

## Towards an Adequate Epistemology for the Scientific Exploration of Consciousness

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**Abstract**— The scientific exploration of phenomena and experience relating to consciousness (a category which includes many "anomalous" phenomena) has long been hampered by two obstacles. One is that subjective experience does not meet the commonly accepted criteria for data in a scientific analysis, in that it is not public, objective, and replicable. The other is that many consciousness-related phenomena do not appear to fit comfortably into the accepted scientific worldview. Scientists have improvised ways of dealing with these two obstacles, so that for much of practical science (e.g., research on pain) they don't get in the way. Nevertheless, the situation can hardly be considered satisfactory. Two concepts have recently come to light which may help liberate us from this predicament—one new, the other revived from the respected writings of American philosopher William James. The first, based on recent work by Max Velmans, involves a different model of perception; the second, referring back to James' concept of "radical empiricism," proposes a different criterion for admission of scientific data.

### Introduction

Many of the most perplexing "anomalous" phenomena involve consciousness\* in one way or another. Among the most obvious examples are the class of phenomena known as<sup>1</sup> "meaningful coincidences," referring to two or more events where there appears to be a meaningful connection although there is no physical connection. The term includes C. G. Jung's concept of "synchronicity" and most of the range of the paranormal phenomena such as supposedly "telepathic" communication, seemingly clairvoyant "remote viewing," and a host of historical and anecdotal examples falling into the categories of "miracles" and "psi phenomena."

The scientific exploration of phenomena and experience relating to consciousness has long been hampered by two obstacles. One is that subjective experience does not meet the commonly accepted criteria for data in a scientific analysis, in that it is not public, objective, and replicable. The other is that many consciousness-related phenomena do not appear to fit comfortably into the accepted scientific worldview. (For instance, the common-sense assump-

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(This article is based on work-in-progress involving the thinking of a number of scientists and philosophers who are participating in a project on this epistemological question. I wish both to acknowledge their contribution and to accept full responsibility for my interpretation of where our explorations together have brought us. In particular, I would like to acknowledge the contributions to my thinking of Max Velmans, Ron Brady, and Eugene Taylor.)

tion that conscious volition is causal—that my choosing can cause things to happen—conflicts with the scientific assumption that the universe operates according to causal laws and that these laws can be objectively known.)

Scientists have improvised ways of dealing with these two obstacles, so that for much of practical science they don't get in the way. For example, research on the effectiveness of analgesics, such as aspirin, goes on in spite of the fact that pain is a subjective experience; similarly, effective research has been accomplished on topics like imagery, emotions, dreams, etc. which depend for data on subjective self-reports. It is assumed that the conscious will of the experimenter, which may at one level seem causal in that he/she devised the experiment, can in principle be explained in terms of scientific laws, implying determinism (at least in a statistical or quantum-mechanical sense), if the experiment and experimenter are viewed in a more comprehensive framework. "Paranormal" phenomena, in which consciousness-related events appear to contradict both scientific and conventional pictures of reality, are typically explained away on bases on non-replicability, assumed faulty observation, or probable collusion and fraud.

Nevertheless, the situation can hardly be considered satisfactory. "Downward causation," causation-from-consciousness, is mainly unacceptable as a scientific concept in spite of the fact that it is one of the most impressive facts in our practical experience. Psychic phenomena, near-death experiences, insight of a spiritual or mystical nature, have the power to change persons' lives; yet they tend to be explained away or otherwise disposed of when serious scientific investigation is proposed. The attention medical researchers give to the role of consciousness in spontaneous remission of life-threatening illness is curiously meager considering how importantly medical practice might be affected by its thorough understanding.

Two concepts have recently come to light which may help liberate us from this predicament—one new, the other revived from the respected writings of American philosopher William James. The first involves a different model of perception; the second a different criterion for admission of scientific data.

### **Re-Perceiving Perceiving**

Consider the conventional model of perception of an object *O* by a subject *S*, as viewed from the standpoint of an external observer *E*. From *E*'s perspective, the object is public, objective, and observable; *S*'s experience is not. Thus scientific investigation of the object being observed, the physical phenomena involved in perception, or *S*'s neurophysiology, is straightforward. However, scientific research on *S*'s experience in perceiving the object is held to be difficult and questionable.

In a recent paper, Max Velmans<sup>2</sup> claims this apparent problem is simply the result of a confusion. In fact, *E*'s perception (despite his scientific training) is no less subjective than *S*'s. Research on spatial localization in various sense modalities, perceptual illusions and "virtual reality" has demonstrated that the

world as experienced (the phenomenal world) is a projection based on clues from "out there." Representations of external events are actually formed within the subject's mind, but the mind models the world by projecting experiences to the judged location of the events they represent. With this "reflexive" model of perception, the phenomenal world is a representation in the mind, which only seems to be "out there." Being *part of* consciousness, the phenomenal world cannot be thought of as *separate* from consciousness. The phenomenal world is just a representation; it cannot be the "thing itself."

Standard science assumes that the things it studies are perceptually public. The reflexive model reminds us that the individual's phenomenal world is *private* to each human being. In this model each observation results from the interaction of the observer with the observed; each observation is observer dependent and unique. If the observation is sufficiently repeatable, intersubjectivity can be established by agreement. (For example, scientists experience no difficulty in agreeing upon the characteristics of a rainbow, despite the fact that every observer sees a different rainbow, formed by a different set of raindrops. Similarly, it is easily established that persons who have gazed for a period at a red circle tend to see a green circle after-image.) Intersubjective agreement requires merely that their experiences are sufficiently similar to be taken for "tokens" of the same "type."

Within this model, the phenomena we call "physical" are just a subset of the things we experience. The traditional gulf between first-person and third-person perspectives is narrowed—it is merely the shift of focus of interest from being interested in one's own experience to being interested in the nature of what is observed. The third-person perspective has dominated reductionist science; this in effect *denies* the legitimacy of S's experience while *asserting* the legitimacy of E's experience of S. In the reflexive model the experiences of S and E are equally legitimate. If S's experiences are to form a data base for science, they merely need to be potentially sharable, intersubjectively validated, and in some sense repeatable.

Thus we see that "objective" data and "subjective" experience are not as different as ordinarily assumed. They can be handled in very similar ways. Observed phenomena in natural science are:

- (1) public in the sense that they are "private experiences shared";
- (2) intersubjectively shared rather than "objective"; and
- (3) repeatable in the sense that successive instances are sufficiently similar to be taken for "tokens of the same type."

These same criteria can be applied equally well to observations of an external object or to phenomena usually thought of as "subjective," such as images, dreams, emotions, seeing a UFO, or seeing the ghost of someone recently dead.

These last two examples remind us that we still have a problem with reports of phenomena that don't fit with the usual picture of reality. This second obstacle, which relates to the intractability of the "mind-body problem" and para-

normal phenomena, is the subject of a long-neglected contribution by the American philosopher William James.

### The "Radical Empiricism" of William James<sup>3</sup>

James' work has been honored by intellectual historians, but little noted by empirical scientists. In James' view, every explanation about reality is undergirded by a metaphysical system, whether overtly stated or simply implied. In his concept of "radical empiricism," he proposes to substitute for the prevailing metaphysic of physicalism, "a metaphysics of experience." In so doing, he aims at defining an appropriate epistemology for research on human consciousness.

James' radical empiricism admits data from the senses, and thus includes within its purview the experience of the physical world. But it also encompasses the broad spectrum of inner realities found within the subjective life of the person. In his *Essays in Radical Empiricism* James defines his term thus: "To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that *is* directly experienced." Nothing within the totality of human experience is excluded from being a potential topic of scientific investigation; although of course, not all claims may be ultimately verified. How widely James meant this to be applied is indicated by the fact that he was involved for 25 years with exploration of psychic phenomena, spiritism, and religious experience. He did not buy into the doctrines of enthusiasts in these areas, but he insisted that the experiences are appropriate data for a complete science.

In James' view, experiences, ideas, and consequences all contribute to the emerging understanding which comprises science. Persons' phenomenological descriptions may differ from one another, so consensus is always partial. Science's accounting of nature is always incomplete and tentative; scientific models and theories only tell a partial story.

James' arguments were not persuasive enough to stand up against the enormously successful results of the positivistic scientific mind-set of the first half of this century. He died in 1910 before he could articulate the details of his metaphysical system, and few other scientists took the same concern. However, his arguments may fall on more accepting minds these days, when the shortcomings of a strictly positivistic worldview are more widely apparent.

The epistemology of radical empiricism has important implications for the phenomenology of the science-making process, especially the problem of consciousness. As James argued, science and the systems of mathematical laws that allegedly govern causality can hardly have an existence independent of the human mind. Thus *it is a fundamental illusion to think that we can know about the world of matter with a system of science which essentially omits, and seems even to deny, consciousness.*

At the core of his radical empiricism, James resolves the dualism of the mental and the physical by asserting that one should not be subsumed under the

other. Rather, he believed that no external world of objects can exist *except as a function of some consciousness*. This means that there can be no objective science without human consciousness to create it; no world of causal mathematical laws except in so far as they are a product of human thought. When the conscious awareness of the scientist is conditioned by training to look outward only, the present form of science may seem to offer a reasonable worldview. But when consciousness turns back upon itself and attention turns inward, not only is another realm of experience added to the picture, but *a new order to external reality may be seen*. The observer is changed in the process; never again can certainty be placed in the articulation of absolute laws that leave this factor of consciousness disregarded.

### **New Promise for the Exploration of Consciousness**

With these two concepts—(a) recognizing the uniform way of dealing with all experience/data, whether it be "objective" or "subjective," and (b) the criterion of "radical empiricism" to govern the data admitted—the main obstacles to a comprehensive exploration of consciousness would appear to have been removed. The fundamental reason conventional science has been so minimally effective in increasing our understanding of consciousness is that the epistemology of physics, molecular biology, and neuroscience *is not suited to the area of consciousness; a new scientific epistemology is needed*. Cognitive science has thus far been limited in its achievements because it has failed to come to grips with this need.

Traditional scientists embrace an epistemology which argues that reality can be *confirmed* by matching our inner and outer worlds. That is to say, if the theoretical mental construction accurately describes and predicts the perceived outer world, and no instances can be found which falsify that construction, it is assumed to confirm that the constructed picture of reality is correct. However, to explore the experience and phenomena of consciousness, it is necessary to have an epistemology which takes the personal characteristics of the observer into account.

Modern science has, in the main, attempted to control observer bias by excluding the observer. "Scientific findings" were claimed to be independent of the person who does the scientific work. If findings prove to be replicable, the scientific community concludes that they represent a *discovery* about reality rather than a construction by the observer. However, this term "finding" conceals a metaphysical assumption that things can be found which exist independently of observers. As discussed above, shared agreements among similarly trained observer-scientists may lead to pragmatically useful knowledge, but such agreements do not prove that their sense data are objective, i.e., independent of observers.

In considering what kinds of observations could or should be admitted as scientific data, considerable misunderstanding has resulted from the confusing of two meanings of the terms "objective" and "subjective." One meaning of

"objective" is in the sense of unbiased. The other meaning is in the sense of external to the person, as contrasted with "subjective" meaning **inner**. The epistemology we seek is "objective" in the first sense, but includes the subjective in the second sense.

Velmans' concept of experimenter's and subject's observations being of identical kind implies an issue of the degree to which research must be participative. If both "experimenter" and "subject" as described above are in the same position with regard to data—namely that they can only offer up their own private experiencing of their phenomenal worlds, then in any research effort they are collaborators at the same level. In an exploration of consciousness, the persons contributing reports of their experience are partners in every way with the scientific investigator. If they are so considered, this directly challenges the power of the "experimenter" to manipulate or deliberately deceive the "subject," and it also challenges the validity of the conclusions drawn under conditions of manipulation or deception—including a good share of the findings in the social sciences. This issue of the relative powers of the scientific investigator and persons whose experiences may be under scrutiny, is much discussed in the literature on "qualitative methodology" in the social sciences.

This point should not be misunderstood to equate the observation of a naive bystander with that of a highly trained scientist—which Michael Polanyi<sup>4</sup> has written about using terms like "art" and "connoisseurship." But the difference is a subtle one. We are only recently recognizing the special understanding of nature found with what we once called "primitive" peoples or "savages." Scientists have been slow to recognize the possibility that mystics and trained observers in other cultures such as the Tibetan, which focus more on inner realms of experience, might be capable of observations which are as foreign to Western scientists as the latter's trained observations are to the man in the street.

### **The Unconscious Mind in Science Construction**

The above implies an intrinsic dilemma with regard to the epistemology of science which is too little noted. In order to have confidence in the scientific view of reality, we have to answer the epistemological question: How do we know what we believe we know? To answer that, the mind needs to step outside itself, so to speak, and observe itself at work. Our view of reality is inevitably determined partly by that reality, and partly by the mental processes through which we arrived at the view we have. However, to know about those processes we need already a scientific study of the mind, for which we need a scientific epistemology—which with a frustrating circularity, leads us back to the initial question.

This circularity implies that even if the results of generations of scientific inquiry appear to be convergent toward a particular picture of reality, a profound caution is advisable regarding how much faith is put in that picture. (This point has been made in another way by Thomas Kuhn.<sup>5</sup>) In any case, this dilemma suggests that as we search for the appropriate epistemology for a

comprehensive science, we need to pay particular attention to what is known about unconscious mental processes.

Research on perception, hypnosis, repression, selective attention, mental imagery, sleep and dreams, memory and memory retrieval, acculturation, etc. all suggests that the influence of the unconscious on how we experience ourselves and our environment may be far greater than is typically taken into account. Science itself has never been thoroughly re-assessed in the light of this recently discovered pervasive influence of the unconscious.

The unconscious enters importantly into the construction of science in at least two ways: (a) the creative/intuitive mind (an aspect of the unconscious) is intimately involved with all the important conceptual advances in science; and (b) the contents and processes of the unconscious influence (individually and collectively) perceptions, "rational thinking," openness to challenging evidence, ability to contemplate alternative conceptual frameworks and metaphors, scientific interests and disinterests, scientific judgment—all to an indeterminate extent. What is implied is that we must accept the presence of unconscious processes and contents, not as a minor perturbation, but as *a potentially major factor in the construction of any society's construction of its particular form of science*. (This consideration even puts into question whether or not the logical construction of a science from a rational epistemology may already be a culturally biased approach.)

There is some precedent for taking into account unconscious processes and contents in the training of the researcher. In training to be a psychotherapist, the individual has to go through inner explorations similar to those anticipated in his/her future clients; with these experiences comes learning, and personal change. Similarly, in training to be a cultural anthropologist, the person must learn to experience being of another culture; this too brings personal change. In training for the bench, the future judge—at least ideally—goes through self-examination to uncover personality characteristics which could cause one to be unconsciously biased. In general, learning to be a faithful observer implies inner change. The scientist who would explore the topic of consciousness (in the broad sense we are considering here) must be *willing to risk being transformed* in the process of exploration.

### **Aiming at a Broad Scope of Inquiry**

A word must be said about the tactic of limiting preliminary inquiry to common everyday consciousness, avoiding areas where the reports and the data are problematical, as for example, profound meditative insight or investigation of the paranormal. Would this not be in accord with much of the history of science, where preliminary inquiry has often and profitably been restricted to simple and limited cases?

We are advising the opposite, namely to seek an epistemology suitable for exploring even questionable areas of human experience. One justification for this comes from an analogy with the origin of the evolutionary hypothesis.

There was much to be learned from studying separately the great variety of microorganisms, plants, and animals with which the planet is populated. But Charles Darwin boldly turned his attention to the synthesizing question: How can we understand all of *these together*? The result was the concept of evolution, around which practically all of biology is now organized.

That same question comprises the chief importance of studying the lesser recognized and seemingly anomalous, but still persistently reappearing reports of experiences and phenomena—experiences and phenomena many of which have a face validity stemming from the fact that they have been reported across cultures, and down through the centuries. What sorts of conceptual frameworks and organizing metaphors can be used to help us understand all of *these together*?

### **A More Careful Definition of the Present Endeavor**

The philosophically sophisticated reader will have detected a contradiction in what has already been said. We claim to be seeking an epistemology for the study of consciousness. Since all of our experience is in consciousness, that leaves nothing out. It would appear that we cannot distance ourselves from the most fundamental question of all—the basic epistemological question of how we know anything. Since many generations of philosophers have been unable to agree on the answer to that question, it would seem unlikely that we would succeed where they have failed.

However, our goal is a more modest one. Science has an accepted epistemology, which has proven inadequate to dealing with various aspects of "ordinary" experience including conscious awareness, intuition, creativity, attention, and volition, as well as a wide range of "anomalous" experiences. We seek, not the ultimate epistemology, but an intermediate one, a provisional one—one which will extend the present form of science to include that which it has heretofore excluded. As we learn more, and as scientists become more adept at exploring the vast realms of inner experience, it may well be that this epistemology will itself have to be set aside in favor of a still more adequate one.

The intrinsic dilemma of science was identified above: In order to have confidence in the scientific view of reality, we need an adequate epistemology. But that implies a prior understanding of the mental processes underlying observation, and for that we already need the scientific epistemology. In our present endeavor we are attempting to break into this circle with a provisional answer to the epistemological question. If we can identify a provisional epistemology which avoids the known limitations of the epistemology presently guiding physics, molecular biology, and neuroscience, and which has the capability of furthering the exploration of consciousness, we may be able to give impetus to that research area. What is learned (including the further development of our "organs of perception" in the sense of Goethe and

Rudolf Steiner<sup>6</sup>) may result in the discovery that our provisional epistemology is also limited, so that it eventually must be displaced as well.

Present science constitutes a base camp, so to speak. It competently deals with a certain kind of knowledge—that which aims at prediction and control. However, modern society's mistake was to believe that, with that base camp, the summit was in sight. We now see that a further advance camp—perhaps many—will be needed. Scouting parties have gone ahead, and we know something of what will be encountered. Two very different non-Western epistemologies—that of the inward-looking East and that of the indigenous peoples with their intimate relationship with nature—have much to teach us. The enigmas of what the British called "psychical research" remain to be dealt with. Even though our knowledge from these advance scouts may be fragmentary, we get some clues regarding characteristics of the provisional epistemology.

There is a danger in this approach, to be sure. Just as today's scientists allowed themselves to be deceived by the apparent successes of the objectivist-positivist-reductionist epistemology, so we could be deceived through our attempts to promote a provisional epistemology of consciousness research. What will save us from deception is continual reminding that (a) any science we can share through words, formulas, and images is at best models and metaphors representing certain aspects of experienced reality, and (b) that the best we can do now will undoubtedly seem inadequate as our "organs of perception" are enhanced through personal transformation.

### **Attributes of an Epistemology of Consciousness**

With all of these considerations in mind, we can now propose a number of characteristics of the sought-for epistemology for conducting a comprehensive exploration of consciousness in the broadest sense:

1. The epistemology will aim at being objective in the sense of being open and free from hidden bias, while dealing with both "external" and "internal" (subjective) experience as origins of data.
2. It will be phenomenological or experientialist in a broad sense; that is, it will include subjective experience as primary data, rather than being essentially limited to objective, physical-sense data.
3. It will insist on open inquiry and public (intersubjective) validation of knowledge; at the same time, it will recognize that these goals can only be met incompletely when seeking knowledge that includes deeper understanding of inner experience.
4. It will be holistic in the sense that it attempts to complement reductionistic science (seeking to understand the whole through understanding the parts) with an approach that honors the irreducible characteristics of the whole. In other words, it will not think to explain (or explain away) experiences that are rich in meaning by reducing them to combinations of simpler experiences.

5. It will recognize the partial nature of all scientific concepts of causality, and the complementarity of the usual "third-person view" of ordinary science with a "first-person view" in which causality may appear quite differently. (For example, the apparent causality, in "third-person" science, of a brain state resulting in physiomotor action does not invalidate the subjective feeling of volition in "first-person" science.)
6. It will recognize that science deals with models and metaphors representing certain aspects of experienced reality, and that any model or metaphor is permissible if it appears to be useful in helping to order knowledge, even though it may seem to contradict another model which is also useful. (The classic example is the history of wave and particle models in physics.)
7. It will be participatory in recognizing that understanding comes, not alone from being detached, objective, analytical, coldly clinical, but also from cooperating with or identifying with the observed and experiencing it subjectively. This implies a real partnership between the researcher and the individual or culture being researched; an attitude of "exploring together" and sharing understandings.
8. It will comprise "radical empiricism" (in William James' sense) in the sense that it will address the totality of human experience; no reported phenomena will be written off because they "violate known scientific laws." Furthermore, consciousness is not a "thing" to be studied by an observer who is somehow apart from it; consciousness is at once the observer and the observed, or if you like, the experience of observing.
9. It will involve recognition of the inescapable role of the personal characteristics of the observer, including the processes and contents of the unconscious mind. The corollary follows, that to be a competent investigator, the researcher must be willing to be transformed in the process of exploration.
10. It may well in time have to be replaced by another, still more satisfactory epistemology, for which it has laid the intellectual and experiential foundations.

### **Reconciling Science and Our Sense of the Spiritual**

A comprehensive study of consciousness must inevitably deal in some way with experience of the sort typically termed spiritual or religious. Religion is, generally speaking, the institutionalized concern with these areas of human experience. In terms of their functions in society, religion and science are different enterprises. However, their interests overlap, particularly in three areas:

- In explorations of non-ordinary states of consciousness (e.g. trance and meditative states; near-death and out-of-body experience; mystical awareness), and their implications with regard to the nature of human beings and their relationship to the universe.

- In the study of "meaningful coincidences," (events that seem to be meaningfully connected, although there is no apparent physical connection), particularly as these relate to events reputedly having a spiritual component (as, for example, a person sensing a strong warning, as by a "guardian angel," and discovering later existence of a real danger; or one person intending the healing of another and the latter feeling restorative effects).
- In the study of the origin or evolution of life and consciousness, and the source of our sense of ultimate values and transcendent meanings.

Insofar as they claim to be representing aspects of reality, science and religion should eventually say compatible things about these three areas; if they seem to say contradictory things, the dependability of one or both remains open to question. These three areas comprise one of the most exciting frontiers in all of science, because in their exploration we may at long last resolve the tension between the two kinds of competing worldviews in modern society—the scientific worldview which prevails in our powerful institutions, and the humanistic-spiritual outlook by which we guide our daily lives.

#### Footnotes

- \* We are here using the "consciousness" to connote the totality of conscious and potentially conscious states of mind, not in the limited sense of "conscious awareness" only.
1. See Beloff, John, (1977), "Psi phenomena: Causal versus acausal interpretation." *Jour. Soc. Psychological Research*, Vol. 49, No. 773, Sept. 1977.
  2. This discussion is based on Velmans, Max, "Consciousness, brain and the physical world." *Philosophical Psychology*, Vol. 3, No. 1, 1990, p. 77 - 99. His concepts are further developed in "A reflexive science of consciousness," in *Experimental and Theoretical Studies of Consciousness*, Ciba Foundation Symposium No. 174, Chichester: Wiley, 1993.
  3. James, William (1912), *Essays in radical empiricism*. New York: Longmans, Green and Co. This discussion is based on Taylor, Eugene (1993), "Radical empiricism and the conduct of research." In *The Metaphysical Foundations of Modern Science*, Willis Harman with Jane Clark, eds. Sausalito, California: Institute of Noetic Sciences.
  4. Polanyi, Michael (1958), *Personal knowledge*. University of Chicago Press.
  5. Kuhn, Thomas (1970), *The structure of scientific revolutions*, 2nd ed. Chicago: University of Chicago Press.
  6. For a good modern discussion of the approach to science recommended by Goethe and Steiner see Zajonc, Arthur G. (1983), "Facts as theory: Aspects of Goethe's philosophy of science."