Abstract
Few address the extent to which William James regards the neo-Lamarckian account of "direct adaptation" as a biological extension of British empiricism. Consequently few recognize the instrumental role that the Darwinian idea of "indirect adaptation" plays in his lifelong efforts to undermine the empiricist view that sense experience molds the mind. This article examines how James uses Darwinian thinking, first, to argue that mental content can arise independently of sense experience; and, second, to show that empiricists advance a hopelessly skeptical position when they insist that beliefs are legitimate only insofar as they directly correspond to the observable world. Using his attacks on materialism and his defense of spiritualism as examples, I particularly consider how Darwinian thinking enables him to keep his empiricist commitments while simultaneously developing a pragmatic alternative to empiricistic skepticism. I conclude by comparing his theory of beliefs to the remarkably similar theory of "memes" that Richard Dawkins uses to attack spiritualistic belief—an attack that James anticipates and counters with his pragmatic alternative.

Keywords: Darwinism, Lamarckism, Dawkins, Empiricism, Faith, Materialism, Science.

William James on Belief: Turning Darwinism against Empiricistic Skepticism

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Introduction
William James is remembered for challenging empiricistic skepticism by expounding a more encompassing "radical empiricism." Strangely, he is not much noted for applying the same strategy to Darwinism, yet this is what he does. He extends the thinking by which Darwinism holds that independent

factors are responsible for generating and selecting variations. He assimilates it into his investigations of mind. With its aid, he brokers a concept of consciousness as a "selecting agency" that forms a cornerstone in his philosophy, his psychology, and his lifelong campaign against mainstream empiricism.

At first blush, this thesis might seem highly speculative, for only occasionally does James explicitly describe his concept of consciousness in Darwinian terms. What this misses, however, is that James first presents the concept in reaction to Herbert Spencer's neo-Lamarckian psychology; that Darwinism is the most obvious alternative to neo-Lamarckian evolution; and that James is well versed in Darwinism, having published and lectured on it, and having had a frontline view of the Darwinian debate during his student years. Also missed is the fact that he regards the neo-Lamarckian idea of "direct adaptation"—which holds that environmental pressures elicit adaptive variations, as opposed to merely reinforcing them—as an extension of what he already dislikes about British empiricism.

James's work is, in fact, elucidated considerably by recognizing, first, that he sees the neo-Lamarckian account of "direct adaptation" as an analogue to the empiricist view that environmental stimuli mold the mind; second, that Darwinism—as a theory of "indirect adaptation"—provides a model upon which he can explain how mental content can arise independently of environmental stimuli; third, that this model not only undermines conventional empiricist theories of mind but also shows that empiricists advance a hopelessly skeptical position when they insist that beliefs are legitimate only insofar as they directly correspond to the observable world; and, fourth, that the theories of mind and knowledge James develops with the aid of Darwinism enable him to keep his core empiricist commitments while simultaneously challenging the materialism and skepticism that accompany many empiricist philosophies.

Early Roots in Darwinism

Though evolution by natural selection first became public in 1858 when papers by co-founders Charles Darwin and Alfred Russel Wallace were presented to the Linnean Society, the theory was not widely noticed until the late 1859 publication of *On the Origin of the Species*. Thus when James entered Lawrence Scientific School at Harvard in 1861, the controversy was relatively new, and he landed in the middle of it. Asa Gray and Louis Agassiz, after all, were both on the Lawrence faculty. The former was probably the leading proponent of Darwinism then in the United States, and the latter was undoubtedly its foremost scientific critic.

It is fitting, then, that James's first two publications—both from his student years—address Darwinism. The first (1865a) reviews a work

by T. H. Huxley. In it James mildly rebukes Huxley's "left wing" (i.e., anti-religious), radical materialism yet credits him for inquiring into whether humans are, like other species, subject to transmutation (pp. 290–291). The second (1865b) discusses Wallace's 1864 *The Origin of the Human Races*, a work arguing that humans are not subject to natural selection in the same way as other species, for humans are "social," "sympathetic," and intellectually complex. Thus, in the case of humans,

> less robust health and vigour than the average does not entail death. . . . Some division of labour takes place; the swiftest hunt, the less active fish, or gather fruits; food is to some extent exchanged or divided. The action of natural selection [on the physical man][1] is therefore checked; the [physically] weaker . . . do not suffer the extreme penalty which falls upon animals so defective. [Wallace, quoted in James, pp. 262–263]

Similarly, whereas other species survive changes in the physical environment only by alterations in their own physical structure, humans adapt "for the most part by [their] intellect alone" (p. 263), for example, by conceiving better tools. Insofar as social and intellectual capacities are more important to survival, and physical constitution less so, human evolution proceeds more on a "moral" and "mental" level than on a physical one (p. 263).

It is not clear whether James, in his mature work, continues to hold that such factors check natural selection on the "physical part of man" so that "[t]he physical part is left immutable" (1865b, p. 263). Crucially, however, James (1878a) does retain the idea that "social affections" and intelligence alter the "survival formula" so that individuals "may survive, even though [they] be ill-adapted to the natural 'outer' environment" (p. 899). Such individuals include "[t]he story-teller, the musician, the theologian," and others who receive a livelihood in return for satisfying wants of their community—"wants," James urges, that "are pure social ideals, with nothing outward to correspond to them" (p. 899). In his magnum opus, *The Principles of Psychology*, James (1890i) similarly maintains that human consciousness pursues what is beyond the immediate world of sense experience. It pursues future ends (p. 8). It pursues interests "which it *creates*, and which, but for it, would have no status in the realm of being whatever" (p. 140). Thus "[e]very actually existing consciousness seems to itself at any rate to be a *fighter for ends*, of which many, but for its presence, would not be ends at all" (p. 141).

Assimilating the Theory of Indirect Adaptation

As James explains, the Darwinian theory of indirect adaptation holds that the role of the environment "is much more that of *selecting* forms [i.e., variations] . . . than *producing* of such forms" (1890ii, p. 636, fn.). For reasons independent of environmental pressures, organisms of a

given species vary. Those endowed with a variation that helps them cope with environmental pressures enjoy higher rates of survival and reproduction. In this way environmental pressures selectively reinforce what they did not elicit and thereby shape evolutionary development. James lauds this distinction "between causes which originally *produced* [a variation] . . . and causes that *maintain* it after it is produced" as "the triumphant originality of Darwin" (1880, p. 622).

In the same way that Darwinism holds that environmental pressures typically do not elicit variations, James asserts that environmental stimuli do not exclusively and directly shape the mind. If they did, he quips in a famous passage, then dogs bred amongst sculptures,

> ought to become, if time were given, accomplished *connoisseurs* of sculpture. Anyone may judge of the probability of this consummation. Surely an eternity of experience of the statues would leave the dog as inartistic as he was at first, for the lack of an original interest to knit his discriminations on to. [1890i, p. 403; also see 1878b, p. 930]

Put another way, dogs could acquire artistic taste, but not solely as a result of environmental stimuli, for the environment can only reach dogs on an aesthetic level if dogs already possess sensitivities—or what James calls "selective interests"—that make them receptive to aesthetic stimulation. Therefore their interests must change before the environment can reinforce an aesthetic appreciation. "Interests," writes James, "are an all-essential factor which no writer pretending to give an account of mental evolution has a right to neglect" (1878a, p. 897, fn.).

The view offered here mirrors the Darwinian position that environmental pressures shape only what already exists in some degree. Many evolutionists, for example, now believe that proto-birds possessed feathers for thermoregulation, not flight. However, it so happened that feathers enabled them in some slight degree to exploit aeronautic factors that slow descent, and thus to leap greater distances. Because this behavior was advantageous, accidental congenital variations that further facilitated it were selectively reinforced. Future generations consequently became increasingly flightworthy. The point, once again, is that Darwinian evolution follows principally from changes in organisms that are reinforced but not caused by environmental pressures. This is also the point about the dogs. Just as creatures cannot be shaped by flight-enabling properties of the atmosphere unless they first possess features that exploit such properties, dogs cannot be shaped by aesthetic phenomena unless they first possess interests that make them sensitive to such phenomena.

James directs this argument against neo-Lamarckian evolutionists, who hold that "[t]he environment . . . mould[s] the animal by a kind of direct pressure, very much as a seal presses . . . wax . . ."

(1880, p. 622). He also directs it against "psychologists of the English empiricist school," whom he accuses of reducing the mind to "absolutely passive clay, upon which 'experience' rains down" (1890i, pp. 402–403; also see 1878b, p. 929). Most of all, he directs it against Herbert Spencer, who combines the two views into what James calls "evolutionary empiricism." Whereas conventional British empiricists assert that relations between objects in the sensible world determine relations between ideas in the mind, Spencer describes everything from basic organic processes on up to intelligence as an "adjustment of inner to outer relations . . . initiated by the actions of things . . . outside of the organism" (1855, p. 498). To this he adds the Lamarckian principle of inheritance of acquired characters, arguing that features impressed upon an organism during its lifetime are in some measure inherited by its progeny. This means a departure from the classic empiricist tenet that each mind enters the world as a "blank slate." Even so, Spencer's psychology remains essentially empiricist. As James notes, it retains the core empiricist thesis that each "mind owes its present shape to experience," only in this case experience includes both that "of the individual" and that "of ancestors as well" (1890ii, p. 620).

Against neo-Lamarckian and empiricist psychologists alike, James maintains that just as environmental pressures do not solely determine evolutionary development, environmental stimuli do not solely determine how an individual mind develops during a single lifetime. He argues this on the factual grounds that minds do adapt to similar environments in a plurality of ways (1880, pp. 634–635; cf. Darwin 1859, pp. 133–134), on the conceptual grounds that environmental stimuli can only shape mental content that already exists in some degree (1878a, p. 897, fn.), and on the functional grounds that the conscious mind "can be efficient . . . only . . . by narrowing its point of view" (1880, p. 620). Thus consciousness constantly acts as "*a selecting agency*" (1890i, p. 139). On the basis of selective interests, it emphasizes certain aspects of the world and suppresses others, meaning that in some degree it determines how the world impinges upon it.

A Pragmatic Challenge to Materialism

Charles Sanders Peirce articulates the first formal pragmatic definition of meaning when he declares that to ascertain the meaning of a concept, we need only "[c]onsider what effects, which might conceivably have practical bearings, we might conceive the object of our conception to have" (1878, p. 266). James (1879a) adopts this view, yet breaks somewhat with Peirce by strongly emphasizing the extent to which individual interests decide what effects get attached to objects of conception. "One man conceives [oil] as a combustible, another as a lubricator," and still another "as a darkener of wood" (p. 952). For different people, the object—in this case, oil—is valued and thus noted for producing

different effects, so that the object's "essence"—that is, the key set of features that make it what it is—"varies with the end we have in view" (p. 952; also see 1890ii, pp. 335–336).

By making selective interests central to his theory of meaning, James does on an epistemological level what Darwin does on a phylogenetic one. He allows for a separation between that which generates new content and that which causes it to inhere. In some cases, the mind selectively filters what the environment generates, as in the example above. In other cases, the environment exerts a selective influence on what the mind generates. James (1880) proposes that new concepts having no direct counterpart in the immediate environment are "produced in the shape of random images, fancies, [and] accidental out-births of spontaneous variation in . . . the excessively instable human brain" (p. 641). Then, depending on how these accidents of cognition fit conditions of life, "the outer environment simply confirms or refutes, . . . preserves or destroys" them (p. 641). As he puts it elsewhere, a concept may be considered as "a 'spontaneous variation' in some one's brain. For one that proves useful and applicable there are a thousand that perish through their worthlessness" (1890ii, p. 636). However, whereas natural selection measures utility simply as the brute fact that some variations happen to help some organisms survive and propagate, James holds that the human mind confronts "the utility of selection [as] obviously created and measured by [its own] interests . . ." (1879b, p. 19). Thus it confronts the utility of concepts as a teleological matter involving value judgments about what *teloi* or ends are worth pursuing. One person values art, another not; hence one person has use for aesthetic concepts, while the other does not.

This view of concepts plays a key role in James's struggle against materialists, especially those who think science shows that reality is solely made of causally determined physical constituents. Empiricists predating James question the concepts of "matter" and "cause." George Berkeley challenges the distinction between secondary and primary qualities, and therewith the notion that the phenomenal world depends upon an independently existing material substrate. David Hume notes that we observe successions of events but never an additional quality of "necessary causal connection" joining them. Under their sway, even Huxley, whom James regards as a radical materialist, grants that the materialist position is indemonstrable. Yet he nonetheless advocates that scientists adopt it, and for reasons James can, in fact, respect. As Huxley explains:

> All physical science starts from certain postulates. One of them is the objective existence of a material world. . . . Another postulate is the universality of the law of causation; that nothing happens without a cause . . . The validity of these postulates is a problem of metaphysics; they are neither self-evident nor are they, strictly speaking,

> demonstrable. The justification of their employment . . . lies in the circumstance that expectations logically based upon them are verified, or, at any rate, not contradicted, whenever they can be tested by experience. [1887, pp. 335–336]

James too suggests that these basically pragmatic grounds justify scientists postulating physical and causal realities. However, he denies they justify the stronger claim that all realities are physical and causal—that physicality and causality are essential characters of anything that is. "[T]he whole doctrine of essential characters," he reminds his readers, "is intimately bound up with a teleological view of the world" (1890ii, p. 336, fn.). Thus if scientists say physicality and causality are essential, they in practice mean essential for scientific purposes. Consequently Huxley's metaphysical postulates do not merely state conceptual means by which science pursues its ends; they also indicate ends science pursues. Science pursues physical accounts of observable phenomena, which usually means causal accounts. Research procedures that fail to further these ends typically fall outside the canon of accepted scientific methodology, just as a science that so fails typically ceases to count as a *bona fide* science (see 1896, p. 463). In today's terms it becomes mere "soft science" or no science at all.

The problem, then, that James has with those citing scientific evidence in support of materialism is that science historically pursues ends that discourage it from affirming anything else. "Science," he writes, needs to be "reminded that her purposes are not the only purposes, and that [postulates] which she has use for . . . may be enveloped in a wider order, on which she has no claims at all" (1890ii, p. 576). His general point—and, in fact, a central point of many pragmatic philosophies—is that particular affirmations do not amount to sweeping negations. To affirm the existence of physical realities is to claim that some physical realities exist, not that nothing other than them exists. However, to the extent that one emphasizes scientific purposes to the exclusion of others, the former claim becomes practically equivalent to the latter. This leads to what James regards as monistic, "half-way empiricism"—monistic because it acts on the assumption that existence is made of one kind of stuff, namely, physical stuff, and half-way because it prejudicially dismisses experiences (empirical data) that do not square with this assumption (see 1897a, p. 447). Seen thus, scientific affirmations of materialism, though couched in empirical terms, mark a retreat from a genuinely empirical attitude.

James expresses hope that the future will deliver a more radically empirical science (see 1909, p. 773). "[I]n its essence," he writes, "science only stands for a method and for no fixed belief" (1897b, p. 698). So although historically engrained habit ties science to materialistic belief, James holds that science can move beyond it.

A Darwinian Challenge to the Concept of Belief as Correspondence

The copy theory of truth is a target against which James directs his pragmatic philosophy. He associates it with Spencer's view that "outer relations" determine how things get related "in" the mind; and that a belief, considered as an "inner relation," is true inasmuch as it "copies" or "corresponds" to a relation in the "outer" environment (see 1878a, pp. 902–903; 1904a, p. 468).

James suggests, to begin with, that Spencer does not appreciate the epistemological ramifications of his own evolutionary psychology. It is actually Spencer, not Darwin, who coins the phrase "survival of the fittest." If fitness is measured by usefulness to life, it should matter little whether an idea copies the world, so long as it guides people into beneficial interactions (see 1904a, p. 468; 1907a, p. 579). People's ideas about how to get from point A to B, for example, often misrepresent streets as intersecting at right angles. Yet so long as they reliably and efficiently get them to their destination, few will call them "untrue."

A second reason James (1890ii) rejects Spencer's position is that it implies that the most unshakable beliefs should correspond to the most frequently observed "outer relations." While granting this sometimes occurs, he cites science as a domain where it often does not, arguing that scientists have produced many laws precisely "by ignoring conditions which are always present" (p. 636). Physicists have pondered how bodies would move over a frictionless surface or respond to a force as point-like objects; aided by these ideal objects that are never actually observed, they have noticed fundamental tendencies in nature. This being so, James considers it absurd to think that scientists acquire beliefs ("inner relations") by merely absorbing salient "outer relations." He proposes, therefore, just the reverse of Spencer's position: "Instead of experiences engendering the 'inner relations', the 'inner relations' are what engender experiences here" (p. 638). Nascent scientific beliefs sometimes arise in a manner "akin to that of the flashes of poetry and sallies of wit to which the instable brain-paths equally give rise" (p. 636). Many direct attention where nothing is to be seen and are consequently abandoned. Others, however, help scientists notice and connect what once seemed unconnected and are therewith empirically verified. Using Darwinian language to express the point, James writes that scientific beliefs must, indeed, "prove their worth by being 'verified'. This test, however, is the cause of their *preservation*, not that of their production" (p. 636).

A third objection James raises against Spencer is that observable phenomena relate in myriad ways, so there is rarely a single "outer relation" to which an "inner relation" ought to correspond (1878b, pp. 921–922). The belief, for example, that the Earth goes around the Sun is not justified by brute correspondence to observed spatial relations. Indeed, if one were to spend a year plotting distances between the Earth

and Sun, the observations would correspond equally to the belief that the Sun goes around the Earth—in fact, it does go around the Earth if the latter is regarded relativistically as a stationary point of reference.[2] From here one could construct a solar system, in a vein similar to the sixteenth century astronomer Tycho Brahe, in which the Sun goes around the Earth, and the other planets around the Sun. If updated with elliptical orbits and perihelion shifts, this Tychonic model would faithfully represent the paths of objects in the solar system relative to one another; it would account for why Venus appears largest during its crescent phase, and so on. For all this, however, it would not work nearly so well as the currently favored Keplerian model does. Whereas the Keplerian model has one center of motion, the Tychonic is more complicated with two; whereas the former uses the Earth's orbit to account for annually reoccurring displacements and aberrations of stars, the latter must assume stars actually undulate lockstep with the Earth-based year; and whereas the former—or something close to it—meshes with both classical and modern physics, the latter integrates poorly. Of the two models, then, the Keplerian is favored for what James regards as pragmatic reasons of workability. It more efficiently makes sense of accumulated theoretical and observational experiences about physical nature. It is easier to use and understand. On this pragmatic account, beliefs do not merely capture outer relations. As instruments of "making sense," they also furnish frameworks through which certain relational orders cohere into appearance. The belief that the Sun is the approximate center brings into appearance an arrangement of neat, concentric planetary paths. Thus, to re-quote James, "the 'inner relations' . . . engender experiences here" (1890ii, p. 638).

That many beliefs are not directly elicited by brute facts; and that few, if any, have a one-to-one correspondence with them suggests that strict correspondence is either a useless criterion for truth or a hopelessly skeptical one. There are, in fact, not just two, but an infinite number of possible models that capture the relational order of the solar system, for any arbitrary position can be adopted as a stationary point of reference. If mere correspondence determines truth, then all these models are equally true; and if one-to-one correspondence is the criterion, then all are equally false. Matters are worsened by the fact that we cannot maintain any model without assuming the future will resemble the past; and this assumption, as Hume and others show, cannot be affirmed on the basis of correspondence to facts. As already intimated, James holds we can escape this difficult situation if we acknowledge that the legitimacy of beliefs depends more on their functional value and sense-making power than on their brute correspondence to facts; as will soon be seen, he maintains that if we adopt this pragmatic attitude, we acquire a basis not only for legitimating scientific beliefs but also spiritual ones.

A Pragmatic Defense of Faith

James maintains that the "experiences which are used to prove a scientific truth are for the most part artificial experiences of the laboratory gained after the truth itself has been conjectured" (1890ii, p. 638). By "artificial," however, he does not mean "unreal." "Artificial" comes from the Latin words *ars* and *facere*. *Ars* can connote "art," as in "skill," "handicraft" or "manner of acting," and *facere* means "to make." By "artificial experiences," then, James describes "experiences made or created through action." Thus when he famously declares we can will ourselves into a belief by acting as if the thing in question were real, he does not merely mean we can convince ourselves on a psychological level; he means also that actions can generate experiences, data, and phenomena that support our belief. In science this is easy to see. The use of a proton collider to produce exotic particles is but one example of scientists acting to create phenomena that support their beliefs. This occurrence is also easy to see in everyday life. A woman who acts on the belief that she is not, after all, too sick to get out of bed for hockey practice actually eliminates a symptom and therewith part of the experiential basis upon which she judged herself to be so very ill in the first place.

Of particular interest to James (1882) are cases in which a person acts on a belief prior to having justification for it, which is to say, acts on faith. "Faith" here means believing what might well be doubted: "as the test of belief is willingness to act, one may say that faith is the readiness to act in a cause the prosperous issue of which is not certified to us in advance" (p. 70). Put otherwise, "[f]aith is synonymous with working hypothesis" (p. 73)—"working" in the twofold sense of being unverified and of being a way of working or acting in the world. As a fallibilist, James holds that nothing is ever completely certain, and consequently that all belief involves a degree of faith. However, degrees vary radically:

> A chemist who conjectures that a certain wall-paper contains arsenic . . . [needs only] faith enough to lead him . . . to put some of it into a hydrogen bottle, [and so find] out by the results of his action whether he was right or wrong. But theories like that of Darwin . . . may exhaust the labors of generations in their corroboration, each tester of [the theory] proceeding in this simple way, that he acts as if it were true, and expects the result to disappoint him if his assumption is false. The longer disappointment is delayed, the stronger grows his faith in his theory. [pp. 73–74]

If longer delays correlate with stronger faith, and delayed disappointment merely means observable facts do not refute a belief, then metaphysical belief—which in this case means belief in what is "beyond the physics," beyond what can be observed in space and time—should be capable of inspiring unshakable faith. Belief in the divine is a common

example of this. Two others, which James particularly dwells upon, are the principles of uniformity and causality.

The first of these follows from the idea that nature is lawful, so that things behave according to the same rules regardless of time or place; and this, writes James (1890ii), is an idea "that has to be *sought* under and in spite of the most rebellious appearances" (p. 636). After all, for every phenomenon accounted for by an established rule or law, untold others are not. The tendency is to take utterly for granted that these untold others only appear random and inexplicable because their connection to underlying laws is yet undiscovered. On the very basis of what it asserts, however, this belief cannot be based on observation, on what actually appears, for it specifically claims things are other than they appear. Hence James considers belief in the uniformity principle to be "far more like a religious faith than like assent to a demonstration" (p. 637; also see 1882, p. 71; 1884, pp. 567–568; 1895, p. 498). He reaches a similar conclusion about the principle that all changes have causes. Again, what one concretely perceives are successions of phenomena, with some types consistently preceded and hence "caused" by others. But what the principle and indeed the concept of "cause" inspire is a "demand for *some* deeper sort of inward connection between phenomena than their merely habitual time-sequence. . . . The word 'cause' is, in short, an altar to an unknown god; an empty pedestal still marking the place of a hoped-for statue" (p. 671; also see 1884, pp. 567–568; 1895 p. 498).

These words are partly drawn from the New Testament, which mentions an altar to an unknown god (Acts 17:23), and describes faith as "the assurance of things hoped for, the conviction of things not seen" (Heb 11:1 RSV), and the use of "hoped for" by both James and the New Testament is instructive. It emphasizes a subjective, emotional impetus in faith, as well as a teleological one. People do not leap chasms when they are indifferent to what is on the other side. Rather, they reserve leaps of faith for what they care about, long for, and desire to be real; and in leaping—"leaping" almost always connoting action—they sometimes become actors in realizing the object(ives) of their faith (1909, pp. 779–780). James (1882) explains this with an example in which life itself hinges upon literally taking a leap. "Suppose," he writes,

> I am climbing in the Alps, and . . . work myself into a position from which the only escape is by a terrible leap. Being without similar experience, I have no evidence of my ability to perform it successfully; but hope and confidence in myself make me sure I shall not miss my aim, and nerve my feet to execute what without those subjective emotions would perhaps have been impossible. But suppose that, on the contrary, the emotions of fear and mistrust preponderate; . . . why, then I shall hesitate so long that at last, exhausted and trembling, and launching myself in a moment of despair, I miss my foothold and roll

> into the abyss. In this case, and it is one of an immense class, the part of wisdom clearly is to believe what one desires; for the belief is one of the indispensable preliminary conditions of the realization of its object. [pp. 74–75]

Whether by moving mountains or empowering people to leap from them, faith makes things happen. These happenings can constitute evidence for what was initially taken on faith, meaning faith, and more particularly acting on it, sometimes "creates its own verification" (p. 75).

James holds that scientists who act on the principles of uniformity and causality go through a process comparable to that of the trapped mountaineer. They too are motivated to believe what they desire; as individuals pursuing a scientific life, this usually encompasses variants of the two principles. Some, it is true, shy from strict causality;[3] some replace laws with approximate rules; yet very few operate on the assumption that occurrences are wholly without cause, and the rules describing them prone to change erratically. An oncologist who concludes on weight of overwhelming evidence that a type of cancer spontaneously erupts without cause, or that its causes are not worth mentioning because they never remain the same, will not be praised for contributing to science but will be condemned for abandoning the pursuit. Uncounted scientific studies do, in fact, turn up only random data, but these are understood to mean: "you are not looking carefully enough or in the right direction." This makes evidence against the aforementioned principles practically impossible, for scientists automatically dismiss such evidence as illusory, as non-evidence. What this effectively means is that the principles are deemed true not because of evidence, but regardless of it.

Yet this is not to say the actions of scientists engender no experiential basis whatever for continued faith in the principles. Rather, it is to compare their situation to biblical characters of old, who never come face-to-face with the divine object of their faith, yet find their willingness to act on faith rewarded. One of the chief rewards, strange to say, is strength to persevere when concrete rewards are withheld (see 1895, pp. 500–501). When an experiment fails to uncover a generalizable cause-and-effect relationship, more trials are run; and when a lifetime of work fails, other scientists pick up the task, ever confident the phenomenon under study must have a cause and must follow some general rule. Whether this confidence will be rewarded in any given instance is a question akin to whether a slot machine will pay on the next pull. Over time, however, acting on the principles will intermittently yield results, and therewith experiences that reinforce continued action, all the more so because behavior rewarded on an unpredictable schedule typically dies hardest—a fact well established by behaviorist psychologists, not to mention gambling addicts. Because these intermittent

results could be reached in a universe not completely lawful and causally determined, they do not require what may casually be called the "truth" of the principles. They do, however, depend a great deal upon faith in their truth. Scientific breakthroughs often come only after years of failures. Without faith, scientists might well abandon an inquiry after a few failures on the grounds that the phenomenon under study is perhaps one to which rules and causes do not apply.

In addition to strengthening resolve, faith brings certain world-orders into appearance. One of the earlier cited New Testament passages goes on to say that faith is the understanding "that the world was created by the word of God, so that what is seen was made out of things which do not appear" (Heb 11:3 RSV); or as another translation reads, so "that the world which we can see has come into being through principles which are invisible" (Heb 11:3 PME). Just so with the principles of uniformity and causality. Each is beyond what can be observed; yet each shapes how the world appears to scientists. The scientific mind often sees nature as fundamentally mathematical, but this "mathematical world-formula," as James (1890ii) calls it, is not "forced on the mind *ab extra*" (p. 667); rather, it is actively pursued as an ideal end. The ideal theory in science is one that holds without exception and predicts outcomes with inexorable accuracy. It is just the sort of theory that can be expressed in the uncompromising terms of mathematics, and just the sort sought by believers in the principles. Not surprisingly, then, scientists focus on quantifiable aspects of the world. More than this, they make it quantifiable by using techniques specifically designed to generate quantifiable observations that can be generalized into predictive, mathematical formulae. James claims there are cases where "[y]our 'things' realize all the *consequences* of the names by which you classed them" (p. 666). The situation here is similar. The principles upon which scientists act help realize the world in its mathematical aspect.

Yet if empirical observation neither affirms nor denies the principles, on what basis do scientists act on them in the first place? A very straightforward one, according to James. When alternative positions mesh equally with data, "we choose between them for subjective reasons" (1907a, p. 581; also see 1882, p. 59). This happens when we choose the more elegant (aesthetically pleasing) and economic (easier to use) of two otherwise equally compelling positions; and it happens in the case of the principles. Scientists are emotionally committed to maintaining that which sustains their activities. As empirical evidence pushes in neither direction, they act according to their own interests, and act on belief in the principles.

For James, however, it is not merely that we are licensed to choose according to our own emotional inclination when evidence is neutral, but that we *must* so choose. After all, "*to say, under such circumstances,*

'Do not decide, but leave the question open,' is itself a passional decision" (1896, p. 464)—that is, a decision based on inclination, not evidence. If delayed decision does not have significant costs; or if going forward has enormous risks or means sacrificing other cherished beliefs, then delay in the absence of evidence may be the more practical and emotionally appealing option. Yet for scientists the situation is the reverse. Not committing to the principles sacrifices scientific life. Committing, by contrast, does not carry enormous risks—while some scientific activities are risky, the principles do not necessitate these specific activities. Nor does committing necessarily threaten cherished beliefs ostensibly opposed to the principles, for example, James's cherished belief in free will. To act on the principles for scientific purposes is to assume, in effect, that phenomena with which science deals tend to be lawful and caused, not that all phenomena are. Under such circumstances, James thinks the better "part of wisdom is clearly to believe what one desires" (1882, p. 75).

Hence James does not object to scientists taking the principles on faith. What he objects to, rather, is the "arbitrary caprice" with which some regard this instance of faith as rational, while rejecting others—most notably, religious ones—as irrational (1882, p. 71), for faith plays strikingly similar roles in scientific and religious life. Though the principles are beyond empirical confirmation, scientists generally act on them because doing so is adaptive: the principles fit and make sense of much of the world scientists encounter; they do not conflict with data; acting on them rewards scientists with knowledge; and faith in them gives scientists strength to persevere when phenomena seem jumbled, governed neither by law nor cause. The Gospel of John says whoever believes shall have life (6:47), and those who believe in the principles secure tools that help them work as scientists and pursue a scientific life. So similarly with religious faith. It "works" for some people: it fits and makes sense of the world they encounter; it does not conflict irrevocably with data, especially if, as many scientists complain, religious belief is unfalsifiable; it enables spiritual enlightenment and spiritual lifestyles; in some cases, it also helps people survive when life is tough and seemingly devoid of divine presence.

A second commonality between scientific and religious faith is that both can function to realize desired object(ives). Faith in the principles often translates into a felt need for mathematical harmonies; and without this "imperious inner demand," scientists might fail to see

> that such harmonies lie hidden between all the chinks and interstices of the crude natural world. Hardly a law has been established in science, hardly a fact ascertained, which was not first sought after, often with sweat and blood, to gratify an inner need. Whence such needs come from we do not know: we find them in us, and biological

> psychology so far only classes them with Darwin's 'accidental variations.' But the inner need of believing that this world of nature is a sign of something more spiritual and eternal than itself is just as strong and authoritative in those who feel it, as the inner need of uniform laws of causation ever can be in a professionally scientific head. The toil of many generations has proved the latter need prophetic. Why *may* not the former one be prophetic, too? And if needs of ours outrun the visible universe, why *may* not that be a sign that an invisible universe is there? What, in short, has authority to debar us from trusting our religious demands? [1895, p. 498]

Nature hides many of her secrets from those who do not act on the principles, and James argues the divine can do the same to unbelievers. This may happen because their minds are closed, their attention selectively misdirected from signs indicating a divine presence. Or it may be that doubt prevents them from making a personal acquaintance with the divine in the same way that excessive mistrust prevents people from forming social relations (1896, p. 476). But whatever the case, James maintains that in religion, as in science, it can happen that "our faith beforehand in an uncertified result is the only thing that makes the result come true" (1895, p. 500).

A third commonality between faith in the principles and faith in the divine is that both are experienced as lived realities. The principles of uniformity and causality are so woven into the world lived by most scientists that most are wont to "see" them as realities infusing nearly everything. The divine too exerts such an organizing influence on the lived world of believers that they may similarly sense it in flowers and trees, in life and being—to sense all this almost as plainly as one senses the blue of the sky. Here the usage of the term "sense" is not exactly literal; yet neither is it merely metaphorical. In the words of James:

> It is as if there were . . . a *sense of reality, a feeling of objective presence, a perception* of what we may call "something there," more deep and more general than any of the special and particular "senses" by which the current psychology supposes existent realities to be originally revealed. [1902, p. 59]

This "sense of reality" might be understood as a "world-grammar" to which experiences habitually conform. In the everyday world, people can walk on garden paths, but not water; they can climb stairs, but not columns of air. The everyday world has various constraints and affordances; these constitute "grammars" or rules to which actions conform; and to a significant degree these rules about what people can and cannot do delimit their sense of what can and cannot be, which is to say, their sense of reality. Inhabiting scientific worlds often means acting in conformity with belief in the principles; inhabiting religious

worlds, with belief in the divine. This means following certain customs, conventions, ways of handling and interacting. These habits of action constitute rules or mores for what people can and cannot do, and this, once again, significantly delimits people's sense of what can and cannot be. Again, the actions of oncologists gravitate around the belief that cancer has causes; the notion that it might occur for no reason is almost nonsensical in their world. That which is nonsensical—the nonsense term "skrkl" to use an example from James—has not even "*the possibility of . . . referring*" to any particular reality (1907b, pp. 913–914). One assumes the notion of a godless universe is similarly without sense of reality for religious figures such as St. Ignatius, who actively embraced a painful execution in hopes of emulating the death of Jesus for the sake of God.

A fourth commonality between faith in the principles and faith in the divine is that both are, practically speaking, insulated within teleological centers of life. Acting on the principles for the purposes of oncology does not presuppose that all phenomena conform to them, but merely that a subset of physical processes do. And while Christians are monists in the sense of believing one God accounts for all, they are epistemologically—which here means pragmatically—pluralists. In practice they allow that religious forms of know-how are relatively independent from other forms. To be sure, there are notorious instances of religion overstepping its jurisdiction, as when fundamentalists try to abolish Darwinism from science classes. Yet most fundamentalists visit medical doctors without worrying whether or not the health sciences make use of religious precepts. Most, in short, typically allow scientists to operate without factoring the divine into their equations, and most, moreover, happily partake in the fruits of science.

James does not claim that the foregoing account demonstrates that there are, in fact, lawful and causally determined regions of the universe. Nor does it demonstrate the existence of the divine. Yet his aim is not to demonstrate what actually is, but to articulate a basis upon which people can rationally believe something is. He takes for granted that science is largely rational, and in defending people's "right to believe," he draws liberally from scientific methodology that was emerging in his day. First, he appropriates the scientific tendency to define concepts functionally, so that concepts *mean* sets of operations enacted for particular purposes (see 1907a, pp. 506–508). Second, he adopts the scientific view that theories are never "proved," but merely shown to be consistent with data and existing knowledge. This is another way of stating that theories are generally accepted because they usefully handle data and knowledge (see 1907a, pp. 512 & 569–570); and this, in turn, is a way of saying they are accepted more for their sense-making power than for their brute correspondence to facts. Third, James holds to the empiricist tenet that "[s]ensible objects . . . are either our realities or the tests of our realities.

Conceived objects must show sensible *effects* or else be disbelieved" (1889, p. 1038; 1890ii, p. 301). His strategy, then, in defending the rationality of religious beliefs is to show that they have functional meaning, sense-making power and some relation to sensible effects.

Religious beliefs meet these conditions, for they entail actions enacted for particular ends and thus have functional meaning (see 1911, p. 1013); they constitute "world-grammars" through which experiences cohere and therefore have sense-making power; and they shape actions, and actions generate sensible effects (see 1911, pp. 1019–1020). As James (1902) elaborates, "I find it hard to believe that principles," even those that bespeak invisible realities, "can exist which make no difference in facts" (p. 465). In such cases,

> the unseen region in question is not merely ideal, for it produces effects in this world. When we commune with it, . . . consequences in the way of conduct follow. . . . But that which produces effects . . . must be termed a reality itself, so I feel as if we had no philosophic excuse for calling the unseen or mystical world unreal. [pp. 460–461]

Here it might seem that James is on shaky ground. After all, it is in consequence of subjects' actions that religious beliefs engender functional meaning, coherence and sensible effects. Hence they seem subjective in a way that scientific facts do not. Yet as pragmatists generally note, even scientific facts are produced through actions of subjects. Wave-particle duality in quantum mechanics provides an excellent illustration. If one acts on the belief that an electron is a wave phenomenon, and sets up the detecting apparatus to measure it accordingly, the electron behaves like a wave; the electron is, as far as can be determined, at that moment and from that point of view, a wave. If, however, one acts on the belief that an electron is a particle, and sets up the detecting apparatus accordingly, then the electron is, at that moment and from that point of view, a particle. It is, as one contemporary physicist puts it, as if we have entered an age of "non-objective physics." Werner Heisenberg developed his "quantum theory in the same city and decade in which Kandinsky coined the phrase 'non-objective art'," and he perhaps "borrowed from Kandinsky when he called quantum theory 'non-objective physics.'" Whereas "classical physics . . . represses the observer and the *act* of observation and talks naively about 'things as they are' . . . [t]he main idea of quantum theory is to talk about *what you do*, not about 'things as they are' (Finkelstein 2003; emphasis added).[4] Wave-particle duality cogently demonstrates that in science, as in other spheres of life, acts of observation—i.e., actions of subjects—radically affect what shows up. This is not to say, however, that the divine—or for that matter, the principles—can be affirmed in the same way that the existence of electrons can. The point, rather, is that if the

subject's role in engendering meaning, coherence and sensible effects is not *in itself* an objection in experimental science, then neither should it be when it comes to belief in the divine.

Indeed, James (1907a) insists it is primarily through action that we test beliefs, and that beliefs deemed "true" are typically those that guide us into fruitful interactions with our world (p. 574). This can be by helping us negotiate it both concretely and intellectually, or by generating new experiences that make our world more coherent and manageable, which is to say, livable. This is why James holds that beliefs are justified when they "work," and also why he warns that we cannot capriciously believe whatever we want (p. 580). We cannot, for we cannot act however we want. Most will find it impossible to act on the belief that they can walk on water, maddening to act on the belief that they can get to Toronto from Montreal by going east, and embarrassing to act on the belief that John A. Macdonald was the first President of the United States. This does not mean beliefs are inevitably correct. Many are not even tested but merely held through "the negative fact that nothing contradictory . . . comes to interfere" (p. 579). Yet it does mean, on the one hand, that the world—including everything from the physical world to the world of already existing beliefs—checks certain actions, and therewith certain beliefs, and on the other, that it tends to reinforce any belief that "adapts our life" to a setting (p. 579), helps "in life's practical struggles" (p. 520), and has "value for concrete life" (pp. 518–519). Thus while many beliefs are not elicited by and do not correspond to brute facts in the experienceable (i.e., empirical) world, the experienceable world nevertheless reinforces those that prove valuable to life, and suppresses those that prove positively incompatible (see 1880, p. 634).

The issue of "value" invariably leads some to defend the rationality of the principles of uniformity and causality, while denying the rationality of religion on the basis of the following sort of argument: Science, in contrast to religion, has split atoms, cured diseases, and built automobiles; hence belief in the principles is more valuable than belief in the divine. The problem is that this makes a value judgment about what ends are worth achieving but then seemingly fails to note that worth is "relative to the temporary interests of the conceiver" (1879a, p. 952). If a person conceives an automobile to be a greater fruit than spiritual edification, this is because the person is more interested in obtaining a consumer good than a spiritual one.

Conclusion

Readers familiar with the evolutionist Richard Dawkins and his theory of "memes" may notice that he and James share strikingly similar views about how religion propagates yet reach very different conclusions about its legitimacy. These points of agreement and disagreement are worth considering, if only to clarify and articulate the continued relevance of James's position.

Dawkins (1976) coins the term "meme" by melding "gene" with "*mimema*," Greek for "that which is imitated." A meme is "a unit of cultural . . . *imitation*" (p. 206), and meme theory is an account of how beliefs, customs, and other cultural "units" propagate. It is an account, more specifically, that Dawkins models after his "selfish gene" theory, which holds that the "fundamental unit of selection" is not the individual organism, but the gene (p. 12). This means that natural selection does not, strictly speaking, favor a gene because it bestows adaptive advantages on the organism. Rather, it favors any gene good at getting replicated, and this incidentally includes those bestowing advantages. Transferring this precept to beliefs, Dawkins suggests that beliefs need not be rational, true, or serve our interests in any way to spread; they need only have characteristics that induce us to copy and maintain them. Dawkins cites Christian belief as a case in point. It comforts believers and thus spreads by dint of "psychological appeal" (p. 207). It eulogizes "faith" and "blind trust" (p. 212), discouraging tests that might undermine it. It equates belief to virtue (2006, p. 199). It peddles the cliché that science cannot adjudicate religious claims, shielding itself from scientific rebuke (2006, pp. 54–61). It threatens doubters with "ghastly torments" (p. 212), scaring them into belief. It fosters cultural environments that favor its continuation (pp. 212–213; 2006, pp. 197–199). So while Christian belief is, according to Dawkins, fallacious, its characteristics ensure its spread.

Before considering how James might answer Dawkins, it is well to note that James, while professing vague belief in God (see 1904b), rejects both "popular Christianity" and "scholastic theism" (1902, p. 465). His pragmatism, moreover, is a basis upon which he, like Dawkins, dismisses much of traditional Christian theology as idle hairsplitting (1902, pp. 399–401; cf. Dawkins 2006, pp. 33–34). James, in fact, concurs with Dawkins on a surprising number of other points.

First, he grants that psychological appeal—especially sentimental appeal—induces belief. James (1879a) adds, however, that sentiments (feelings, etc.) can help distinguish between rational and irrational beliefs, and motivate us to seek the former. Inconsistencies obstruct the flow of thought; obstructed thought—like gridlocked traffic—is an irritation we flee; and the transition from inconsistency to "rational comprehension" is marked by feelings of "relief and pleasure" (p. 950). Extreme complexity similarly agitates us, while excessive simplicity bores us, so that we seek parsimony, yet not oversimplification (see pp. 954–956). The point is that what we call "rational comprehension" is a product of certain of our subjective preferences. That a belief persists because of its psychological appeal, therefore, sometimes means that it persists because it is rational.

Second, James agrees that religion involves faith in things that are not affirmed by what conventionally counts as evidence. Yet this does not translate into a refusal to test beliefs. Strong faith, after all, entails a

commitment that has central importance in our life—a commitment, therefore, that affects how we live and act. Actions, in turn, produce experiences that may support but also challenge the practical wisdom of our commitment. Thus having strong faith means testing and even risking it by acting on it.

Third, James does not deny that religious individuals equate belief to virtue, almost as if to justify it on the mere grounds that "believing is the right thing to do." But this is hardly unique to religion. James notes that one of his contemporaries "calls it 'guilt' and 'sin' to believe even the truth without 'scientific evidence'" (1982, p. 71). More crucially, he notes that even our basic concepts—for example, our concepts of what "oil" is—are shaped by what we value. It is, in short, unavoidable that beliefs should rest on value judgments of one sort or another.

Fourth, James (see 1909, p. 773) shares Dawkins' impatience with the platitude that science can say nothing about alleged spiritual realities.[5] However, whereas Dawkins fingers polite society and religious propaganda as primary progenitors of this platitude, James (1897b) insists the scientific community shares blame. It ridicules serious discussion of spiritualism, and thus scares scientists from the pursuit (pp. 681–693), much as fear of God scares theists from religious heterodoxy. Scientists also withdraw from spiritual debates by adopting a "half-way" empiricism. For example, some presume that reality is exclusively mechanical, and consequently that alleged evidence for non-mechanical realities must always be fallacious (p. 698). This means they hold the presumption not because of evidence, but regardless of it. It further means that if spiritual phenomena are not amenable to mechanistic conceptualizations, then they too will be ignored regardless of evidence (pp. 693–698; cf. Dawkins 2006, pp. 59 & 91).

Fifth, James allows that religious belief fosters environments that favor its own continuation. Once again, however, this is not unique to religion. Behavioral scientists, for instance, create laboratory environments that pace participants through structured tasks that limit responses to a finite number of discrete possibilities. By doing this, the laboratory environment corrals behaviors into orders that can be mathematically converted into generalizable cause-and-effect relations. By consistently not publishing null (statistically random) results, the academic environment does much the same. James says that "our thoughts determine our acts," and "acts redetermine the . . . nature of the world" (1909, p. 774). By acting on faith in the principles of uniformity and causality, scientists nurture environments that perpetuate their own metaphysics.

When it comes finally to developing his core thesis that religious believers are delusional, Dawkins (2006) reaffirms key arguments that James directs against Spencer's neo-Lamarckian psychology. He does so, first, by using his meme theory to show that we readily acquire

beliefs that do not correspond to "external reality"; and, second, by using Darwinism to emphasize that the brain actively constructs the world rather than passively receiving it (pp. 361–374), which means it can also misconstruct it and thereby suffer delusion (pp. 88–92). That said, Dawkins does share Spencer's devotion to a psychology organized around an inner-outer divide. He explains that there is "simulation software in the brain" (p. 89), so that "[w]hat we see . . . is not the unvarnished real world but a *model* of [it]" (p. 371) built "inside our head" (p. 361). Perceived hues, for example, are "internal labels" having "no intrinsic connection with lights of particular wavelengths." They are "tools" used to construct a "model of external reality" that tags "important distinctions in the outside world" (p. 373). Dawkins stresses that an animal's "world-representing software" is adapted to its particular "way of life," and speculates, accordingly, "that bats may 'see' colour with their ears. The world-model that a bat needs," after all, "must surely be similar to the model that a swallow needs. . . ." Granting, therefore, that perceived hues are arbitrary markers, bats may use them "as internal labels for some useful aspect of echoes." "The point," Dawkins says, "is that the nature of the model is governed by how it is to be *used* rather than by the sensory modality involved" (p. 372).

For many pragmatically minded thinkers, the point should be rather that perceived qualities are not mere representations "in" the organism, but "qualities of interactions in which both extra-organic things and organisms partake" (Dewey 1925, p. 259). Thus the quality of "smoothness" includes the way in which a surface allows fingertips to glide over it; it characterizes a "style" of interaction in the world (Merleau-Ponty 1945, p. 315). The point, more generally, is that "[t]he properties of a thing are effects on other 'things': if one removes other 'things', then a thing has no properties . . ." (Nietzsche 1967 [c. 1885–1886], §557; also see Peirce 1878, pp. 266–68). The yellow of a lemon, for instance, is a property conditioned not only on the presence of a sensate being, but also on that of light. The color even depends on the lemon's relative velocity since light reflected from rapidly approaching objects is "blue shifted," while light from receding objects is "red shifted." Thus even before the perceiver is introduced, it remains true that properties are effects of interrelationships. If properties are effects; if effects count as "real"; and if one does not arbitrarily deem them "unreal" merely because a perceiver participates in an interrelation, then something startling happens. The yellow of the lemon—which Dawkins regards not as a real property but as a way in which the mind represents the object—becomes every bit as real as heat arising as an effect of two objects rubbing. Indeed, it becomes every bit as real as "primary properties" such as length, for as with color, length varies with an object's velocity relative to the observer.[6] In fact, even mass—defined as resistance to acceleration—varies with relative velocity.

For all their emphasis on subjective interests, classical pragmatists resist the notion that thought and perception are "representations in the subject's head." James shifts the locus of conceptual meaning from an ideational or mental level to that of the actively lived world, and his compatriot John Dewey does much the same for perception. Dawkins (2006), by contrast, suggests that consciousness is a simulated sphere of inner representation, and thus easily deluded (see pp. 87–92, 361–74). And as with many who see the brain or mind as a representing machine, he seems to adopt a correspondence theory of truth very much in the vein of Spencer. He describes the search for "truth" as "a model-building enterprise" (p. 361), and characterizes models as internal templates that tag distinctions in the "outer" world. Given that Dawkins invites us to mistrust our perceptions; given that he seems to advocate a theory of truth that cannot, for reasons discussed, even affirm a heliocentric model over a geocentric one, much less affirm the principles of uniformity and causality; given, in short, that Dawkins casts his skeptical net so wide, it is hardly surprising that he rejects spiritualistic belief as delusional.

James, of course, does not claim to demonstrate that either the principles or spiritualistic claims are true in a straightforward factual sense. He claims, rather, to establish that in certain world-contexts it is rational to believe they are true. However, from his standpoint—and indeed from a scientific standpoint—this is about as close as one can get to the truth: practically speaking, calling something "true" means it is reasonable to believe it is true. James recognizes, moreover, that skeptical empiricists in the vein of Hume are apt to see his pragmatic account as further demonstrating the absence of any philosophically sound basis for the beliefs in question. Indeed, while he tries to establish an equivalency between scientific and spiritualistic beliefs in order to increase the range of what it is possible to believe rationally, the strategy might work in either direction. Those who grant both the rationality of scientific belief and the aforesaid equivalency should also grant the rationality of spiritualistic belief. Yet for those who cannot accept the rationality of spiritualism, the equivalency may merely make them skeptical of science.

James's final response to skeptics, delivered in the last paragraphs of his posthumously published *Some Problems of Philosophy* (1911), is to call upon faith—to call upon it not merely as an attitude that may be taken, but one that must be. Human life is uncertain. "Its destiny hangs . . . on a lot of *ifs*" (p. 1099), so that "[n]o insurance company can . . . save us from the risks we run . . ." (p. 1100). In struggling with the question of what kinds of belief we ought to risk in this uninsurable world, James maintains there are four basic attitudes we can adopt:

1. [W]ait for evidence; and while waiting, do nothing; or
2. *Mistrust* . . . and, [feeling] sure that the universe will fail, *let* it fail; or

3. *Trust* . . .; and at any rate do *our* best, in spite of the *if*; or, finally,
4. *Flounder*, spending one day in one attitude, another day in another. [p. 1100]

James quickly distills this list to two options. He dismisses the fourth as "no systematic solution," and collapses the first attitude into the second on the grounds that the two are practically indistinguishable (p. 1100). The basic choice, therefore, is between *mistrust* and *trust*—a dilemma James articulates by way of analogy. When first we meet other people, we can mistrust them until they demonstrate their worth; or we can trust them until such a time—if it ever comes—that evidence shows them untrustworthy (see pp. 1098–1099; also see 1896, pp. 476–477; 1904a, p. 473). In both cases we act on a belief about other people, even if we do not consciously declare it; and in both cases we initially act in the absence of evidence. Thus in both cases we act on faith, only where the first case "spells faith in failure" (p. 1100), the second spells faith in success. James holds, accordingly, that adopting a skeptical position in the absence of evidence still amounts to adopting a belief without evidence, so that even skepticism involves a strange sort of faith (see 1882, pp.85–86). The choice, then, is not between faith and non-faith, but between two varieties of faith: one based on mistrust, the other on trust.

Of these two options, James thinks the second wiser. It is wiser because living on trust and believing what we desire is—if all else is equal—the more emotionally fulfilling option. More importantly, it is a path that is likely to bring us closer to truth. Scientists often believe a theory before obtaining compelling evidence for it. Yet by trusting the theory—which here means acting on it—they may generate evidence for it. They may also generate evidence against it. Thus as natural selection works to extinguish maladaptive variations, "[t]he long run of experience may weed out the more foolish faiths. Those who held them will then have failed" (1911, p. 1101), and so much the better, James argues, for this also sets us on a truer path.

James's answer to skeptics, then, is that their faith in failure is self-fulfilling. By refusing to act on trust, they discard powerful tools by which they might support particular beliefs, acknowledge certain truths, and therewith ameliorate skepticism. For this reason, he insists it is intransigent skepticism—not faith founded on trust—that is irrational. As he puts it in *The Will to Believe*: "*a rule of thinking which would absolutely prevent me from acknowledging certain kinds of truth if those kinds of truth were really there would be an irrational rule*" (1896, p. 477).

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NOTES

1. James's addition, not mine.

2. This is easily grasped in the following way. Place your right index finger through the hole in a compact disc, and then, while keeping it stationary, move your left index finger around the exterior edge. Next keep your left finger stationary, and use your right to move the edge of the disc around it. Though the spatial relations between the fingers remain the same (in these two cases, everywhere equidistant), the left appears to circle the right in the first case, and the right the left in the second. This reversibility works not just with circles, but also ellipses or any other shape, and it works regardless of the location of the point within the bounded figure.

3. Quantum mechanics—with its probabilistic atomic half-lives, Heisenberg's uncertainty principle and the like—challenges strict causality. I do not, however, attempt to defend James's position that science overwhelmingly assumes the principle of causality from this counter-example, first, because quantum mechanics

only emerged after his death; second, because I intend this work primarily as a historical exegesis, not a defense; and, third, because the principle of causality is, in fact, still alive in most scientific fields.

4. I am unable to provide a full reference for this quotation. I originally read it online, but the paper, which appeared in a 2003 conference, is no longer posted. I have, however, received confirmation from the author, David Finkelstein, that the words I quote are his, though he too is unable to specify the particular source.

5. Some caveats: James is more interested in investigating spiritual phenomena of a psychical nature than of a specifically religious one; Dawkins does not in practice promote scientific investigations of religious claims, but merely encourages scientists to pass judgment on them.

6. I am indebted to Evan Cameron of York University for pointing out to me that this feature of relativity theory undermines the distinction between primary and secondary qualities.