects are far from homologous. Nor is

[2] As an aside, Quine's concept of the observation sentence bears some similarity to Skinner's (1957) concept of the tact, insofar as both concepts combine the talk and the talked about into a single analytic unit.

> anything to be gained by trying rather to match the distribution of the external forces impinging on the two subjects; for we would have to require that the subjects be oriented alike to the impingement pattern, and this revives the homology question. (1974, pp. 23–24)

Although Quine clearly acknowledges that homology presents a problem for his concept of joint witnessing, and thus for his concept of the observation sentence, he also argues that the problem may be approached pragmatically. Continuing directly from the previous quotation, Quine states, "*In practice*, [italics added] of course, psychologists find no difficulty in such intersubjective equating of stimulus situations; they simply see that there are no physical differences *that are apt to matter* [italics added]. We shall do well to take the same line" (1974, p. 24). By focusing on actual practice, and what matters (presumably to the psychologists in question), Quine is clearly advocating that the problem of homology be ignored on pragmatic grounds.

Summary and Synthesis

To summarize, Quine apparently avoids the problems surrounding correspondence by combining the concepts of observation and description into the single conceptual unit of the observation sentence. However, the definition of the observation sentence relies on the concept of joint witnessing, and thus the issue of correspondence (between observation sentence and ontological reality) reenters the picture when Quine attempts to specify exactly what joint witnesses are agreeing about. Quine admits that they cannot be agreeing about receptually similar impingements, because the receptors of different individuals are far from homologous. Consequently, Quine cannot specify in precise terms exactly what joint witnesses are agreeing about (because they do not necessarily possess similar receptors). For Quine, therefore, the relation between the agreement and the event agreed about remains vague. At this point, it seems that Hayes's criticism of the third type of correspondence (i.e., between observation and description) also applies to Quine's concept of the observation sentence. Because we cannot identify precisely what is being agreed about when observation sentences are uttered appropriately, we are left only with agreement among such sentences and no clear comparison of observation sentences with ontological reality. Truth therefore collapses into little more than correspondence between what we say about the universe and what we say about the universe (Hayes, 1993, pp. 39–40). In Quine's defense, however, he openly accepts the lacuna created by the problem of homology and offers a pragmatic solution by suggesting that philosophers, like psychologists, need not concern themselves with homology because in practice it does not seem to matter. Quine's appeal to pragmatism, as a means of circumventing the problem of homology, thus appears to undermine Hayes's criticism that a utility-based truth relies ultimately on correspondence. Nevertheless, the problem of homology raised by the concept of joint witnessing still remains unresolved within the framework of Quine's analysis. In other words, Quine suggests that the problem may be ignored on pragmatic grounds, but he does not offer a pragmatic solution that avoids the problem altogether.

At this point, therefore, it is difficult to decide whether Hayes is in fact correct in claiming that pragmatists rely ultimately on a correspondence-based truth criterion. Hayes is correct insofar as Quine's concept of joint witnessing raises the problem of homology (and with it the issue of correspondence), but her claim is weakened when Quine chooses to ignore this problem on pragmatic grounds (note that her claim is weakened only because Quine does not avoid the problem). In any case, this lack of clarity has led me to believe that there may be some value in presenting a behavior-analytic version of pragmatism that aims to avoid the

problems raised by both Hayes and Quine.

BEHAVIORAL PRAGMATISM

In what follows, I will outline a version of pragmatism that not only avoids the problem of homology but also avoids Hayes's criticism that utility-based truth relies ultimately on correspondence. The form of pragmatism to which I refer was laid out in an earlier article that I coauthored with Bryan Roche (Barnes & Roche, 1997). In this article, we outlined a solution to the problem of what we called *behavioral reflexivity.* This solution was both pragmatic and behavior analytic, and constituted what I now call *behavioral pragmatism.* I will now outline this version of pragmatism and explain how it circumvents both the use of a correspondence-based truth criterion and the problem of homology.

The Three Basic Assumptions of Behavioral Pragmatism

What I call behavioral pragmatism may be broken down into three fundamental assumptions. These assumptions emerge directly out of the epistemology of behavior analysis (see Barnes & Roche, 1994), and seem to be completely consistent with the philosophy of radical behaviorism (cf. Chiesa, 1994). I have not labeled what I am about to offer as radical behaviorism, however, because I am sure that at least some individuals will disagree with part or all of the following and yet consider themselves to be radical behaviorists.

Assumption 1: What is known is always a behavioral function. For the behavioral pragmatist, all events are defined or known as behavioral functions, instead of physical things that exist independently of behavior (see Skinner, 1938, on the inseparability of stimuli and responses; see also Barnes & Roche, 1994). Consider the simple case of an apple. In commonsense terms, the apple is a physical thing that exists independently of behavior. For the behavioral pragmatist, however, the apple is defined only in terms of its behavioral functions that emerge in a particular stream of behavioral interactions (see Barnes, 1989, pp. 340–341; Schoenfeld & Farmer, 1970). The apple, for example, may be defined as an eliciting stimulus for a particular response, such as salivation, or it may be defined as a discriminative stimulus for uttering "There's an apple," or it may defined as a reinforcing stimulus for other responses, such as pointing at the apple or uttering "Give me the apple." For the behavioral pragmatist, therefore, the apple (or any other part of the universe) is always defined or known within a particular behavioral stream (see Barnes & Roche, 1994).

Assumption 2: The activity of each organism participates in a separate behavioral stream. Behavioral pragmatism does not permit one organism's behavioral stream to overlap perfectly with a second organism's behavioral stream. Consider, for example, the sound of a fire alarm in a department store. The behavioral pragmatist might define the alarm as a discriminative stimulus for a shopper who starts to exit the store immediately after the alarm is switched on. This discriminative function would be explained in terms of the history of behavioral interactions that established the function. This history of behavioral interactions, and the functional relation thus obtained between the alarm and the "exiting" response, constitutes part of the shopper's behavioral stream. Consider now a second shopper who also starts to leave the store at the sound of the alarm. In commonsense terms, we would likely say that the alarm is the *same* alarm for both shoppers. The behavioral pragmatist, however, must define two separate discriminative functions for the two exiting responses. Separate functions are defined for two main reasons. First, the history of behavioral interactions that established the discriminative function of the alarm for the exiting response of one of the shoppers cannot be identical to

the history that established the function for the response of the other shopper (e.g., one shopper may have previous experience of the fire alarm in that store, whereas the other may not). Insofar as a discriminative function is explained, in part, by the history of behavioral interactions that produced that function, then clearly the functions for the two shoppers cannot be considered identical. Second, the discriminative function of the alarm may be manipulated independently in one or another of the behavioral streams. Imagine, for example, that a security guard says to one of the shoppers, "Ignore the alarm, there's a fault in the system." In this case, the discriminative function of the alarm may suddenly change in one behavioral stream but not in the other (e.g., one shopper will remain in the store while the other continues to hurry for the exit). As such, there are two fire alarms, one in each behavioral stream. In summary, therefore, Assumption 2 of behavioral pragmatism views the activity of each organism as participating in separate behavioral streams. Even when two organisms are responding to the "same" event (in commonsense terms), they do so from within their respective streams (see also Roche & Barnes, 1997).

Assumption 3: The activity of the behavioral pragmatist participates in a behavioral stream. According to behavioral pragmatism, even the activity of a behavioral pragmatist participates in a behavioral stream, and thus no special point of vantage is available to the pragmatist from which to conduct scientific analyses (Skinner, 1974, p. 234). Such analyses, therefore, do not involve discovering the fundamental laws of nature or developing an increasingly accurate picture of an ontological reality; instead, scientific activity itself is subject to scientific analysis (Skinner, 1969, p. 141). From this perspective, the output pattern from a cumulative record, for example, is not a representation of what the rat or pigeon "really" did in the operant chamber. Instead, the pattern may be defined as a discriminative stimulus for a particular "scientific" response, such as "scallop" or "break-and-run," that has been differentially reinforced in the presence of that pattern. In short, the activity of a particular behavioral pragmatist is always part of that pragmatist's behavioral stream.

Truth and Behavioral Pragmatism

Assumptions 1 and 2 of behavioral pragmatism do not directly affect the issue of truth. Assumption 3, however, appears to preclude the possibility, in behavioral pragmatism, of finding a scientific truth statement that corresponds to an ontological reality. In effect, if the scientific activity of the behavioral pragmatist is the product of a behavioral history, then he or she can never claim to have found an ontological truth, because a different or more extended history may have produced a different truth (an ontological truth, by definition, is immutable, absolute, and final). This is not a problem for the behavioral pragmatist, however, because truth is defined simply in terms of prediction and control (i.e., successful working). If a scientific statement is useful in helping the behavioral pragmatist to achieve the goals of prediction and control with some degree of scope and precision, then the statement is considered true (see Barnes & Roche, 1994; S. C. Hayes & Brownstein, 1986; Skinner, 1974, p. 235). The correspondence between the scientific statement and an ontological reality is entirely irrelevant.

In adopting the goals of prediction and control, a behavioral pragmatist may often talk *as if* "real" events are being contacted outside of the behavioral stream. According to the behavioral pragmatist, however, such ontological talk is considered to be a particular instance of scientific verbal behavior. Imagine, for the sake of argument, that in the course of an experimental analysis a behavioral pragmatist discovers that whenever he or she arranges for event X to occur,

event Y always follows. If the pragmatist then states that, "X produces goal Y," one may be tempted to assume correspondence between the goal statement and the X-then-Y event. According to behavioral pragmatism, however, the goal statement and the event participate in a behavioral stream, and thus no correspondence between the statement and a nonbehavioral, ontological reality need be assumed. For illustrative purposes consider a more technical description. An individual may learn to respond to the statement "X produces goal Y" and the observation that X always precedes Y as being equivalent or coordinated (see S. C. Hayes & Barnes-Holmes, in press). These relations may also be coordinated with other relations that may become functionally related within the individual's behavioral stream. These functionally equivalent relations do not correspond to or refer to one another, they are simply coordinated within a set of contingencies operating on the individual's behavior. The issue of correspondence, therefore, is simply irrelevant.[3]

For the behavioral pragmatist all scientific talk participates in a single behavioral stream containing (a) the pragmatist's verbally stated goals, (b) the pragmatist's analytic talk about how to achieve them, and (c) the pragmatist's statement as to whether or not they have been achieved. Such talk is a-ontological in the sense that it is verbal behavior (i.e., it involves the dynamic and codefining interaction among stimulus and response functions). Verbal behavior, technically defined, does not *refer* or *correspond* to an external reality. From this behavioral perspective, what matters is not correspondence between what the pragmatist says and some aspect of reality, but whether the pragmatist concludes (i.e., states verbally) that a particular analysis (i.e., previous verbal behavior) led to achieving his or her particular goal (which was also verbally stated). Although behavioral pragmatism may appear somewhat "autistic" in its emphasis on the personal goals of a single pragmatist, such philosophical autism is avoided if the pragmatist adopts the goal of "getting other individuals to communicate and agree." This agreement also is always discriminated within a single behavioral stream.

By focusing on the personal goals of the behavioral pragmatist, truth always remains a behavioral issue (i.e., stating a particular goal and trying to achieve it are behavioral events). Furthermore, the personal or behavioral nature of scientific goals is emphasized in behavioral pragmatism because doing so guards against dogmatic or ontological statements concerning the goals themselves (S. C. Hayes, 1993). If a particular goal is clearly discriminated as participating in the behavioral stream of a behavioral pragmatist, he or she has no grounds on which to argue that the goal is the *best* or *right* goal in some absolute or final sense (i.e., if the goal is behavioral, then it may well change if the contingencies change; see Leigland, 1993). The only way in which goals may be justified, within behavioral pragmatism, is to point to other goals. A behavioral pragmatist might say, for example, that achieving prediction and control will be of benefit to the wider culture, in areas such as education and health (i.e., achieving prediction and control is justified by pointing to the additional goal of helping the wider culture). If asked to justify this latter goal, then another goal

[3] The idea that a behavioral pragmatist is unable to say *anything* that corresponds to an ontological reality may be seen by some as an unbearable conceptual or even psychological burden. In other words, if even scientific statements are behavioral events, and as such are not ontologically true, what is the point in doing science? Interestingly, Skinner did not appear to be overly concerned with this issue when he wrote, "If human behavior is as fully determined as the behaviorist says it is, why does he bother to write a book? Does he believe that anything matters? . . . Similar questions might as well be asked of the author of a book on respiration: 'If that is respiration, why do you go on breathing?' " (1974, pp. 247–248). Or, more appropriately in the current context, "If that is truth, why do you go on searching for it?"

may be identified, such as feeling good by helping the wider culture (i.e., helping others is justified by pointing to the goal of feeling good). Obviously, if a behavioral pragmatist argued that he or she had identified *the* best or right goal, this would clearly undermine the third assumption of behavioral pragmatism: One cannot escape the behavioral stream and contact a nonbehavioral event, such as an ontologically correct goal. For the behavioral pragmatist, scientific goals are like any other instance of verbal behavior—they are uttered and are subsequently strengthened, maintained, or weakened by the contingencies of reinforcement.

Behavioral Pragmatism: Conclusion

Behavioral pragmatism is an unusual and perhaps threatening philosophical position. As a philosophy, it leaves each of us hanging naked in the wind with nothing but our own personal goals for protection against the cold wind of professional and academic life (S. C. Hayes, 1993). This is not a position that most scientists or philosophers enjoy. The histories of such individuals often push them towards science and philosophy because they want definite and final answers to the mysteries of the universe. Furthermore, the wider community often confers upon the scientist expert shaman- or priest-like qualities. Naturally, few of us want to sacrifice this luxury at the altar of verbal or philosophical consistency. We appear to have a choice, therefore, between living with the discomfort created by there being no absolute or ultimate point to science, beyond that provided by our own goal statements, or living with the philosophical problems or verbal inconsistencies created by the assumption that scientific talk corresponds (at least potentially) to an external reality. I have chosen to live with the discomfort of a pointless, goal-based science, and I call this solution to the problem of reality and truth *behavioral pragmatism*.[4]

Behavioral Pragmatism: Implications for Hayes and Quine

I will now return to the issues raised by Hayes and Quine, and consider the implications of behavioral pragmatism for their respective positions.

Hayes. The foregoing description of behavioral pragmatism allows one to appreciate how easily behavioral pragmatism fits into what Hayes describes as a one-universe system. Although I previously used the phrase *behavioral stream*, I could easily have used the phrase *behavioral universe*. From this perspective, the activity of the behavioral pragmatist constitutes a single universe in which all events are contained; there is no separation ontologically between the pragmatist's talk and the talked about. From this perspective, a behavioral pragmatist engages in "spot-removing language" because it has proven useful in achieving specific goals in the past, not because it constitutes an appeal to ontology. Thus, when a behavioral pragmatist exhorts, "Look at the data, it's there in black and white," this is a response that in the past has produced reinforcing consequences. Whether the data actually reflect some form of ontological reality is irrelevant. Consequently, Hayes's claim that pragmatists rely ultimately on a correspondence-based truth crite-

[4] The reader may note some similarity between behavioral pragmatism and the philosophical pragmatism of Richard Rorty (e.g., 1989). In both cases, language is considered to be a tool or behavioral repertoire for achieving certain goals, and as such does not constitute a representational system for capturing the "true" nature of "reality." Despite this clear point of contact between Rorty's philosophy and behavioral pragmatism, the two are quite different. As indicated earlier, for example, the latter is strongly rooted in the epistemology of behavior analysis and the philosophy of radical behaviorism, neither of which, as far as I am aware, has influenced Rorty's work. In any case, a detailed treatment of the relationship between these two forms of pragmatism is beyond the scope of the current article.

rion does not apply to behavioral pragmatism.

Quine. Quine's concept of the observation sentence is quite acceptable from the behavioral pragmatist's perspective, because the concept neatly removes the problem of correspondence by unifying observation and description into a single conceptual unit (not unlike Skinner's, 1957, concept of the tact). Quine departs from behavioral pragmatism, however, in suggesting that one might look to agreement among observation sentences as the basis for truth, rather than to the personal goals of the individual making the observation sentence. For the behavioral pragmatist, Quine's observation sentence is a useful tool that scientists and others often use to achieve certain goals. One of these goals may be to achieve agreement among the members of a particular community (perhaps because such agreement may help to achieve yet other more long-term goals). For the behavioral pragmatist, therefore, Quine's concern with agreement, and the resultant problem of what is actually being agreed about, are irrelevant and thus the problem of homology is completely avoided. On balance, I should stress that a behavioral pragmatist may well be interested in how stimuli impinge upon the receptors of an organism (apparently raising the issue of homology). However, the relevant analyses would have to be couched in the language of function, not structure; the pragmatist would not look for key structural similarities within or across the receptors of individual organisms to account for agreement about stimulating events. Instead, he or she would focus on the structure of receptual activity only in terms of its functional relations to other stimulating and perhaps response events. For example, different patterns of receptor activity in a particular organism (e.g., excitation of rods and cones) may be grouped into one response class, because they are found to be functionally related to a particular stimulating event (e.g., the presentation of a red light). Similarly, that same class of patterns of receptor activity may be considered as the first part of a behavior–behavior relation, if the class was found to be functionally related to a particular class of verbal reports (e.g., "I saw red"). In summary, the question of homology, raised by Quine, becomes a problem only if one assumes that final explanations for behavioral events will be found in the structural patterns of receptor activity per se. If the activity of such receptors is incorporated into the functional analysis of behavior, the problem of homology disappears. In other words, the question of homology is completely avoided within the philosophical framework of behavioral pragmatism.

SUMMARY AND CONCLUSION

The current article began by examining Hayes's claim that pragmatism relies ultimately on a correspondence-based truth criterion. In order to evaluate her claim, Quine's concept of the observation sentence was considered. Although the concept appears to remove the problem of correspondence, it reemerges in Quine's appeal to agreement as the basis for truth. Quine therefore suggests that we simply ignore (but not avoid) the problem on pragmatic grounds. Consequently, it was argued that there may some substance to Hayes's claim that pragmatism relies ultimately on correspondence as a truth criterion. Behavioral pragmatism was then introduced as a means of circumventing both Hayes's claim and Quine's implicit appeal to correspondence. Although successful in achieving these aims, behavioral pragmatism does rob science and philosophy of any final or absolute objective beyond the pragmatist's own personal goals. Nevertheless, behavioral pragmatism cannot be criticized for generating the same philosophical problems that have come to be associated with correspondence-based truth, nor can it be criticized for ap-

pealing to both correspondence- and utility-based truth. In defining truth behaviorally, the behavioral pragmatist always appeals to utility, and never correspondence, as a truth criterion.

REFERENCES

Barnes, D. (1989). Behavior-behavior analysis, human schedule performance, and radical behaviorism. *The Psychological Record, 39,* 339–350.

Barnes, D., & Roche, B. (1994). Mechanistic ontology and contextualistic epistemology: A contradiction within behavior analysis. *The Behavior Analyst, 17,* 165–168.

Barnes, D., & Roche, B. (1997). A behavior-analytic approach to behavioral reflexivity. *The Psychological Record, 47,* 543–572.

Chiesa, M. (1994). *Radical behaviorism: The philosophy and the science.* Boston: Authors Cooperative.

Goodman, R. B. (1995). *Pragmatism.* New York: Routledge.

Hayes, L. J. (1993). Reality and truth. In S. C. Hayes, L. J. Hayes, H. W. Reese, & T. R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 35–44). Reno, NV: Context Press.

Hayes, S. C. (1993). Analytic goals and the varieties of scientific contextualism. In S. C. Hayes, L. J. Hayes, H. W. Reese, & T. R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 11–27). Reno, NV: Context Press.

Hayes, S. C., & Barnes-Holmes, D. (in press). *Relational frame theory: Creating an alternative behavioral agenda in language and cognition.* Reno, NV: Context Press.

Hayes, S. C., & Brownstein, A. J. (1986). Mentalism, behavior-behavior relations, and a behavior-analytic view of the purposes of science. *The Behavior Analyst, 9,* 175–190.

Leigland, S. (1993). Scientific goals and the context of justification. In S. C. Hayes, L. J. Hayes, H. W. Reese, & T. R. Sarbin (Eds.), *Varieties of scientific contextualism* (pp. 28–33). Reno, NV: Context Press.

Quine, W. V. (1960). *Word and object.* Cambridge, MA: MIT Press.

Quine, W. V. (1974). *The roots of reference.* La Salle, IL: Open Court.

Quine, W. V. (1990). *The pursuit of truth.* Cambridge, MA: Harvard University Press.

Roche, B., & Barnes, D. (1997). The behavior of organisms? *The Psychological Record, 47,* 597–618.

Rorty, R. (1989). *Contingency, irony, and solidarity.* Cambridge: Cambridge University Press.

Schoenfeld, W. N., & Farmer, J. (1970). Reinforcement schedules and the "behavior stream." In W. N. Schoenfeld (Ed.), *The theory of reinforcement schedules* (pp. 215–245). New York: Appleton-Century-Crofts.

Skinner, B. F. (1938). *The behavior of organisms: An experimental analysis.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1957). *Verbal behavior.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1969). *Contingencies of reinforcement: A theoretical analysis.* New York: Appleton-Century-Crofts.

Skinner, B. F. (1974). *About behaviorism.* London: Jonathan Cape.