

positions. Cacioppo and his colleagues created not a symbiosis of realist and instrumentalist ideals but one more in line with pragmatism and instrumentalism. Calls for *critical realism* and *scientific realism* that negotiate not only motivational differences but also epistemic and ontological positions between realists and relativists have been considered elsewhere (Fletcher, 1996; Nightingale & Cromby, 1999).

As an observer of and participant in these debates, I am reminded of the differences in how individuals with different religious and spiritual beliefs practice their faith. The motivations (much like Cacioppo et al.'s, 2004, analysis of instrumentalism and realism) for these individuals to engage or not engage in religious practices often differ; Christian evangelists' call in life may be to search for the love and message of God and to spread this to the world, whereas Buddhists may take the stance that nirvana can be found in each and everyone's own personal way and consequently will refrain from evangelistic activities. To not examine what ontological and epistemic assumptions underlie these two agendas is to have a weak claim to the possibility of symbiosis. Nevertheless, I see the beauty and poignancy of Cacioppo and his colleagues' contribution, in that (and to further the religion metaphor) the humanity, modesty, curiosity, and, ultimately, responsibility that arise in the face of a belief's ultimate mystery (be that a belief in science or in religion) are readily evident.

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The Scientific Denial of the Real and the Dialectic of Scientism and Humanism

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Cacioppo, Semin, and Berntson (May–June 2004) argued that psychologists should adopt the iterative practice of scientific realism and scientific instrumentalism in order to profit from each perspective. In this way, the rigor and elegance of realism could be coupled by the innovative exploits of the less constrained instrumentalism approach.

The appeal for the unification of psychology is in fashion (Sternberg, 2003), and Cacioppo et al.'s (2004) term “symbiosis” connotes a cooperative and communal practice that is difficult to criticize without being regarded as quarrelsome and cantankerous. The authors suggested that “as a practical lot scientists need not decide between [scientific realism and scientific instrumentalism] but rather can capitalize on the strengths of each” (Cacioppo et al., 2004, p. 221). They propagated an unnecessary division between scientists and philosophers as if the former need not quibble about philosophical matters and should continue getting on about the business of practicing science. Understanding the deep implications of metatheoretical differences, however, is paramount to understanding the differences over methodological and evaluative claims concerning the veridicality of evidence in science.

The principal weakness of scientific realism is taken to be its outcome-driven pursuit of truth, such that perspectival pluralism would be eschewed, thus resulting in the perseverance of outdated theories. Cacioppo et al.'s (2004) conclusion seems to be a support of scientific realism that encourages less political attachment to theories and support for an atmosphere of “open-mindedness, creativity, integration, consilience, and problem solving” (Cacioppo et al., 2004, p. 217). The unity proposed, however, is the result of a rhetorical dichotomy that is not even taken particularly seriously and is, in fact, swiftly dismissed. As Cacioppo et al. stated, the ultimate goal for a unification in psychology should be “to approach or approximate scientific realism” (p. 221). Thus, iterative practice or not, there is no symbiosis, only

a reductionistic approach with a gesture toward including positive qualities of instrumentalism. Cacioppo et al. essentially proposed a check-and-balance system for scientific realism, no real dialectic. Consider one person who believes there are only odd numbers and another only even. The averaged position is unfaithful to both original formulations, and an acknowledgment of each alternative expands the number set to include both odds and evens. Thus, if there is progress, in true dialectical fashion, one must dismiss both original formulations in favor of the new emergent synthesis and mathematics. Clearly that is not the case for the authors; realism is the ultimate victor.

According to *scientism*, reality comprises physical things subject to the natural laws of the universe (Olafson, 2001). Broadly, according to humanistic and phenomenological psychologies, a person is that creature *for whom things are*, whereas a thing is *that which is for* a person. This differentiation allows for a rock to be something for me, but for me to be nothing from the perspective of a rock (an incomprehensible perspective). The goal of scientism corresponds to Cacioppo et al.'s (2004) scientific realism, that is, to “describe the world as it really is . . . and to establish what actually exists in it” (p. 215). The authors' proposed symbiotic relationship of realism and instrumentalism is analogized with the cyclic practice of induction and deduction in the scientific method and its putative successes. It is important to note that if one examines Cacioppo et al.'s several diagrams that illustrate how this science could work, one notices that at no point does a person enter this circle. That is, the method proposed is a *transcendental* science, one that may be abstractly elegant with its boxes and arrows but that lacks the *realism* to which it is supposed to attend—that is, the science practiced and contemplated by *people*. To study what is real, one must acknowledge the import of the individual doing the science—by importing him or her into the formulation of that science in the first place!

A famous example illustrates this point. Consider a fisherman who constructs a net with two-inch holes. After dredging a pond and collecting many fish, the claim is that there is no fish smaller than two inches in this pond. Of course, this conclusion is flawed, but it reveals how the scientific realist believes that one can just construct a new, more precise instrument (i.e., the net) in order to capture true facts about the objective world (i.e., the fish). Thus, the progression of science is to build better

nets. But this mandates a separation of person and world, scientist and fact, such that one assumes that fish exist a priori and independent of the scientist's investigation. Organisms, however, shape their worlds as their worlds reciprocally shape them (Lewontin, 2000). Thus, the scientist who clears land on his or her property for a new tennis court will create the circumstances of a world lacking fish as facts for discovery.

Cacioppo et al. (2004) should be credited for bringing attention to the different consequences of the approaches of scientific realism and instrumentalism. It is ironic that they are inadvertently encouraging psychologists, even as a practical lot, to consider the entailments of metatheoretical assumptions. Unification without regard to these assumptions is like appealing for the unification of Christianity, Judaism, Islam, Buddhism, and atheism. However, it is a disservice to the field of psychology to pretend that realism and instrumentalism constitute an exhaustive dichotomy, especially one whose resolution entails progress toward scientific truths. If there is to be an iterative deployment of differing epistemological and methodological practices, then one should begin to recognize the significant differences between a psychology informed by scientism and one informed by humanism/phenomenology, specifically with regard to the place of the human being as both scientist and subject. Public policy and scientific practice cannot devalue or ignore the concept of human being. Although the appeal to scientific realism may support one's anxieties and desires to legitimize the discipline of psychology, it imposes an acceptance of the reducibility and measurement of human beings, when human being is a concept that cannot be measured. Reality consists of the co-presence of organisms and the objects to which they tend, each term mutually exclusive, and realism is the study of the emergent understanding of this dialectic.

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Scientific Symbiosis Represents the Mutual Benefit of Iteratively Adopting the Perspective of Realism and Instrumentalism

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We wrote "Realism, Instrumentalism, and Scientific Symbiosis: Psychological Theory as a Search for Truth and the Discovery of Solutions" (Cacioppo, Semin, & Berntson, May–June 2004) from the viewpoint of practitioners of science who believe that the perspective of scientific realism, which many contemporary psychologists have simply inherited, may now place unnecessary constraints on theoretical developments in psychology. In this belief, we are clearly at odds with Haig (2005, this issue), who argued that "realism alone can serve as a sufficient philosophy for psychology" (p. 344). Haig faulted our characterization of realism as being noncomprehensive. Of course, our intention was not to provide a comprehensive review of the variations on scientific realism but to describe some of its core features and to consider their implications for how psychologists think about, formulate, and evaluate psychological theory. Haig argued for one particular version of realism (evolutionary naturalistic realism, or ENR), but he acknowledged that the core features we described apply to ENR as well.

We recognize that reasonable people can disagree on which philosophical perspective they prefer. We further believe that theory and research in psychology would benefit from the explicit consideration of this question rather than, as is currently the mode, accepting realism without considering alternatives.

Haig (2005) criticized our proposed symbiosis because the suggested perspective "will confuse psychologists rather than provide them with effective understanding and guidance" (p. 345). Psychologists have long addressed complex problems with intelligence, sophistication, and clarity. We

therefore respectfully disagree that our perspective would simply confuse psychologists who chose to give it serious consideration.

The divide between our proposals and those of Lau (2005, this issue) and Ramey and Chryssikou (2005, this issue) are less dramatic. We anticipated that we would stir some controversy. What we did not expect is that some readers would conclude that we were advocating scientific realism (Ramey & Chryssikou, 2005) while others would conclude that we were advocating scientific instrumentalism (Lau, 2005). In point of fact, we did not exclusively embrace either.

We suggested that among the strengths of scientific realism is its tendency to foster theoretical rigor, verifiability, parsimony, and debate, whereas among the strengths of instrumentalism is its tendency to promote theoretical innovation, synthesis, generativeness, and scope. We proposed that the benefits of both might be achieved by the appropriate iterative application of each when thinking about, formulating, and evaluating psychological theory. We termed this perspective scientific *symbiosis*.

Symbiosis between organisms does not imply an averaging that would be unfaithful to the two organisms. Nor does symbiosis imply the morphing of the organisms—the emergence of a new organism—or a relativistic position. Symbiosis refers to an interaction between two different organisms to the advantage of both, or to a mutually advantageous association or relationship. A symbiosis between two approaches does not require the emergence of an approach that is fundamentally different from either. The criticisms of Ramey and Chryssikou (2005) and Lau (2005), therefore, would seem more appropriate had we proposed a synthesis or a unification of realism and instrumentalism rather than a symbiosis.

By analogy, scientists benefit from appropriately applying both inductive and deductive reasoning to the problem of scientific inquiry. The appropriate and iterative application of induction and deduction in science might reasonably be described as symbiotic because the accrual of knowledge (the endpoint of inductive and deductive reasoning) benefits from their iterative application in the scientific method. Similarly, we proposed that psychologists might bring both realist and instrumentalist perspectives to bear on theorizing in science to achieve a scientific symbiosis within the theoretical domain. Our intention in this proposal was not to advocate scientific realism or scientific instrumentalism over the