

## PRAGMATISM, CRITICAL REALISM, AND THE COGNITIVE VALUE OF RELIGION AND SCIENCE

by J. Wesley Robbins

*Abstract.* Pragmatism and critical realism are different vocabularies for talking about the cognitive value of religion and science. Each can be, and has been, used to make the case for cognitive parity between religious and scientific discourse. Critical realism presupposes a particular form of cognitive psychology that entails general skepticism about the external world and forecloses scientific inquiry in the name of a preconceived idea of what the nature of human cognition must be. Thus, of the two, pragmatism is the better vocabulary for fostering mutual understanding between religion and science.

*Keywords:* critical realism; folk psychology; generic Cartesianism; pragmatism; Timothy van Gelder.

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Pragmatism and critical realism are, among other things, different vocabularies for talking about the cognitive value of religion and science. In critical-realist terms, the cognitive value of scientific theories is a function of the extent to which they are representations that match the actual structure and character of the world itself. Similarly, whatever cognitive value religious convictions have lies in their being representations that correspond more or less closely to reality.

In pragmatist terms, in contrast, the cognitive value of scientific theories is a function of the extent to which holding them to be true enhances our ability to predict and control events occurring in the world around us. By the same token, the cognitive value of religious doctrines lies in the extent to which holding them to be true enhances our ability, for example, to deal with a variety of extreme circumstances.

J. Wesley Robbins is Professor of Philosophy at Indiana University South Bend. He maintains a Web site at <http://www.iusb.edu/~wrobbins/>.

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If there is such a thing as orthodoxy in the religion-and-science field, critical realism is one of its dogmas. In the past thirty years, writers in the field as different in other respects as Ian Barbour (1974; 1990), Arthur R. Peacocke (1984), Wentzel van Huyssteen (1989), Janet M. Soskice (1985), and Willem Drees (1996) all have espoused versions of critical realism as the only plausible way in which to assess and compare the cognitive value of religious and scientific discourse respectively.

This privileged position is undeserved. Critical realism suffers from at least two fundamental defects that are the subject of this essay. First, its presupposed cognitive psychology entails that the cognitive value of both religious and scientific discourse is strictly indeterminable. This skepticism undermines the effectiveness of the religious and scientific inquiry whose results critical realists claim to take more seriously than pragmatists do. Second, critical realism's presupposed psychology forecloses future cognitive scientific inquiry in the name of a preconceived idea about the nature of human cognition. This, so far as pragmatists are concerned, is the unforgivable sin against human inquiry.

Soskice's statement of critical realism is representative. The "cautious realism" she advocates attributes to the discourses that qualify, quoting Mary Hesse, "the permanent and cumulative capture of true propositions corresponding to the world" (Soskice 1985, 132). Soskice claims that such capture of true propositions occurs when it does, now quoting Hilary Putnam, where "speakers mirror the world, i.e., their environment—in the sense of constructing a symbolic representation of that environment" (Soskice 1985, 136).

Critical realism attributes a cognitive value to certain current scientific theories, and by extension to certain current religious doctrines, that entitles them to be taken "seriously but not literally." This is because they are supposed to be symbolic representations of the world that at least pick out the right sorts of things for depiction (and thus are to be taken seriously) even if their depictions of these things do not now, and may never, exactly match them (and thus are not to be taken literally). The resulting endorsement of religious and scientific discourse is tentative. Even those contemporary convictions and theories that do represent the world to some extent are liable to revision in the light of further inquiry.

There is one exception to this tentativeness. Critical realism presupposes a specific sort of cognitive scientific theory, which philosopher of cognitive science Timothy van Gelder calls a generically Cartesian picture of the nature of mind (van Gelder 1995b, 379). According to generic Cartesianism, "mind is an inner realm of representations and processes, and . . . mind conceived this way is the causal underpinning of our intelligent behavior" (van Gelder, 1995b, 380). Critical realism attributes the cognitive value of current religious and scientific discourse to their being

more or less accurate representations of the environment that, in turn, are products of the operations of generically Cartesian minds.

Were this particular cognitive scientific theory to be discredited and replaced in the course of further inquiry, critical realism itself would be discredited. Its assessment of the cognitive value of religious and scientific discourse would, by its own lights, not be realistic because the systems it posits as the cause of that value do not correspond to the nature of human cognition. Critical realism, thus, is inherently dogmatic about the cognitive scientific theory that it presupposes. For critical realism itself to be a realistic form of discourse, its generic Cartesianism must be taken both seriously and literally.

The cognitive system presupposed in critical realism is characterized by its representations and the operations that it performs on those representations. This is what van Gelder means when he describes the generically Cartesian mind as “an *inner* realm of representations and processes” (van Gelder 1995b, 380; emphasis added). This is not to say that Cartesian minds are necessarily immaterial substances. Even if human minds and their cognitive activities are brain based, in the generically Cartesian view the symbolic content of the brain’s representations and the ways it manipulates them can be described independently of the physical makeup of the brain and of what is going on in its environment. In van Gelder’s words, “because the [generically Cartesian] cognitive system traffics only in symbolic representations, the human body and the physical environment can be dropped from consideration; it is possible to study the cognitive system as an autonomous, bodiless, and worldless system whose function is to transform input representations into output representations” (1995b, 378). The functionalist distinction between software and hardware is typical. The programming language in which symbols are manipulated is logically distinct from the hardware that actually runs the program. Thus, even if the human mind is brain based, the way it manipulates symbolic representations in principle could have a very different physical instantiation from that of our brain.

This logical independence of the generically Cartesian mind from other things guarantees that cognitive psychology is a discipline autonomous from other physical and social sciences. It also is the seedbed for the problem of knowledge about the external world. Given that mental representations are identifiable apart from any causal connections with the rest of the world, they can logically vary independently of what is going on in the rest of the world. One’s representations of the world might be completely different from the way the world itself is. It is entirely possible for a generically Cartesian mind to operate on its representations as it is supposed to and yet have its representation of the world be completely and systematically false.

Because such a mind traffics only in symbolic representations, there is no way for it to eliminate this possibility by manipulating more representations. The possibility of falsehood applies to those representations as well, and skepticism breaks out again. A generically Cartesian mind can never determine whether its representations correspond to reality and, thus, have any cognitive value. Universal skepticism is the inevitable consequence of the Cartesian picture of the mind. By all rights, therefore, the critical-realist assessment of religious and scientific discourse should be that their cognitive value is indeterminable.

Pragmatists reject this Cartesian picture of the mind and cognition both because of the skepticism that it generates and because the logical independence from its surroundings that it claims for the mind is implausible given what we know about ourselves as biologically evolved organisms. Pragmatism presupposes folk psychology, which differs sharply in two respects from the cognitive psychology presupposed in critical realism. First, folk psychological beliefs are not representations of the environment. Consequently, it makes sense to take them to be coping mechanisms whose cognitive value lies in their effectiveness, not in their correspondence to anything. Second, folk psychological states are embedded in their environment, not logically independent and detachable from it.

William James, motivated by Darwin, began making these anti-Cartesian points as early as his 1870 essay "Great Men and Their Environment" (James 1961). There he attacked Herbert Spencer's attempt to put an evolutionary spin on the classical empiricist version of generic Cartesianism. Contrary to Spencer, James compared important scientific ideas, such as Newton's theory of gravity, to instruments like chronometers. Both, he said, are tools formed at the intersection of distinct sets of forces operating from inside us and from the environment, not copies of itself that the environment passes into our minds by repeatedly impressing itself on our sense organs. A mind of the sort that James described, unlike a generically Cartesian mind, could not possibly be disentangled from its environment and studied as an independent object without any reference to that environment.

Contemporary pragmatists make these Jamesian points in terms of the differences between folk and Cartesian psychology and the practical primacy of the former over the latter. Folk psychology, as elucidated by such philosophers as Donald Davidson (1989), Daniel Dennett (1993), and Richard Rorty (1993), is a vocabulary that enables us to ascribe mental states to one another with very superficial knowledge of our inner workings and, indeed, of the world around us. It relies heavily on overt behavior and environmental occurrences to determine which mental states, beliefs for example, are which. The end product is a rough and ready way for us to predict and control one another's behavior, and that of assorted other

things on earth, in terms of these ascribed mental states. The folk-psychological beliefs and desires presupposed in pragmatism, thus, are functions of a particular interested stance that we take toward things, what Dennett calls the intentional stance.

Generally speaking, we ascribe folk-psychological beliefs and desires to one another by correlating individuals' behavior, linguistic and otherwise, with what is going on in their environment. Thus, external surroundings play a crucial role in distinguishing one belief from another. The semantic content of a belief, which makes it a belief about one thing rather than another, is a function of how people have been conditioned to respond linguistically when caused to do so by various objects and events in their environment. For example, what distinguishes one's beliefs about cats from one's beliefs about other things is a social history of having been conditioned to be caused to use certain words appropriately by the presence of cats in one's environment.

Obviously, minds characterized by folk-psychological beliefs and desires, unlike generically Cartesian minds, are not logically distinct from their environment. The contextuality of their beliefs disqualifies such minds from being devices for representing their environment. Folk-psychological beliefs are not separate enough from the rest of the world to be independently identifiable symbolic stand-ins, in the holder's mind or language, for things outside of that inner logical space. This is the feature of folk psychology that Davidson is talking about when he says that "beliefs are true or false, but they represent nothing" (Davidson 1989, 165). We cannot first identify folk-psychological beliefs and then ask what caused them. Consequently, there is no way for the content of a set of folk-psychological beliefs to vary independently of the rest of the world. There is no way, in other words, for a set of folk-psychological beliefs *in toto* to be about things other than their causes and thus all be false.

This thumbnail sketch of contemporary pragmatism's presupposed psychology suffices to counter the most common critical-realist criticism. Critical realists typically object to pragmatism on the grounds that it does not take successful scientific theories with the seriousness that is due them. This is because pragmatism, so the argument goes, is a form of fictionalism that treats both scientific theories and religious doctrines as useful, even though false, depictions of the world. Drees is representative. He discounts fictionalism, and pragmatism by implication, saying that "it is hard to have wrong beliefs which none the less support right behavior, and even harder to persistently modify wrong beliefs on the basis of new experiences with the world into other wrong beliefs, which are again successful" (Drees 1996, 21). If that were what pragmatism amounts to it would be implausible indeed; but it is not.

Contemporary physicists' beliefs about quarks and Christians' belief about God are not necessarily useful fictions on the pragmatist account of

them. They are semantic contents which these and other people hold to be true. Treating them as false would amount to contrasting the effects of holding them true invidiously with the effects of holding some other beliefs true. Someone making such a contrast would be treating the beliefs in question as useful fictions for those who hold them in contrast to the beliefs which they themselves hold to be true. There is nothing about belief in quarks or in God *per se*, however, that would require pragmatists to make such an invidious comparison and treat them as useful fictions. In this respect, scientific beliefs about unobservables and religious beliefs about God, for example, are no different from ordinary everyday beliefs about macroscopic physical objects. None of them is a useful fiction intrinsically. Whether any of them is such depends entirely on whether and how it is compared with other beliefs that are held to be true.

This point addresses what I take to be the most important critical-realist reservation about pragmatism: that it gives religious believers reason to stand pat with respect to the sciences. After all, why worry about taking scientific results into account and adjusting religious convictions to them, if scientific theories are nothing but useful fictions? This position, as I have indicated, rests on a misunderstanding of pragmatism.

Holding quantum mechanical theory to be true, for example, enables us to predict and control aspects of our environment in unprecedented ways. There is no point in denying the truth of quantum mechanical theory unless and until something better comes along. If religious believers choose not to adjust their convictions to take these scientific results, along with their environmental and social fallout, into account, it is not because of any excuse for inaction that pragmatism gives them.

The crux of the disagreement between pragmatists and critical realists in this regard concerns what it is about the sciences that deserves our respect—the human creativity that produces new science, or representational accuracy? The pragmatist concern is that making representational accuracy the hallmark of cognitive value in the sciences risks inhibiting the creativity that produces scientific innovations. The cognitive psychology presupposed in critical realism provides a striking case in point.

The psychological terms presupposed in pragmatism require no knowledge of the inner workings of people. Pragmatism, therefore, has no prior commitment to the character of the underlying systems that produce the performances to which it assigns cognitive value. What those systems are must be determined by further scientific inquiry. Specifically, pragmatism does not require that these systems include folk-psychological beliefs and desires or anything like their semantic content. The cognitive value of folk psychology lies in its usefulness to us, not in how well it comports with what goes on inside us when we solve problems. That usefulness would not be destroyed if future cognitive scientific theories included nothing like folk-psychological states.

Such is not the case with critical realism. According to its standards of cognitive value, if future cognitive scientific theories did not include inner symbolic states that have semantic content (and thus qualify as representations of the world), its presupposed psychology would have no cognitive value, because it would not correspond to the nature of the systems responsible for our cognitive performances. In that eventuality, critical realism itself would lose its status as a realistic account of cognitive value in religion and science. Critical realism cannot retain its own claimed realistic status while allowing that future inquiry might replace its presupposed cognitive psychology. It, therefore, has to foreclose inquiry about human cognition in a way that pragmatism does not.

The possibility that the cognitive systems at work in our religious and scientific adjustments to the world include neither folk-psychological beliefs nor Cartesian representations is not just the stuff of science fiction. Van Gelder, in several essays (1995a; 1995b) and a coauthored collection of readings (van Gelder and Port 1995), develops a powerful case for the plausibility of a relatively new research program in cognitive science in which the systems responsible for our successes in functioning effectively in the world are not generically Cartesian minds at all.

By van Gelder's definition, the systems that account for our performances—such as pattern recognition, decision making, and language use—are representational if they have particular aspects which “can be systematically interpreted as having semantic content, and whose causal role in the cognitive system is in accord with their interpretation” (van Gelder 1995a, 19). Whether cognitive systems are in fact representational in this sense should be the subject of inquiry, not settled in advance. As van Gelder says, “What it is inside the head that allows us to negotiate our way around the world is a matter for science to determine, using whatever theoretical framework does the explanatory job best” (1995a, 19). There is no a priori reason, outside the Cartesian fancy that we know our own minds first and best of all things, to suppose that the best explanations of our various cognitive performances will be ones that posit representations and their manipulation.

Van Gelder uses the example of a nineteenth-century invention, a governor to maintain uniform speed in steam engines (1995b, 347–50). Such a device might work computationally, forming representations of such things as the speed of the engine's flywheel, performing calculations on those representations, and then adjusting the engine's throttle valve accordingly. In fact, the actual device developed by James Watt was a spindle whose centrifugal motions were linked to the throttle valve. This centrifugal governor worked without forming, or performing calculations on, representations of the engine. It and the engine form a coupled dynamic system, whose changes over time are describable mathematically in terms of differential equations.

We may take the steam engine governor as a model of the human mind. By analogy, the human mind might operate computationally on representations or noncomputationally without representations, as the centrifugal governor does, to secure the kind of adjustments to the environment that occur in our religious and scientific practices. The dominant mode of explanation in contemporary cognitive science is computational. It attributes our cognitive performances to internal processes in which input symbolic representations are transformed into output symbolic representations through a series of algorithmic sequential steps. The states through which the posited systems that produce our cognitive performances evolve are configurations of representations located inside us, whose independently specifiable contents may or may not conform to the rest of the world. Such is the kind of cognitive science presupposed in critical realism.

Some cognitive scientists have begun thinking of the processes that produce our various cognitive performances in dynamical terms. The states through which a dynamical cognitive system evolves are numerically measurable quantities, not configurations of symbols. Dynamical rules of evolution specify the simultaneous mutual coevolution of these states, not algorithmic sequences of symbol transformation. The dynamical hypothesis in contemporary cognitive science is that dynamical systems like that of the centrifugal governor underlie, and are responsible for, various human cognitive performances. Dynamical cognitive science is not essentially representational. The posited dynamical systems that produce our cognitive performances may, but need not, involve representational states and processes (van Gelder 1995a, 19–20).

The difference between computational and dynamical modes of explanation becomes apparent in their respective accounts of the underlying processes responsible for human decision making. This is of particular importance because decision making is certainly a case in point of high-level cognitive performance. Classic utility theoretical accounts of decision making are computational. Static input representations of options are algorithmically manipulated to obtain the output representation of the choice to be made (van Gelder 1995b, 360).

In contrast, motivational oscillatory theory (MOT) and more complicated decision-field theory are dynamical. These theories posit states—for example, of motivation, satiation, and movement—that are changing continuously and affecting one another. They use differential equations to describe how these states evolve over time. According to theories of this type, the cognitive processes that account for our decision-making performances are “not the manipulation of symbols, but rather state-space evolution in a dynamical system.” This is “decision making without decisions” in that there are no “discrete occurrences that one could characterize as decisions” (van Gelder, 1995b, 362). Instead, “decision making is better thought of as the behavior of an agent under the influence of the pushes



and pulls that emanate from desirable outcomes, undesirable outcomes, and internal desires and motivations; in a quasi-gravitational way, these forces act on the agent with strength varying as a function of distance” (van Gelder 1995b, 362). Proponents of decision-field theory claim that it is more powerful than utility theories and is able to explain, among other things, some of the paradoxes of the latter.

The elimination of internal representations and their manipulation as the central mechanism in cognitive scientific explanations “grows out of the realization that for at least some aspects of cognition it is possible to provide more illuminating dynamical descriptions which invoke no representations. That is, anti-representationalism is not just idle speculation; it is based on powerful new ways of describing systems that exhibit cognitive performances” (van Gelder 1995a, 20). Dynamical theories show “how the internal operations of a system interacting with an external world can be so subtle and complex as to defy description in representational terms—how, in other words, cognition can *transcend* representation” (van Gelder 1995b, 381; emphasis in original).

The dynamical-systems approach to cognitive science comports with pragmatism in at least three respects. First, to the extent that representations do not figure in dynamical explanations of cognitive performance in general, their cognitive value does not consist in the accuracy with which they represent the world. By the same token, the cognitive value of religious and scientific practices specifically, if explained dynamically, would have to lie in something other than the correspondence of their representations to the world. As in the case of the centrifugal governor, it would be a matter of how well they worked for their designated purpose.

Second, dynamical cognitive systems are not inner in the way that the Cartesian mind is; that is to say, they cannot be identified independently of the world around them. The states that interact and evolve over time are located both inside the human organisms whose cognitive performance is being explained and in the environment. It is the constant coupling of these internal and external factors over time in one dynamical system that accounts for the adjustment of the organism to its environment. It makes no sense, then, to treat human cognition as something that in principle could be described without reference to its physical instantiation or environment.

These first two points combined place pragmatism and dynamical cognitive science together squarely in opposition to the agenda of modern epistemological philosophy. For both, it is a mistake to treat the human mind-brain as a microcosmic image of whatever world it is in and to suppose that one can ascertain the cognitive value of religion or science simply by consideration of the objects and processes located in that inner representational space.

Third, human adjustments to the environment by means of religious and scientific practices respectively need not be a result of the operations

of one and the same cognitive system. They may well be products of different dynamical systems instead of one central processor of representations as would be the case in computational cognitive science. In van Gelder's words, "there is no one dynamical system that any interesting cognitive agent is identical with, and there is no more a fundamental unity to cognition (and hence to mind) than there is unity to all the phenomena of nature. At many different levels, I am many different kinds of dynamical system, belonging loosely together by virtue of their association with one object (my body)" (van Gelder 1995a, 24). This parallels the pragmatist view that minds, described folk-psychologically, are webs of beliefs and desires different portions of which have cognitive value because they serve quite different purposes, not because of some shared unitary feature.

My principal point, however, is not that dynamical theories in cognitive science support the pragmatist view of human cognition. It is that, given the availability of both computational and dynamical theories in contemporary cognitive science, pragmatism does not foreclose the future course of inquiry in this area as critical realism does—and must. Critical realism must rule out dynamical theories in cognitive science in advance in the name of its preconceived idea that human cognition is the work of a generically Cartesian representational device and can be nothing else.

If dynamical explanations of the sort that van Gelder describes were to become widely accepted in cognitive scientific circles, then, scientifically speaking, human cognition would be very different from what critical realists suppose and require it to be. It would not be the operations of a single representation processor located in our brains. It would be, instead, the operations of a number of nonidentical, nonrepresentational dynamical systems characterized by different variables and equations whose states are located both inside our bodies and in the surrounding environment (van Gelder 1995a, 24). In that scientific eventuality, critical-realist accounts of the cognitive value of religion and science would lose any claim to being based on knowledge about the nature of human cognition. This is why critical realism must foreclose cognitive-scientific inquiry in favor of the generically Cartesian mind, van Gelder's case for the viability of nonrepresentational dynamical accounts of cognitive systems notwithstanding.

For experiment-minded pragmatists, this is the unpardonable sin, blocking inquiry in the name of preconceived ideas. As previously noted, pragmatists have no prior theoretical commitments to the character of the underlying systems responsible for the cognitive performances that we routinely describe in folk-psychological terms. Scientifically speaking, the only thing that matters to pragmatists is whether computational or dynamical theories in cognitive science enhance our ability to predict and control in some way. Should a computational or a dynamical account of cognitive systems turn out to have more predictive power in certain respects

than folk psychology, then so be it. In such an event, it is quite likely that folk psychology would continue to be of use for many everyday purposes of predicting and controlling one another's behavior.

Critical realism, then, is seriously and literally defective when compared to pragmatism as a vocabulary in terms of which to discuss the cognitive value of religion and science. First of all, contemporary pragmatism is not a form of fictionalism, as critical realists typically claim. Consequently, the contention that it does not treat the results of scientific, or religious, inquiry with the seriousness they deserve is unfounded. Second, critical realism's generically Cartesian view of the mind entails skepticism. By all rights, its position should be that the cognitive value of both religion and science is indeterminable. Third, critical realism forecloses inquiry in the crucial area of cognitive science. In religious terms, the difference between critical realists and pragmatists in this respect is the difference between old lights and new lights. Pragmatists are open to the possibility that there is new light yet to be shed on what we are as cognitive beings. Critical realists are not. These considerations should go a long way toward removing whatever attractions the vocabulary of critical realism may have held for those who are interested in comparing the cognitive value of religion and science.

One impediment, historically, to mutual understanding between religion and science has been the allegation that religions typically involve dogmatic commitments that block scientific inquiry in the name of religious truth. If my argument in this essay is correct, there is some merit to this allegation. Most of the advocates of critical realism writing in the field of religion and science in recent years are religionists who want to make the case that some form of religion, usually Christianity, deserves a cognitive status similar to that of science. Their position blocks further scientific inquiry in the name of a particular cognitive psychology, one that has historic associations with the Platonic-Christian doctrine of the soul as something that is detachable from the body and its earthly environment. Critical realism, thus, actually reinforces a main suspicion of religion *vis à vis* the sciences. It forecloses scientific inquiry in the name of religious-epistemological dogma.

Pragmatism makes the case for cognitive parity between religion and science by showing how science is every bit as interested a form of human discourse as religion, not by claiming that both involve subjective mental representations that correspond to objective reality. This strategy carries with it no commitment to the notion of subjectivity, that the mind and mental states are describable independent of their surroundings. Thus, pragmatism is open to scientific and religious innovation in ways that critical realism cannot be, particularly in the sensitive area of psychology. Unlike critical realism, pragmatism does not reinforce the suspicion that assigning

religion a cognitive status comparable to that of the sciences automatically means foreclosing scientific inquiry in the name of religious dogma. This, I believe, is a major contribution to the mutual understanding of religion and science.

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