As a form of human action, mystical exposition constitutes an aspect of the subject matter of behavior science. Presented for analysis, therefore, is a mystical conceptualization of human experience in which vexing problems of language, logic, truth, reality, time, and utility are confronted. Commonalities among the solutions achieved by mystics and contemporary physicists to these problems are discussed, culminating in the insurmountable problem for both of the unity of opposites. The value of this exposition for behavior analysts is demonstrated in indications that behavior science is headed down this same path and may thereby expect to ponder the same questions as are occupying mystics and physicists.

Behavior science occupies a unique position in the constellation of intellectual disciplines. Its uniqueness lies in its subject matter, namely behavior, which includes the behavior of all those who count themselves among the intellectual workers of our culture. Among the materials available for analysis by behavior scientists, therefore, are the verbal actions of those holding views regarded as incompatible with those of behavior analysts. Mystical conceptualizations of human experience are one such example.

Mystical views are not as incompatible as they might first appear however. In fact, many of the issues with which mystics have struggled have begun to present themselves to physicists, who have, oddly enough, articulated similar understandings. It seems likely, therefore, that behavior analysts may at some point find themselves addressing some of these same issues and, in being forewarned, may be better prepared to do so. It is toward this end that the mystical conceptualization of human experience is presented in the following pages.

The philosophical category of mysticism encompasses many different traditions. What distinguishes these traditions is not the end to which they are aimed: All mysticisms are inevitably drawn to the same end. Neither do they differ in their fundamental premises, however.
implicitly these may be contacted. Instead, they differ in the extent to which those premises sustain a consistency throughout; and this in turn reflects their positions along the path to the end.

Providing an understanding of mysticism, therefore, entails more than merely characterizing the end to which it is aimed, or to that which is referred to as "mystical experience." Required, as well, is an understanding of the path by which it may be approached. It is difficult to make sense of a path when its destination is unclear, however. Hence, my plan is to first depict the destination. From this source, I will attempt to illuminate the path. To do so, it will be helpful to derive the underlying premises of mysticism as a philosophical system; and in articulating the systemic aspects of mysticism, it will become obvious that mysticism shares features with other philosophical systems, including those underlying contemporary physics, and science more generally. These commonalities, as well as their points of departure, will be addressed as they arise. Finally, I will point to the value of this exposition for behavior scientists.

What is Mysticism?

From the outset it should be noted that mysticism is not a fully elaborated philosophical system. It is, instead, a loosely organized collection of premises, held to be self-evident. The evidence comes from experience; which is to say, the foundation of all categorical concepts is believed to be simple, unsophisticated experience (Suzuki, 1964, p. 33). It is for this reason that mysticism is always characterized, in its most basic form, by reference to direct experience. Mysticism, in this sense, shares a commonality with phenomenology and existentialism. The existential focus on existence rather than essence reflects this same understanding of evidence (Hammond, Howarth, & Keat, 1991, pp. 133-142; Merleau-Ponty, 1967).

Mystical Experience

Mystical experience, that is, the end to which mystics aspire, is depicted in a number of interrelated aspects, as described below.

The All-Inclusive Whole

The most distinctive aspect of mystical experience is the appreciation of all phenomena as manifestations of a basic oneness (Capra, 1976, p. 117). As the Avatamsaka philosophy teaches: "The One embraces All, and All is merged into One. The One is All, and All is the One. The One pervades All, and All is in the One."

Though there might be differences in its expression, this is not an unfamiliar premise to contemporary scientists of every variety (Wheatley, 1992). Physicists, in particular have operated on the premise of unity-as-reality for many years (Capra, 1976; Zukav, 1979). Bohm and Hiley (1975) describe this burgeoning understanding in the following passage:
One is led to a new notion of unbroken wholeness which denies the classical idea of analyzability of the world into separately and independently existing parts... We have reversed the usual classical notion that the independent “elementary Parts” of the world are the fundamental reality, and that the various systems are merely particular contingent forms and arrangement of these parts. Rather, we say that the inseparable quantum interconnectedness of the whole universe is the fundamental reality, and that relatively independently behaving parts are merely particular and contingent forms within this whole.

A concept like interdependence, as understood in physics and other sciences, in focusing on relations among things, as opposed to things in relation, is a step in the right direction. It doesn’t go far enough, though to make contact with mystical views in this regard. There is still implied in scientific philosophy an enormity of things or forms upon which relations among them may be construed as reality. This is not the sense in which the oneness of reality is understood in mysticism.

Participation as Reality

In mystical tradition, it is not the whole that constitutes reality, but rather the experience of participating in the whole. Participation here is carefully construed. One’s participation in the all-inclusive whole, that is to say, one’s experience of the oneness, is conceptualized as the oneness. There is no reality other than this; and it is this interpretation of reality that gives mysticism the solipsistic character that has yet to develop in scientific philosophy (although see Hayes, 1993, 1997). Harding (1986), in a brilliant essay entitled “On Having No Head,” articulates the solipsistic implications of the participation premise, as follows:

The reality behind all appearances is lucid, open, and altogether accessible. I know my way in and out of the secret innermost heart of every creature... because we are all one Body, and that Body is one void. And that Void is this void, complete and indivisible, not shared out or split up into mine and yours and theirs, but all of it present here and now. This very spot, this observation post of mine, this particular “hole where a head should have been” — this is the Ground and Receptacle of all existence, the one Source of all that appears... as the physical or phenomenal world, the one infinitely fertile Womb from which all creatures are born and into which they all return. It is absolutely Nothing, yet all things; the only Reality, yet an absentee. It is my Self. There is nothing else whatever. I am everyone and no-one, and Alone.

What Harding is pointing to in this passage is that participation in the oneness means the dissolution of multiplicity. This aim distinguishes mysticism from other philosophical systems more acutely than any other
characteristic. The dissolution of multiplicity is often contrasted with dichotomous thinking in mystical writings. It is articulated as a denial of dualities of every sort, among which is the duality of the observer and the observed. In the mystic’s oneness, subject and object fuse into a unified, undifferentiated, boundless, whole. In the all-inclusive whole there are no things to be observed and no observer to observe them. The apprehension of the all-inclusive whole is achieved, thereby, when the world of the senses is transcended and the notion of things is left behind (Capra, 1976, p. 128). To reiterate, reality is not the all-inclusive whole in mystical perspective; it is rather the experience of participating in that whole.

The idea of reality as participation, in contrast to observation, underlies cosmic understandings in physics as well. It was this appreciation of the observer’s participation in observation, as it applied to both spatial and temporal specifications, that eventuated in the concept of space-time (Sachs, 1969). The irony of this situation is that although both space and time lost their reality status in an appreciation of the participatory status of the observer, no such realization appears to have impacted confidence in the ontological character of space-time. This oversight is explicit in Minkowski’s famous lecture; and although a great deal more has been constructed about this entity since its conceptualization, its reality status does not appear to have come into question. Scientists are still discussing space-time as an existent which knowers may eventually come not only to know, but to know why (Hawking, 1990, pp. 174-175). In short, the duality of observer and observed, though violently challenged in scientific circles, remains intact. This is not what participation—what experience—what reality—means in mysticism.

The Void

An intimately related and equally pervasive feature of mystical experience is the apprehension of the void. Paradoxically, in mystical thinking, the all-inclusive whole is synonymous with the void. Mystical writings are permeated with ideas of emptiness, nothingness, quietude, stillness, no thought, and other similar notions (Suzuki, 1964, p. 50). The assertion of nothingness in these writings is another way of speaking of the whole as a unity. It is another way of denying multiplicity. The whole has no parts and pieces. The whole is comprised of no things, and no one, conceptualized as an independent existent, to make contact with them. The all-inclusive whole is the void; the void, the all-inclusive whole.

The Unity of Opposites

This identity of the all with the none has given rise to the view that mysticism is nihilistic (Suzuki, 1964, p. 39). This is a common misunderstanding, which, as all misunderstandings of mystical thinking, has its source in dichotomous thinking. Lay persons and scientists alike are so accustomed to thinking in terms of dichotomies that they have
come to see the referents of their constructions as independent existents. They implicitly acknowledge a here and there, this and that, then and now, as existent and opposite realities. The most fundamental, and thereby most abstract of these dichotomies is that of yes and no. In nonmystical thinking, the circumstances under which "yes" applies are held to be not the same as those under which one would say "no." The realities in these cases are held to be different, and further, irreconcilable.

This intellectual history makes it difficult for scientists to make sense of the mystic's blend of assertion and denial. Nonmystics cannot see that in affirming the all-encompassing whole one is also affirming the void; and likewise, in denying the void, one is also denying the whole. Nonmystics believe it possible to affirm only one of these two, the other necessarily denied in that affirmation. Nonmystics do not see it possible for both and neither to be affirmed at the same time: These are opposite realities. Hence when mystics speak of the void, scientists see this an affirmation of nothingness in place of allness, and retreat from the void and mystical understandings as representing a dangerous alliance with nihilism (Schnaitter, 1987).

Nothing is not the antithesis of everything in mystical understanding, however. Just as there is no good without bad, no right without wrong, happy without sad, there is no none without all. The difference between these lesser dichotomies and that of the all and the none, though, is that although both good and bad, right and wrong, happy and sad may be said to prevail in the context of the all, the all is a super-ordinant category in which the none cannot participate. At least, the none cannot participate in the all as the none, because when both the all and the none are unified in the oneness, neither prevails as itself. The oneness constitutes a newness in which both and neither prevail. The oneness is the neither-both, the yes-no, the all-none, characterized in Zen tradition as the experience of nirvana. This understanding is reflected in the following passage:

Thus . . . all things have the character of emptiness, they have no beginning, no end, they are faultless and not faultless, they are not perfect and not imperfect. Therefore . . . here in this emptiness there is no form, no perception, no name, no concepts, no knowledge. No eye, no ear, no nose, no tongue, no body, no mind. No form, no sound, no smell, no taste, no touch, no objects . . . There is no knowledge, no ignorance, no destruction of ignorance. . . There is no decay nor death. . . There is no knowledge of Nirvana, no obtaining of it, no not-obtaining of it. (Taken from the Prajnaparamita-Hridaya Sutra, as cited in Suzuki, 1964)

Nihilism, as a philosophical system, rests on the assumption that the all and the none constitute a duality, as it is only in contrast to the all that the none can be conceptualized from this perspective (Deleuze, 1983,
In mystical thinking, by contrast, the all and the none are not separate, independent realities. Experientially, they are the same and the only reality.

**Dynamism**

Finally, mystics and nonmystics alike see the universe as a *dynamic* unity, a oneness with the fundamental characteristic of change. For example, in discussing how the world is experienced in a state of enlightenment, Suzuki (1964) comments that "the past and future are both rolled up in this present moment of illumination, and this present moment is not standing still with all its contents, for it ceaselessly moves on." There is, as such, a sense of the oneness as an *evolving* present. Likewise, in physics the assumption of change is fundamental. The universe is not only held to be dynamic at a subatomic level, but also at a cosmic level. Capra (1976, p. 181) captures this understanding as follows: "When we study the universe as a whole . . . we have reached the largest scale of space and time; and (as was the case at a subatomic level), at that cosmic level, we discover that the universe is not static—it is expanding!"

In summary, in mystical understanding, a dynamic oneness, which is both everything and nothing is alluded to. Participation in this oneness is understood to be reality. The mystic's path leads to this end—to what is known as mystical experience.

**The Way to Mystical Experience**

The way to mystical experience is implied in the end to which the path leads. The path is obscured by a number of what appear to be insurmountable barriers, however. Among them, for example, is the poverty of language—the problem of expressing the inexpressible. This is a problem recognized not only by mystics, but also by contemporary physicists and philosophers. The mystic's solution to this problem, as with others encountered along the way, differs from those of other intellectual workers, however. The result is that mysticism is held to be illogical (Suzuki, 1964, pp. 58-65); and other formulations are defended as merely other-logical.

We turn now to these barriers, beginning with language. My aim in this section is first to understand the nature of these problems and the conflicts produced in adopting ordinary solutions for them; and secondly, to examine the solutions ultimately adopted by both mystics and nonmystics, specifically with respect to their adequacy in avoiding systemic inconsistencies.

**The Barrier of Language**

The trials of Zen pupils to reach the oneness, in the face of what appears to a nonmystic as bizarre and obscure instruction, are legendary. Examples of such instruction abound in Zen literature. The inclusion of a few of them here may be helpful in understanding the
mystic's perspective. We consider first the following interaction between pupil (Seihei) and master (Suibi), concerning the fundamentals of Buddhism, as cited in Suzuki (1964, p. 73):

‘What is the fundamental principle of Buddhism?’
‘Wait,’ said Suibi; ‘when there is no one around I will tell you.’
After a while Seihei repeated the request, saying, ‘There is no one here now; pray enlighten me.’
Coming down from his chair, Suibi took the anxious inquirer into the bamboo grove, but said nothing. When the latter pressed for a reply, Suibi whispered, ‘How high those bamboos are! And how short those over there!’

A second exchange, initiated by a Zen philosopher to a master, concerns the logic of Zen understandings (cited in Suzuki, 1964, p. 57):

‘With what frame of mind should one discipline oneself in the truth?’
Said the Zen master, ‘There is no mind to be framed, nor is there any truth in which to be disciplined.’
‘If there is no mind to be framed and no truth in which to be disciplined, why do you have a daily gathering of monks who are studying Zen and disciplining themselves in the truth?’
The master replied: ‘I have not an inch of space to spare, and where could I have a gathering of monks? I have no tongue, and how would it be possible for me to advise others to come to me?’
The philosopher then exclaimed, ‘How can you tell me a lie like that to my face?’
‘When I have no tongue to advise others, is it possible for me to tell a lie?’
Said (the philosopher) despairingly, ‘I cannot follow your reasoning.’
‘Neither do I understand myself,’ concluded the Zen master.

One final example, again an exchange between a master and a pupil, (as cited in Suzuki, 1964, p. 84) grapples with knowing as doing:

Sekkyo . . . asked one of his accomplished monks, ‘Can you take hold of empty space?’
‘Yes sir,’ he replied.
‘Show me how you do it.’
The monk sketched out his arm and clutched at empty space. Sekkyo said: ‘Is that the way? But after all you have not got anything.’
‘What then,’ asked the monk, ‘is the way?’
The master straightaway took hold of the monk’s nose and gave it a hard pull, which made the latter exclaim: ‘Oh, oh, how hard you pull at my nose! You are hurting me terribly!’
‘That is the way to have a good hold of empty space,’ said the master.

The peculiarity of these instructions does not reflect a perversity on the part of mystics. It is, rather, a necessity, given their premises concerning reality and the inadequacy of language to make contact with it. The dissolution of distinctions, as implied in an appreciation of the oneness, cannot be achieved by language. On the contrary, language is
the very means by which distinctions are created. As such, reason and consciousness are regarded as impediments to understanding. Enlightened understanding is achieved in silence. As Suzuki (1964, p. 54) explains it: "In Zen tradition, the Buddha reveals himself when he is no more asserted; that is, for Buddha's sake, Buddha is to be given up.

This is the only way to the realization of the truth of Zen. So long as one is talking of nothingness or of the absolute, one is far away from Zen, and ever receding from Zen. The only way to get saved is to throw oneself right down into a bottomless abyss."

This same conclusion is reached by more conventional logic. Through a process of verbal abstraction and generalization, the here and there, this and that, now and then of ordinary experience collapse into more and more inclusive categories until we arrive at the one category of this event in which the all is implied. To get from one to none, though, to achieve the synonymy of the all and the none, requires a different strategy. In other words, whereas verbal behavior is a means by which we may be able to reach the point of transcending ordinary experience, so long as we engage in verbal behavior toward that end, we are still on the path. Extraordinary experience occurs in silence.

In other words, the way to salvation, is through the letting go of language. To simply not speak, not reason, not question, would appear to be an obvious strategy, given this understanding of the way. It might seem possible, in other words, to find truth in the absence of any discussion of it. One implication of this position would be that animals, having never discussed anything, much less the truth, are living in a state of enlightenment. The mere absence of language does not constitute a state of enlightenment in Zen perspective, however. Enlightenment is achieved in the letting go of language. It is the act of letting go that achieves a higher affirmation in Zen understanding. In Suzuki's (1964, pp. 85-86) words: "Zen must never be confused with naturalism or libertinism, which means to follow one's natural bent without questioning its origin and value. There is a great difference between human action and that of animals, which are lacking in moral intuition and religious consciousness. The animals do not know anything about exerting themselves in order to improve their conditions or to progress in the way to higher virtues."

Accordingly, the mystic's solution to the problem of language takes a different form than merely abiding in silence. Silence might be the end, but it is not the means. Rather, the letting go of language is an active process, provoked by various methods of deliteralization of language. Among them are speaking in contradictions; answering questions with nonsequiturs or by repeating the question; and by giving, without hesitation, different answers to the same questions over time. It is this solution that is exemplified in the bizarre and nonsensical directions to pupils cited above, and which renders the position illogical from the standpoint of nonmystics.

Nonmystics have also commented on the poverty of language as a
means of knowing what is there to be known, however. Their arguments have centered around the premise that the words we use to describe our reality are not themselves that reality. This understanding is reflected in the writings of many a renowned physicist, as Zukav (1979) has pointed out. For example, Heisenberg’s (1958) recognition of the distinction between reality and our knowledge of it is exemplified in the following remark: “What we observe is not nature itself, but nature exposed to our method of questioning.” Philosophers, likewise, have made a similar point in suggesting that although language may be necessary for carrying out the business of everyday life, it cannot grasp the bare reality of nothingness and as such should not be assumed to disclose the world as it actually is (e.g., Heidegger, *On Time and Being*, trans., Joan Stambaugh, 1972). Similarly, Ryle (1979) and Wittgenstein (1969) have made the point that the meanings of words are dependent on social practices. That is to say, there are no *absolute* meanings of words which correspond, in the sense of “truthfulness,” to the intrinsic properties of things and events conceptualized as reality. In more precise terms, the eminent psychological philosopher, J. R. Kantor (1950, 1963, 1981) has for decades warned of the danger to scientific advancement of confusing constructs with the events from which they were merely derived.

These arguments, denying the adequacy of language to represent reality, should not be taken to imply that reality cannot be known. They suggest, instead, that other means of knowing are required for this purpose; and this is due, in part, to certain assumptions about what is there to be known. The difficulty here is that what is assumed to be there to be known, and the means suggested or implied in knowing it, defy ordinary understanding and logic.

*The Barrier of Logic*

The deficiency of ordinary logic in making contact with the known and the means of knowing has not gone unnoticed in the physical sciences. Classical logic assumes that every element of physical theory must have a counterpart in physical reality, such that there is sustained a one-to-one correspondence between theory and reality. A problem arises, however, when this logic is applied to particular kinds of phenomena, namely quanta. In this domain, classical logic produces more than one representation of such phenomena, and contradictory ones at that. A quantum comes to be understood as both a wave (an action), as well as a particle (a thing), which is everything a wave is not (Zukav, 1979, p. 260). As Max Born (1957, p. 97) explains it, the difficulty is that ordinary language and logic compel us to understand things by visualizing them; and quanta, being unlike other things of our experience, cannot be understood by this means. This is to say, none of the words or concepts we use to describe ordinary physical objects, such as their position, velocity, color, size, and so on are applicable to quantum phenomena (Heisenberg, 1958, p. 114).

The solution to this problem, adopted by most physicists, is to make
use of a nonrepresentational language to explain quantum phenomena (Zukav, 1979, p. 261). The solution is achieved, in other words, by retreating to mathematical analysis. This solution is workable, but only in so far as the lingering problem of a mathematical analysis of "what" is not seen as necessary to address.

The latter problem—what the "it" is that quantum mechanics describes—was initially resolved in the 1927 Copenhagen Interpretation of Quantum Mechanics, namely, that it doesn’t matter what quantum mechanics is about. What matters is that it works as an explanation in all experimental situations (Zukav, 1979, p. 37). The solution achieved by the Copenhagen Interpretation, in other words, was that the truth of a theory does not depend on one-to-one correspondence between aspects of the theory and aspects of reality, but was instead a matter of the utility of the theory in predicting events, or more accurately, event probabilities.

These solutions, both the employment of a nonrepresentational language and a pragmatic interpretation of truth, are not themselves without problems. We may deal with each of these problems in turn.

The problem of nonrepresentation. Mathematics is not, in fact, a nonrepresentational language. Mathematics evolved out of counting operations which are premised on the existence of objects or events to be counted. That increasingly elaborated and manipulated formulations of these basic operations lead to event constructions that are not able to be visualized, does not imply that the formulation is fundamentally nonrepresentational or nonreferential. With perhaps the exception of certain conceptualizations of this enterprise as a kind of game or intellectual intrigue, mathematics is not taken to be a frivolous occupation. What this means, in essence, is that it is referential in kind. In other words, mathematics does not purport to formulate an understanding of nothing. That ordinary language cannot make contact with the something to which mathematics alludes, does not change the fact that mathematics, as a symbolic system, assumes a something alluded to.

In a similar vein, Finklestein (1976, as cited in Zukav, 1979, pp. 261-280) takes issue with the mathematical analysis solution. He argues that the problem confronted in attempting to describe and explain quantum phenomena is not peculiar to particular kinds of languages or symbolic systems, but is instead an inherent deficiency in symbolic analysis per se. In his view, symbolic systems of every variety, including mathematics, operate against a background of classical logic. That is, they presume to mimic reality on a one-to-one basis, serving as a substitute for the experience of that reality. The reality they imitate is not the reality experienced, however. What is needed, according to Finklestein, is not an artificial substitute for experience, but rather a means of alluding to it, which neither attempts to replace it nor to mold our perception of it. In short, the true language of physics, as Finklestein would have it, is a kind of experience that resists description, and toward which ordinary logic cannot proceed.
What remains at issue, given Finklestein's approach, is how one communicates this experience—how one expresses the inexpressible. His response to this question is that you can't communicate it. You merely arrange conditions, by telling others how to make quanta and measure them, for example, through which those others may come to have the same experience. This is precisely the strategy employed by mystics and more traditional philosophers in solving the problem of communication. For example, existential philosophers provide others a means of experiencing their understanding by writing novels (e.g., Sartre, 1947). The mystics' solution, namely exposing their pupils to language stripped of ordinary meaning, while somewhat more unconventional a practice, achieves the same outcome.

The solutions to the problems of language and logic achieved in all of these domains fall short of their aims nonetheless. In all of these treatments there is sustained the view, explicitly or implicitly, that language and logic have a place in knowing—that they have utility—but up to only a certain point or with respect to only certain phenomena. From a philosophical perspective, both mystical and nonmystical, it is only in contacting the All and/or the None that language ceases to have utility as a means of knowing. In physics, it is in making contact with the infinitesimally small that language cannot achieve its more usual purpose. In these cases, genuine knowing, it is argued, can come only from direct experience.

This argument lacks coherence. After all, in what sense is language not an aspect of direct experience? How can saying "hello" be conceptualized as different in kind from waving the hand or nodding the head as a form of greeting? That is to say, language acts are no more nor less "real" than any other sort of act. Moreover, even when language plays a substitutive role, the experiences engendered by it are no less aspects of direct experience than any other. To imagine the face of someone upon hearing his or her name called is not fundamentally different from seeing the face upon confrontation with the person directly (Parrott, 1984, 1986).

From this perspective, it does not seem plausible that the mystic's objection to language is that it does not participate in direct experience. Surely it does. Moreover, if language were so completely useless, why would so much be written about mysticism and mystical experience? How is it that language is useful in approaching the edge of the abyss, yet so completely useless once over the edge? Likewise, how could language be the fundamental means of achieving scientific knowledge, including the "discovery" of quanta, yet be so completely nonserviceable in characterizing its product? How is it not contradictory to solve a genuine problem by denying the utility of the very thing that led to the problem in the first place? These arguments show considerable finesse, but they are not convincing. They are examples of dichotomous thinking, a logical formulation already found wanting in both mystical philosophy and physical science.
Dichotomies, in both Eastern and Western thinking, have a way of falling away, as discussed previously. It seems likely that the dichotomy implied of the utility of language as logical understanding and explanation will come to this same end. Not, I believe, in discovering that language is useful beyond what appear, at present, to be its boundary conditions; but rather in the pushing back of those boundaries until the utility claim vanishes altogether.

To suggest that language may not be "useful" is, admittedly, an odd suggestion. Verbal behavior is the means by which we act in concert with all that is not a part of the immediate situation. It is the means by which we are able to conceptualize the past, the future, the remote, and the plausible (Hayes, in press). How could this extension of direct experience not be useful? More than this, how could civilization have come about in the absence of language? All that we might include as aspects of civilization—the procurement of food and other resources, protection from the elements and predators, the coordination of people toward these ends—all is fundamentally dependent upon the participation of language in human experience. How is it possible to conceive of language as lacking in utility?

The arguments in support of this rather unusual claim about language, come from two sources; one having to do with the problem of truth and its implication for reality; the other with concept of time. Let us consider these issues in turn.

The problem of truth. With regard to the issue of truth, we may first acknowledge that this concept has numerous interpretations (Pepper, 1942). This is to admit that truth is an outcome of logical operations; and, as such, what is held to be true by one set of operations is not necessarily so by another (Hayes, Hayes, & Reese, 1988). Among these interpretations of truth is the utility criterion of pragmatic thinking. This criterion gained popularity out of two sets of considerations. The first of these has already been addressed. To reiterate, support for pragmatic logic arose out of failed attempts to characterize the "it" for which quantum theory constituted an explanation. The workability of the theory in predicting event probabilities was thereby taken to be sufficient to establish the truth of the theory, despite an absence of specification as to what the theory was about.

The second source of support for the pragmatic interpretation of truth came with an appreciation of certain insurmountable problems in achieving truth by way of a correspondence criterion. In order to formulate truth by this means, it is necessary to contact reality directly and without bias. In the absence of these constraints, it is not possible to establish the one-to-one correspondence between aspects of reality and aspects of theory, as demanded by classical logic (see Hayes, 1993, for further discussion). What was needed was a truth criterion that didn't depend on correspondence and was, further, free of bias. The utility criterion of pragmatic logic appeared to overcome the correspondence problem in claiming that theories were true to the extent that they were
useful in the achievement of particular ends. The bias problem was handled in suggesting that corroboration among observers as to what was useful was not necessary in formulating truth.

The utility criterion of truth is not as powerful as these arguments suggest, however. Pragmatic logic does not overcome the correspondence problem: An assessment of the utility of a theory depends as much upon a correspondence between the world and what we say about the world as the classical theory required. This is the case because the utility of a formulation is a way of referring to certain goals having been achieved; and in making this assessment, we are claiming that what we say about goals having been achieved corresponds to their having, in fact, been so. The latter is a matter not of language, but of the world represented by language (see Hayes, 1993, for further discussion). In other words, it is not possible to assess the utility of a theory in the absence of a one-to-one correspondence between the world of ends having been met and what we say about having met them.

Secondly, pragmatism does not solve the bias problem. As a psychological occurrence, an observer's description of his or her observations cannot be understood to reflect an absolute or universal reality, but merely the reality historically and uniquely experienced by the observer. No description is free from the idiosyncratic and cultural histories of the describer. Pragmatism, as such, does not overcome the problem of bias in truth-telling, it merely entertains multiple biases.

More fundamental than these problems is the problem of making contact with reality. Both correspondence- and utility-based theories of truth are characteristic of realistic philosophies in the sense that both assume the presence of an independently existing universe that is in some way knowable. Both are what might be called two-universe systems, assuming a universe of which we speak and a universe of speaking. The insurmountable problem for two-universe systems is their inability to contact the existence of that about which we speak except by speaking about it. This is to say that what anyone observes is not known until some sort of report is provided. In other words, we cannot compare our observations with our descriptions of observations, so as to assess their correspondence, because in order to do so we must first convert our observations into descriptions, with the result that we are no longer comparing descriptions with observations but descriptions with other descriptions. In short, the only things that can correspond as a means of determining the truth of a formulation 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 is true if it corresponds to what we say now. This circumstance leads to the conclusion that there is no justification for the adoption of one set of beliefs over another (see Hayes, 1993, for further discussion). Pragmatism does not constitute a solution to this problem.

The larger issue underlying this conclusion is the status of the concept of truth within the systemic foundations of contemporary
science. There is, in other words, some question as to whether truth, however interpreted, is a meaningful construction (Hayes, 1993). Physicists aspire to admit of only one reality, one universe. It is further a reality in which distinctions are progressively dissolving into a oneness, a seamless whole. In the present context, speaking constitutes that reality. Not speaking about something, though. Rather, simply speaking—nonreferential speaking.

In a one-universe system of this sort, admitting that what we say is true only if it corresponds to what we say does not present a problem. In the first place, there is nothing else to be used in making such an evaluation; and in the second, there really is no truth to be told. Truth, bear in mind, is a relation between two things existing in different domains of existence. That is, truth pertains to relations between what we say and that about which we say it—between verbal and nonverbal events. Verbal events are not true in and of themselves; neither are nonverbal events. In short, when existence is confined to only one domain, it is neither true nor false. Truth is a two-universe concept. In a one-universe system, to which both mystics and physicists aspire, truth has no meaning (Hayes, 1993).

What does have meaning in a one-universe system in which speaking is held to be the existent, the reality, is its consistency or coherence. A correspondence between what one says and what one has said is not an insignificant issue in such a system. On the contrary, it is the only reason for saying anything at all. Progress in such a system, moreover, is measured in the construction of ever more inclusive categories into which all one has to say may find a place and nothing so incoherent as to be unfit for inclusion survives the telling. Progress is the saying of less and less until the boundaries of there being nothing to say are reached—until the categories into which all one has to say are equal to one, to the one category of the universe as a whole. Beyond this acknowledgment of the oneness is the oneness itself in which there is no-thing to observe and no-one to observe it—nothing to say and no one to say it.

In taking this perspective on language and understanding the problem of truth implied by it, the issue of reality can not help but be confronted. Both scientists and mystics have commented on this issue, and with some considerable similarity of opinion. We turn now to the problem of reality.

The Problem of Reality

The notion that there exists a reality independent of an observer's participation in it has never been sustained in mystical thinking. This idea is clearly expressed in Buddhist thinking as follows: "It was taught by the Buddha . . . that the past, the future, physical space . . . and individuals are nothing but names, forms of thought, words of common usage, merely superficial realities" (Madhyamilca Karika Vritti, as quoted in Murti, 1955). In physics, a similar realization is expressed by Sachs
The real revolution that came with Einstein's theory was the abandonment of the idea that the space-time coordinate system has objective significance as a separate physical entity. Instead of this idea, relativity theory implies that space and time coordinates are only elements of a language that is used by an observer to describe his environment.

The difference between these views centers on the concept of participation and the attitude of each toward it. In mystical thinking, participation is reality. It is the appreciation of the participatory status of the observer in the observational event that constitutes the final achievement in Eastern thinking. "(Mystics) arrive in deep meditation at a point where the distinction between observer and observed breaks down completely, where subject and object fuse into a unified undifferentiated whole. This then is the final apprehension of the unity of all things" (Capra, 1976, p. 128).

In physics, by contrast, participation is not so much reality as what prevents us from knowing it in an unbiased way. The participatory status of the observer is not an end; it is rather a problem to be solved in order that other ends may be reached. For example, the problem of space and time, as verbal constructions of individual observers in different locations and moving at different velocities, is solved by asserting the reality of space-time. In Capra's (1976, p. 153) words: "Since space and time are now reduced to the subjective role of elements of the language a particular observer uses for his or her description of natural phenomena, each observer will describe phenomena in a different way. To abstract some natural law from their descriptions, they have to formulate these laws in such a way that they will have the same form in all coordinant systems, that is, for all observers in arbitrary positions and relative motion. This requirement is known as the principle of relativity and was, in fact, the starting point of relativity theory." In short, to accommodate the unique experiences of individuals which can neither be predicted nor controlled, a class construction, in which these experiences may be appreciated as members, is derived. That construction is space-time. Hence while space and time loose their reality status, space-time emerges as the existent to which an objective observer may point.

Despite this solution to the problem of the observer's role in observation, the concept of an independently existing reality remains at issue. Zukav (1979, p. 28) claims that quantum physicists find themselves pondering questions like: "Did a particle with momentum exist before we conducted an experiment to measure its momentum?"; "Did a particle with position exist before we conducted an experiment to measure its position?" and "Did any particles exist at all before we thought about them and measured them?" "Did we create the particles that we are experimenting with?" (emphasis in original). In this same vein, Wheeler (1973, as quoted in Zukav, 1979, p. 29) asks: "May the universe in some strange way be 'brought into being' by the participation of those who participate?" These questions attest to the physicists'
quandary concerning the existence status of the universe observed, at least in as much as quanta are the immediate focus.

Beyond this wonderment with respect to quanta, is its application to all phenomena. That is, if there is reason to believe that quanta are created in our discussions of them, ought not the same be wondered of all phenomena? Does this path not lead from an independently existing universe to an understanding of participation or experience as the only reality? Although physicists may be reluctant to pursue this implication of their questions concerning quanta, it seems clear that the concept of an independently existing reality has come to rest on rather shaky ground.

Buddhist views on this issue are quite explicit. As explained by Zukav (1979, p. 236): "[R]eality is 'virtual' in nature. What appear to be 'real' objects in it, like trees and people, actually are transient illusions which result from a limited mode of awareness. The illusion is that parts of an overall virtual process are 'real' (permanent) 'things.' 'Enlightenment' is the experience that 'things,' including 'I,' are transient, virtual states devoid of separate existences."

It is not only reality that is shaken in grappling with the problem of truth, however. It is also the broader question of utility. Utility is an issue of what something does—its workability toward some end as yet to happen. Something useful, in other words, serves the end of some future. This interpretation raises a question if reality is comprised of nonreferential speaking, as contemplated above, namely: To what end but its own elimination is language directed? What purpose does it serve but to eliminate itself? It is, in fact, exactly this end to which mystics assume language proceeds—what is meant by the "letting go" of language.

To understand the purported uselessness of language, beyond its own elimination; and more generally, the uselessness of all aspects of living as understood from a mystical perspective, requires further understanding of time from this perspective, as previously mentioned. The concept of time has undergone considerable revision in scientific thinking as well, and its conceptualization in this domain bears remarkable similarity to Eastern views. We turn now to the problem of time and its bearing on the issue of utility.

The problem of time. As previously discussed, the oneness, to which both mystics and scientists point, is said to be dynamic in character. Attributing a property of dynamism to the oneness is a way of referring to its transience—to its changeability over time. What exactly is implied by the attribution of this characteristic?

Hayes (1992) has commented on this issue from a psychological perspective, proposing a conceptualization of then as now—as a continuous moment of now into which the past has culminated. This notion, referred to as the "psychological present" was depicted as the immediate, instantaneous, and transient aspect of time—the durationless instant. The psychological present was further described as an evolving moment of now, with the express purpose of eliminating time
while sustaining change as the fundamental unquestionable. As for how change might be reflected in space, it was suggested that spatial change might be understood as the reorganization of space, the reorganization or rearrangement of extended mass (Hayes, in press).

These notions are problematic, however. The problem is that points in time, including the present, lie along a continuum which includes the past and future. From this standpoint, the present emerges as a point separating the past from the future. Time is not eliminated by reducing points in time to the point understood as the present, however. Time can be eliminated only by denying the continuum, denying the transience, denying change.

Physicists have also come to this realization, arguing that time is an illusion produced by the unavoidable narrowness of individual observers' visions of reality. For example, de Broglie (1949, p. 114) writes: "In space-time . . . everything for which each of us constitutes the past, the present, and the future is given in block . . . Each observer, as his time passes, discovers, so to speak, new slices of space-time which appear to him as successive aspects of the material world, though in reality the assemblage of events constituting space-time exist prior to his knowledge of them."

Zukav (1979), conversely, ponders the possibility of human beings' experiencing timelessness. In his words: "If (consciousness is a quantum process) then it is conceivable that by expanding our awareness to include functions which normally lie beyond its parameters . . . we can become aware of . . . these processes themselves. If, at a quantum level, the flow of time has no meaning, and if consciousness is fundamentally a similar process, and if we can become aware of these processes within ourselves, then it also is conceivable that we can experience timelessness" (p. 222).

Despite the promise of the conclusions reached by physicists in this regard, the arguments by which they are reached leave something to be desired. The argument based on the observer's narrowness of vision harks back to the problem of reality. It suggests, in essence, that the problem of the participatory status of the observer may be overcome by an uncritical assertion concerning reality. It suggests that while an observer is unable to make contact with it, there nonetheless exists a reality independent of the observer. The problem with this suggestion is that it was the observer's participation in the observed that raised the specter of there being no reality other than this participation to begin with. They can't have it both ways. The physicists' problem in this area is a lack of sophistication in psychology. In other words, what anyone says about reality, time, participation, and so on, is human action; and no human being stands outside of his or her context of experience such as to assert the reality of that which is not part of their experience.

Zukav's (1979) contemplation concerning the nature and possibilities of consciousness bespeaks of the same problem. In his case, however, it is not so much a lack of sophistication as it is an adherence to "objectionable" views, namely mind-body dualism.
Regardless of the adequacy of physicists' arguments concerning the elimination of time, their conclusion that such is possible remains significant. The significance is to be found in what this conclusion suggests with respect to space. In the absence of time, there can be no spatial rearrangement, no spatial reconstitution. There can be no first *this* organization then *another*, because there is no time other than now in which to speak of organizations. In short, if transience is denied, if change is denied, there can be no space nor time (Hayes, in press.) The perplexing problem with this resolution is that although it unquestionably articulates the void, it is not a void that sustains a synonymy with the all.

The resolution to this puzzle is not to eliminate space and time, as had seemed inescapable by this reasoning. It is rather to understand them as a unity of opposites—a synonymy of opposites—in which the distinction between time and space no longer prevails. It is not sufficient, though, to eliminate them by constructing their composite. A synonymy of opposites is not achieved when each survives as itself in reciprocal relation to the other. Required is a newness in which both and neither participate. It is a newness which both mystics and scientists have found themselves conceptualizing as change.

**Conclusions about utility.** If time is collapsed into the elaborated present, then what becomes of the concept of utility? Utility is about how the here and now is related to the there and then. It is about prediction. Even that which *has been* useful is a way of referring to a future in which it will continue to be so. It is a way of speaking about how the future is circumscribed by the past-present. It is a way of speaking about the future. It assumes a future to be spoken about.

The concept of utility, as just described, is foreign to mysticism. As Watts (1983) describes it: “The whole notion that any event in life might be useful . . . is to a Taoist absurd. The universe is viewed as purposeless and useless through and through. . . . [W]hen a Taoist sage is wandering through the forest, he is not going anywhere, he is just wandering. When he watches the clouds, he loves them because they have no special destination. He watches birds flying, and he watches waves slapping on the shore. Just because all of this is not busy in the way that human beings are normally busy, and because it serves no end other than being what it is now, he admires it. . . . The joy for the Taoist is that things have no use, and the future is not important” (pp. 73-74).

In contrast to Watt's implication in this passage, it seems more consistent to suggest that it is not that the future is not *important*, but rather that there is no future to *be* important. In the absence of a future, the notion of things and events having utility with respect to it becomes nonsensical. Again, it seems likely that scientists will come to this same conclusion.

**The Insurmountable Problem of the Synonymy of Opposites**

The central issue in the attack on language and logic, and the questions raised about truth, reality, time, and utility, all of these issues,
have to do with the problem of unifying opposites. Ordinary logic can not accomplish the unification of opposites; and even if it could, we would have no words to describe the newnesses created by this process. That is to say, the yes-no, neither-both, all-none character of the Oneness is incomprehensible by means of ordinary logic and language. In short, the synonymy of opposites is not possible of achievement by these means. This inadequacy presents an enormous problem in as much as the unification of opposites is the essence of mystical understandings, as well as a burgeoning aspect of scientific formulations. The only way out of this dilemma, in both mystical and nonmystical treatments, is to suggest synonymy of opposites by way of other sorts of relational constructions possible from within the constraints of the available descriptive tools. Our aim in this section is to examine the descriptive formulations thereby employed, as well as some of their implications.

From the outset, we may acknowledge that the yes-no, neither-both, all-none character of mystical thinking is variously interpreted. None of these interpretations appears to fulfill its purpose in going beyond the world of opposites to the world of nondistinction, however. In the physical sciences, the unity of opposites is seen as a kind of dynamic interplay or dance between two opposites, namely creation and destruction, whose conflict is irreconcilable, and hence endless (Zukav, 1979, p. 217; Capra, 1976, p. 211). In more static terms, opposites are understood as two aspects of the same reality. The Yin and Yang of Chinese thought is the most familiar example of this premise in mystical thinking.

The duality implied in these conceptualizations of the unity of opposites is of less concern to scientists than mystics. Physicists make no apologies for their failure to sustain a true synonymy of opposites in favor of reciprocal relations. In fact, they do not appear even to appreciate the difference between these two. One reason for this, as discussed previously, is that physicists have never achieved the mystic's understanding of participation as the oneness. That is to say, they have never completely dissolved the dichotomy of the observer and the observed. In keeping with the maintenance of this dichotomy, reality is not assumed to be discovered in direct experience, but rather indirectly through the lens of logic. In the domain of physics, and in science more generally, what is real is our description of experience. Reality is constructed by language; and it is constructed, as it must be, from the standpoint of an independent observer. Sustaining this position is surely becoming a problem, though, in that scientists can not claim on one hand that logic leads to an understanding of reality as the all-inclusive and empty whole while, on the other, argue that any actual observer is in a position to come to such an understanding.

In short, there is also the problem of the observer's history of interaction; there is also the psychology of the observer with which to deal. As a psychological occurrence, an observer's description of his or her observations can not be understood to reflect a universal reality, but merely the reality uniquely experienced by the observer. No description
is free from the history of the describer, including that of space-time. That is to say, space-time no more reflects an absolute reality than did the earlier concepts of space and time. These are all constructions; and they are not about reality. Physicists rarely take the psychology of the observer into account, though, and as a result they do not appreciate the observer's participation in reality as reality, as does the mystic. As a result, physicists assume their constructions are progressive—that they are approaching a correspondence with what really exists—that they are coming closer to the truth. Mystics suffer under no such delusion.

To recapitulate, a true synonymy of opposites is not sustained in scientific thinking. The relationship between opposites articulated in much of this work is more properly understood as one of reciprocity. Any suggestion of reciprocity between opposites—the dance, as it is sometimes called—is fundamentally dualistic; and the position along the path from which it springs is a long way from the end.

Mystical thinking also falls short of its objective in this realm, however. The dissolution of distinctions is not achieved by recasting different things as aspects of the same thing. If the all is indeed one, it has no characteristics, not of opposites, nor of aspects, nor of any other sort. The all is made up of no things, and no one to encounter them. The all is void of every thing and every one.

The failure to achieve synonymy of so fundamental a set of opposites as the all and the none, opens the door to other failures on the parts of both mystics and scientists. Two of these failures seem particularly significant. The first is evident in the attribution of dynamism to the oneness; the second in the assertion of its essential characteristic.

**Attribute of Dynamism**

While we may take some comfort in the unification of space and time into a newness of change, as described above, we are still some steps short of reaching the world of nondistinctiveness with this resolution. To reach the world of nondistinctiveness—the all-inclusive void—we will have to let go even of change. Why be so sure of change? Must we not address ourselves to the unity of change and stillness? How will we understand this newness? Some appreciation of this understanding is expressed in the following passage: "When the impediments of consciousness are annihilated, then (a person) becomes free of all fear, is going beyond the reach of change, enjoying full Nirvana." (Taken from the *Prajnaparamita-Hridaya Sutra*, as cited in Suzuki, 1964, emphasis mine.) This is the end to which the path leads. It is the end of mystical travel—the end of mysticism as an enterprise.

If the commonalities between Eastern thought and Western science already elucidated suggest anything about the likelihood that they will be seen to share other characteristics, then it seems likely that scientific formulations will also reach beyond change. And this understanding will be the end of science as a path—as a means—just as it has this implication for mysticism.
The end of science has not been overlooked by scientists. Their speculations are not fostered by a reconsideration of change as fundamental, at least not in particular. It is more a question about fundamentals *per se* and the need for entirely new forms of intellectual activity. For example, Capra (1976) comments on the bootstrapping world view of Geoffrey Chew, in this regard. Chew sees the universe as a dynamic web of interrelated events. None of the properties of this web is fundamental, though. Rather all properties follow from the properties of other parts and the overall consistency of their interrelations determines the structure of the web. Capra imagines a network of future theories which will contain increasingly fewer features, deriving more and more of its structure from the consistency of its parts. “Someday, then, a point will be reached where the only unexplained features of this network of theories will be the elements of the scientific framework. Beyond this point, the theory will no longer be able to express itself in words, or rational concepts, and will thus go beyond science” (Capra, 1976, p. 276).

Chew also ponders the end of science, as the following remark in reference to a theory of particle physics illustrates: “Our current struggle (with certain aspects of advanced physics) may thus be only a foretaste of a completely new form of human intellectual endeavor, one that will not only lie outside physics but will not even be describable as ‘scientific’ (Chew, as cited in Zukav, 1979, p. 314).

**The Essential Characteristic of the Oneness**

One final problem, perpetuated by an inadequate formulation of the synonymy of opposites, concerns the essential character of the all-none. Mystics argue that the ultimate character of the oneness is spiritual; nonmystics, material. As before, arguments of this sort depend on sustaining the dichotomy of subject and object, of the observer and the observed. Although a unity may be understood as having the characteristic of a particular sort from the standpoint of an independent observer who can stand outside of that unity sufficiently to appreciate its characteristics, a unity has no characteristics from the standpoint of its participants. All inherent characteristics are identified in contrast to characteristics assumed to exist elsewhere. But if the oneness is the all, there is no elsewhere in which such opposing characteristics may be found for contrast or comparison. The all-inclusive oneness can not sustain a noninclusive characteristic, in other words. The ultimate character of the universe is, in such views, thereby, not the experience of oneness but an attribute imposed upon it from without. It is an observer construction.

Although both physicists and mystics appear to recognize this problem, their arguments as to the unity of these opposites is unconvincing. Many an esteemed scientist has speculated about a higher authority, for example; and mystics routinely argue that what appears to be material will, in the end, reveal its spiritual nature. I think, however, that these ideas do not reflect a unity of opposites resolution. Scientists would have a lot less to say if there were nothing to talk about, and mystics a lot more if there were.
The Unfettered Path

Mystics claim that true a synonymy of opposites can only be sustained in mystical experience, not in the description of mystical experience. The experience of "letting go of language," of abandoning consciousness, of enlightenment, is held to be one of inexpressible joy. Enlightenment in Zen does not mean withdrawal from the world. It means, instead, experiencing the Buddha nature of all things achieved through active participation in everyday affairs. Living entirely in the present and giving full attention to everyday affairs, one who has attained enlightenment is said to experience wonder and mystery in every single act: "How wondrous this, how mysterious! I carry fuel, I draw water."

On the surface this argument seems intuitively plausible, and sustains a consistency with the underlying system, but there remains a lingering doubt. In the world of nondistinction, who is experiencing what? Who is sufficiently separate from the all to be aware of its characteristics, much less appreciate them? In the world of nondistinction there is nothing to feel and no one to feel it. In short, joy too is an illusion. Hence to whatever extent joy abounds, we have not yet arrived. We are still on the path. It is rather in the unification of joy and its opposite, fear, that we may reach the end—of nothing and everything at once.

Epilogue

We return now to the question of what all of this means to behavior scientists. In the first place, the intellectual work of physicists and mystics concerning these issues is itself behavior, subject to the kind of analysis behavior scientists alone can provide. We have no reason but personal preference to exclude such behavior from our purview. Moreover, to address these issues from within our own philosophical system, and to do so consistently, presents a difficult challenge. That is to say, we may learn something about our own systemic foundations in the process.

Beyond the domain of philosophy, though, is the domain of everyday scientific affairs. We assume that we are observing something in our laboratories, that we are talking truthfully about our observations, that we are predicting events and constructing practices that will be useful in the future. As such, we are no more immune to the problems of language, logic, reality, truth, utility, and time than is any other intellectual worker.

Finally, the behavior analytic literature is punctuated with examples of the unification of central categorical concepts. Among them we may note the following:

The unification of stimulus and response into a newness of function
The unification of form and function into a newness of interaction
The unification of interaction and context into a newness of uniqueness
The unification of cause and effect into a newness of field
The unification of reality and appearance into a newness of participation
The unification of truth and falsehood into a newness of language
The unification of the past and future into a newness of presence
The unification of time and space into a newness of change

These examples suggest that behavior analysis may be on the same journey as physics and mysticism. We may expect, thereby, to find ourselves pondering the same questions as have occupied our fellow travelers and may be better prepared to address them in being forewarned. More than this, we may find some peace, some joy, in acknowledging our fellow travelers. To see ourselves traveling among so many others may facilitate our awareness and appreciation of the oneness in which we are participating. And, we may yet find a greater peace.

References


