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Scientistic Philosophy, No; Scientific Philosophy, Yes

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Abstract

If successful scientific inquiry is to be possible, there must be a world that is independent of how we believe it to be, and in which there are kinds and laws; and we must have the sensory apparatus to perceive particular things and events, and the capacity to represent them, to form generalized explanatory conjectures, and check how these conjectures stand up to further experience. Whether these preconditions are met is not a question the sciences can answer; it is specifically philosophical. This is why the myriad forms of scientistic philosophy in vogue today (neurophilosophy, experimental philosophy, naturalized metaphysics, evangelical-atheist reductionism, etc), are all hollow at the core. Does this mean we must return to the old, a priori analytic model? No! What is needed instead is scientific philosophy in the sense Peirce articulated more than a century ago: philosophy motivated by a genuine desire to discover the truth, and relying not solely on reason but also on experience—only not the special, recherché experience required by the sciences, but close attention to aspects of everyday experience so familiar we hardly notice them.

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> *The kind of philosophy which interests me and must, I think, interest everybody, is that philosophy, which uses the most rational methods it can devise, for finding out the little that can as yet be found out about the universe of mind and matter from those observations which every person can make in every hour of his waking life. It will not include matters which are more conveniently studied by students ofI special sciences such as psychology. ...It is true that philosophy is in a lamentably crude condition at present; that very little is really established about it; while most philosophers set up a pretension of knowing all there is to know—a pretension calculated to disgust anybody who is at home in any real science. But all we have to do is to turn our backs upon all such vicious conduct, and we shall find ourselves enjoying the advantages of having an almost virgin soil to till, where a given amount of really scientific work will bring in an extraordinary harvest*.... C. S. Peirce.[1]

In "Scientific Philosophy," the 1905 paper from which this passage is taken, Peirce urges that, if philosophy is to make real progress, philosophers will need to tackle their distinctive questions and problems in the same spirit, from the same desire to find things out, that has motivated the best work in (as he might say, meaning what we would now call "the sciences") the "special sciences"; and, like inquirers in the special sciences, they will need to call on experience—but not, like them, on special, recherché experience, but on familiar, everyday experience. As he writes elsewhere, the essential difference between metaphysics and meteorology, linguistics, or chemistry is that it needs no "microscopes, voyages," etc., but only "such experience as every man undergoes every day and hour of his life."[۲]

Today's cultural landscape is very different from Peirce's—and today's philosophical climate is very different from the philosophical climate of his day. Our discipline is no longer beholden to theologians, as it was in Peirce's time, so his complaints about the sham reasoning characteristic of "seminary philosophers"[۳] no longer resonate as they once did; and his concern to rescue "the good ship Philosophy … from the lawless rovers of the sea of literature"[۴]—though it will surely remind us of the recent but now apparently receding tide of postmodern cynicism—no longer seems so pressing. Moreover, while much philosophy remains as thoroughly a priori and as pointlessly disputatious as ever, there seems to be a growing dissatisfaction with the long-dominant analytic paradigm, and a growing interest in allying our discipline, somehow, with the sciences. So nowadays many philosophers' response to Peirce's call for reform would probably be that philosophy already *is*, or at least is rapidly *becoming*, scientific; so that, while it may have been necessary in his own day, his advice is now old hat,[۵] completely out of date.

I couldn't agree less. By and large, I fear, philosophy is becoming, not more *scientific*, in the sense Peirce had in mind, but more *scientistic*. What we see is not sustained, serious efforts to make philosophical inquiry as fruitful and as rigorous as the best scientific inquiry has been, but instead, a raft of sterile exercises in *faux*

rigor, a flimsy pretence that philosophy already is scientific; and not solid and industrious investigation of philosophical questions, but bold promises that this or that result from the sciences will do the job for us—and when, inevitably, these promises go unfulfilled, even bolder claims this or that philosophical question, or even this or that entire field of philosophy, since it proves recalcitrant to scientific resolution, must be misconceived, and should simply be abandoned. The upshot is, to borrow a word of Peirce's, "unphilosophical"[۶] in the extreme. In short, the good ship Philosophy is sinking fast; and Peirce's advice is more apropos than ever.

Articulating more exactly what the root of the trouble is, however, is challenging to say the least. For—beyond dissatisfaction, overt or covert, with neo-analytic philosophy, and very often an element, overt or covert, of anti-religious sentiment—the scientism presently at work in philosophy is no less various than the scientism at work elsewhere in our culture. Some are proposing to turn philosophy into a kind of descriptive meta-science; others are looking to cognitive psychology, or evolutionary biology, or neuroscience, or physics, or …, etc., to resolve philosophical questions; others again, finding that philosophical questions resist resolution by whichever science they favor, are concluding that these questions must be misconceived; and what looks on the surface like a unified, revolutionary movement in the direction of "experimental" philosophy turns out to encompass several different projects, some potentially radical, others, at bottom, remarkably conventional.

For me, at least, this post-analytic adulation of science is almost as disorienting as the anti-scientific disparagement of science a few decades ago—another deafening din of philosophical axes being ground, and a new cacophony of confusing "isms": "naturalism," "reductionism," "physicalism," "scientific realism," "radically naturalistic metaphysics," and, yes, even "scientism." Once you step back far enough to hear yourself think, however, you soon realize that all these scientistic proposals—whether the idea is to transform philosophy into meta-science, to invite one or another of the sciences to colonize it, or to abandon it altogether in favor of scientific work—have a common flaw.

The underlying thought is simple enough, though its ramifications—well, they ramify alarmingly, as philosophical ramifications are apt to do. It is this: If successful scientific inquiry is to be even possible, there must be a real world, a world that is independent of how we believe it to be; and this world can't be a complete chaos of unrelated things and events—there must be *kinds* of stuff, things, events, etc., natural *phenomena*, and *laws* of nature. Moreover, we humans must have the sensory apparatus to perceive particular things and events in the world, and the cognitive capacity to represent those things and events, to form generalized explanatory conjectures and check out how those conjectures stand up to further experience, and to marshal and record what we learn of the world so those who come later can build on it.

All the special sciences rest on these presuppositions; but the special sciences can neither explain nor justify them—*that* task falls to philosophy. And this is why the idea that philosophy should focus exclusively on the sciences lacks a cogent rationale; why efforts to squeeze answers to substantial epistemological, metaphysical, etc., questions out of fundamental physics, psychological experiments, evolutionary theorizing, or those fMRI brain-images of which aficionados of "neurophilosophy" are so fond invariably fall short; *and* why assuming that only questions resoluble by the sciences are legitimate leaves the very scientific results on which you rely hanging in mid-air with no rationally defensible means of support—in short, why all these forms of philosophical scientism fail.

Now, I fear, some may take me to be defending the idea that the job of philosophy is to provide a priori foundations for the scientific enterprise and urging that we circle the wagons and retreat to the safety of the old analytic paradigm, relying on our conceptual or linguistic intuitions, insisting on the autonomy of our discipline, and ignoring what the sciences have to say. But this would be a complete misunderstanding—a misunderstanding based on a dichotomy I emphatically reject: that philosophy must *either* be a purely analytic enterprise, *or else* turn to scientism. Empirical knowledge *includes* scientific knowledge, yes—but it includes much more besides: historical knowledge, for example, legal knowledge, culinary knowledge, etc., etc., *and* the everyday knowledge to which Peirce alludes, the knowledge available to anyone in his daily interactions with the world and with others. And what's needed to get a grip on the questions scientistic philosophy ignores or evades or dismisses outright is, precisely, to pay close attention to "those observations which every person can make in every hour of his waking life," and to devote serious reflection to what they reveal.

The first goal here is to show that the scientistic philosophies in vogue today are hollow at the core: that, in the name of science, they duck the very questions on the answers to which our capacity to figure out something of how the world is, and hence the possibility of the scientific enterprise, depend (§1). The second goal is, with Peirce's help, to suggest how—going beyond the limitations of the analytic approach, but avoiding an unphilosophical scientism—we might begin to articulate answers to some of those questions (§2). And then it will be time to turn briefly to Peirce's thoughts about the motive from which philosophy should be undertaken, and what these thoughts reveal about the perverse incentives partly responsible for the present sad state of our profession; after which it will remain only to show how the proposed approach avoids scientism, and how it explains the seductive illusion that philosophy can be conducted purely a priori (§3).

1. Diagnosing a Disaster: The Hollow Core of Scientistic Philosophy

The focus here will be, not on scientists' efforts to colonize philosophy,[۷] but on philosophers' hopes of handing their discipline over to one or another of the

sciences. And I won't engage in detailed historical exploration of scientistic themes in twentieth-century philosophy. But I will mention two earlier forms of philosophical scientism that set the stage for present trends. One, going back almost a century, is the logical positivists' effort to banish the traditional problems of metaphysics, aesthetics, ethics, etc., to the realm of the cognitively meaningless and, at the same time, to charge philosophy with the supposedly all-important task of articulating the "logic of science"—making our discipline once again (as Moritz Schlick announced) "Queen of the Sciences," albeit with a distinctly shrunken empire:[٨] a self-flattering idea to which, as, as we shall see, some philosophers seem recently to have returned. Another, going back almost fifty years, is Quine's "Epistemology Naturalized,"[٩] in which more than one of the various forms of philosophical scientism in vogue today can already be discerned in embryo.

Even before "Epistemology Naturalized," Quine's critique of the analytic-synthetic distinction[١٠] and his skepticism about meaning[١١] prefigured a shift from older positivists like Schlick or Rudolf Carnap, and a break with the analytic paradigm; and his doubts about intensional concepts, belief among them,[١٢] put epistemology in his sights. But it's the multiple ambiguities of "Epistemology Naturalized"[١٣] that are most relevant here. On a modest reading, Quine seemed to suggest that epistemology can't be conducted purely a priori, and that it might have something to learn from the sciences of cognition. On a more ambitious reading, he seemed to suggest that epistemological questions might simply be handed over to psychology, evolutionary biology, or maybe even physics to resolve. And on the most ambitious reading, he seemed to suggest that supposed epistemological problems not resoluble by the sciences are misconceived, and should be jettisoned.

How did Quine manage to suggest three apparently competing positions in one short paper?—in part, by using the word "science" in two quite different ways: sometimes in something like the older, broader sense, to refer to our presumed empirical knowledge generally, and sometimes in the modern, narrower sense, to refer to those specific fields now classified as sciences.[١٤] This made it all too easy to elide the relatively modest claim that epistemology is part of science in the broadest sense, i.e., that it is at least partly empirical, into the much more ambitious claim that epistemological questions can be answered by science in the narrow sense, i.e., by one or another of the sciences. But then the sheer implausibility of the idea that psychology or evolutionary biology, let alone physics, could answer such characteristically epistemological questions as "what makes evidence stronger or weaker?" or "is induction valid?" made it all too tempting to conclude that these aren't really legitimate questions after all.

On its most modest reading, Quine's paper was a step in the right direction, towards an acknowledgment that philosophy is, or should be, about the world, not just about our language or our concepts. But it was the more ambitious, scientistic

positions that caught on. By the 1980s, Alvin Goldman was announcing in *Epistemology and Cognition*[۱۵] that the cognitive sciences could tell us, for example, whether the structure of epistemic justification is foundationalist or coherentist. Others went still further. Stephen Stich informed us that cognitive science had displaced "folk psychology" by showing that there simply *are no* beliefs; so that epistemology is entirely misconceived.[۱۶] And the Churchlands proclaimed that neuroscience had shown the folk ontology of beliefs and desires to be as mythical as phlogiston; and so, again, that epistemology, which takes this folk-psychological ontology for granted, is nothing but an old, failed pseudo-discipline long overdue for the scrapheap.[۱۷]

Not surprisingly, these bold scientistic promises and even bolder scientistic pronouncements of the death of epistemology fell flat on their faces. The cognitive-psychological studies that Goldman reported in the second half of his book failed to engage with the philosophical analyses he offered in the first half; and his promise of an experimental resolution of the debate between foundationalism and coherentism was never honored.[۱۸] The studies on which Stich relied fell *so* far short of showing that there are no beliefs that one of them actually bore the sub-title, "The Origin and Accuracy of Beliefs about One's Own Mental States" (!)[۱۹] The neuro-scientific work the Churchlands cited—whether focused on the ganglia of the sea-slug, on human infants, on pre-propositional capacities such as recognizing a vowel sound, or on motor capacities like catching a ball—went nowhere even close to establishing their revolutionary conclusions.[۲۰] In any case, such overweening claims were self-defeating: if epistemology really were misconceived, the idea of there being evidence for believing something could be nothing but sheer superstition, and the science on which Stich and the Churchlands called could have no evidentiary support.

At the time, Goldman's scientistic hope of colonizing epistemology for cognitive science and Stich's and the Churchlands' melodramatic scientistic dismissals of the entire field probably seemed to many, as they did to me, like bizarre aberrations—manifestations of "opportunistic naturalism," as I put it in 1993,[۲۱] philosophers' hope of jumping on the newest and most prestigious scientific bandwagon.[۲۲] By now, however, it's clear that they were harbingers of what is by now a tidal wave of scientistic philosophy.

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Quine had suggested, specifically, that the theory of evolution might explain why humans' "innate quality space," our inborn dispositions to see certain things as alike and others as unlike, might roughly correspond to real natural kinds.[۲۳] Of course, even in 1969 the idea of "evolutionary epistemology" was far from new;[۲۴] and since then there has been a good deal of work on the biological preconditions of knowledge and inquiry. Sometimes—as with Popper, who tried to persuade us that

the method of conjecture and refutation stressed in his philosophy of science was analogous to random mutation and selective retention in biology[۲۵]—"evolutionary epistemology" wasn't much more than a metaphor; sometimes—as with the Just-So story Michael Ruse offers by way of "argument" that the scientific method is part of our evolutionary heritage[۲۶]—it was off-hand and casual. Still, much of what was produced was serious, modest interdisciplinary work, and not, by my lights, scientistic.

But it's worth pausing for a moment over Hilary Kornblith's *Inductive Inference and Its Natural Ground,*[۲۷] because of its striking combination of insight and blindness. The insight: Kornblith is right on target about the questions that need to be tackled—"What is the world, that we may know it?" and "what are we, that we may know the world?"[۲۸] The blind spot: not noticing Quine's double use of "science," Kornblith simply follows him in assuming that, since these are empirical questions, they must be questions for the sciences to resolve.[۲۹] As a result, he succumbs to a kind of scientism: offering, by way of answer to his second question, the results of psychological research that—though it surely has contributory relevance—couldn't possibly, by itself, do the job.[۳۰]

But my main focus here will be today's newer, and much brasher, styles of scientistic philosophy, beginning in the early years of this century with the first breathless announcements of the birth of "experimental philosophy." This phrase was at one time the usual term for what we would now call "the sciences";[۳۱] this time around, however, it refers to a philosophical "movement," as its proponents call it, with a brand name, a logo, and even an anthem.

Especially given the tone of some enthusiasts' YouTube self-promotion, it's tempting to dismiss the whole "experimental philosophy" enterprise with Peirce's mordant observation that "[i]conoclastic inventions are always cheap and often nasty."[۳۲] But no; it's worth looking more closely because, while it's clear enough what experimental philosophers are *against*—armchair linguistic or conceptual analysis relying on the individual philosopher's own "intuitions"—it's much less clear what, exactly, they're *for*. Moreover, while the talk of a "movement," the branding ("X-phi"), the logo (a burning armchair), and the anthem (belting out something about "taking it to the street")[۳۳] might suggest that revolutionary change is in the offing, Joshua Knobe and Shaun Nichols's much tamer introduction to their 2008 anthology of work in experimental philosophy might convey the impression that they're proposing nothing more radical than adding one more tool to the philosopher's toolbox, in something like a return to an older tradition from a time before philosophy and psychology had evolved into distinct, separate fields—only (as Knobe and Nichols suppose) in a more rigorous way.[۳۴] The phrase "bait and switch" comes to mind.

But what *is* going on, exactly? The clearest picture I can form is this. The initial impetus was an understandable frustration with the idea that philosophers should rely on their own conceptual or linguistic "intuitions," and with the inconclusive—and, frankly, terminally boring—disputes that arose when those intuitions turned out to be at loggerheads with each other. This frustration prompted these new-fledged experimental philosophers to try conducting little surveys (not, however, in the usual sense, experiments) as a putatively better way to determine "what we would say if … ." However, some of those social-psychological surveys of what subjects say they would say in these or those circumstances gave mixed results, leading some experimental philosophers to suspect that "our" concepts may be neither so simple nor so culturally invariant as the analytic mainstream imagined;[۳۵] and so they began devising slightly more complex surveys to explore factors that might influence such variations.[۳۶] And perhaps it was this that suggested the further possibility that the same methods might also serve, more generally, as a way of exploring how the human mind works—a project duly dubbed "experimental philosophy of mind."

In its initial conception, experimental philosophy wasn't really, as you might have supposed, a radical alternative to the analytic paradigm; it *was* analytic philosophy, albeit conducted by other than the usual introspective means. Moreover, these "other means" were nothing new: Arne Ness had conducted just such a philosophical survey, considerably more rigorously than many experimental philosophers today, in the 1930s.[۳۷] The next step was potentially more radical, suggesting that there might be real problems with the presuppositions of the analytic paradigm. But this was really nothing new, either; anyone familiar with the classical pragmatist tradition will realize that experimental philosophers of this second stripe might, on the most charitable interpretation, be seen as taking tentative baby steps towards a path that Peirce and his successors had cleared for us well *before* the analytic tradition took hold[۳۸]—though somehow they seem to miss the most important point, that our concepts grow richer and deeper *as our knowledge grows*.

But most immediately to the present purpose is the third instantiation, the idea of an experimental philosophy of mind, because this brings to the surface a crucial ambiguity in "psychology" and "psychological," exactly parallel to the ambiguity in Quine's use of "science." "Psychological" may mean either, broadly, "to do with the workings of the mind" or, narrowly, "falling within the sphere of the science of psychology."[۳۹] People form beliefs, hopes, fears, desires, designs, plans, etc.; sometimes they deceive themselves, managing to believe that what they *want* to be true, *is* true; sometimes their judgment is skewed because they're in the grip of strong emotion, sometimes they're especially diligent in inquiry because they're passionately anxious to find something out; what they *think* they see can be influenced by what they *expect* to see; etc.—these are all, in the broad sense, psychological truths. These are truths we learn from our everyday experience of the

world and our everyday interactions with other people; and playwrights, novelists, etc., have been exploring their complexities for centuries. Psychological (narrow-sense) experiments or surveys may teach us more about the details of the effects of expectation on perception or the mechanisms of self-deception, or, etc.; but we certainly didn't need the science of psychology to teach us those familiar underlying truths. So—while some in the big tent of experimental philosophy may be doing decent interdisciplinary work at the borders of philosophy and (narrow-sense) psychology—most, disregarding the difference between the broader and the narrower meanings of "psychology, seem to be pursuing Goldman's old scientistic fantasy of squeezing substantial philosophical conclusions out of narrow-sense psychological results.

You might wonder why—unlike Goldman, who relied on the work of cognitive psychologists and others in related fields—these experimental philosophers generally conduct the surveys on which they rely themselves.[۴۰] Ironically enough, a large part of the answer seems to be that their surveys are often focused on very familiar, very conventional old-chestnut puzzles from the analytic tradition, such as the Gettier paradoxes or the trolley problem, or else on recently-fashionable puzzles in neo-analytic contextualist epistemology;[۴۱] people's intuitions about which are, to put it politely, unlikely to be of burning interest to professional psychologists. You might also wonder why so many of these surveys are apparently conducted in classroom settings.[۴۲] A large part of the answer, I suspect—besides, of course, the obvious fact that this kind of survey is both cheap and easy—may be that if you were to ask regular people on the street, rather than a class of meekly compliant students, what they would say about whether, in the scenario described by Gettier,[۴۳] Smith knows that Brown is in Barcelona, the most likely response would, understandably, be a baffled "Huh?"

Perhaps it's unnecessary to add that the suggestion that experimental philosophers are merely returning to an older tradition in which philosophy and psychology weren't as clearly distinct as they are now is very far from the truth. Take, for example, the work of Alexander Bain, the remarkable Scottish philosopher-psychologist whom Peirce once called the "grandfather of pragmatism."[۴۴] Bain's ideas are certainly of great philosophical interest; but that's because, writing before the rise of experimental psychology, he happily took on any and all questions about the human mind, and paid especially shrewd attention to aspects of the human psyche of which everyone has experience but on which few ever seriously reflect. In my estimation, Knobe and Nichols's anthology isn't nearly as rewarding as Bain's *The Emotions and the Will*,[۴۵] first published in 1869.

Still, isn't today's experimental philosophy more rigorous, at any rate, than the work of Bain and others like him? Well, it's true that Bain doesn't give us graphs and tables, as experimental philosophers do. But this doesn't by itself guarantee rigor;

and in fact it looks to me as if experimental philosophers' graphs and tables often mask significant methodological flaws.[۴۶] Moreover, the little "vignettes" to which their questionnaires elicit subjects' responses seem sketchy and under-described. And in any case, and more importantly, the survey methods on which they rely would be completely inappropriate to the kinds of question Bain tackled.

My discussion of experimental philosophy has focused primarily on its expression in epistemology and philosophy of mind; now it's time to turn to metaphysics, and a 2007 book by James Ladyman, Donald Ross, et al, *Every Thing Must Go*, which proposes a whole other style of philosophical scientism. Ladyman and Ross's subtitle, "*Metaphysics Naturalized*,"[۴۷] echoes Quine; the opening sentence of their preface tells us that "contemporary analytic metaphysics fails to qualify as part of the enlightened pursuit of objective truth, and should be discontinued";[۴۸] and a few pages later we learn that it's not only "contemporary analytic metaphysics" that Ladyman and Ross regard as beyond the pale, but a priori metaphysics generally.[۴۹] They assure us, however, that they aren't proposing, like the positivists, to abandon metaphysics entirely but want, instead, like the pragmatists, to reform it.[۵۰] This sounds promising; but you don't have to read much further before you realize that that it is, to say the least, misleading.

Even though they occasionally allude to Peirce, Ladyman and Ross have apparently relied on what Putnam says about him, rather than actually reading him themselves;[۵۱] and, so far as I can tell,[۵۲] the "radically naturalistic metaphysics" they envisage is *very* different from the scientific philosophy Peirce proposed. It looks to me, in fact, like nothing so much as a repackaged version of the positivists' hope of making philosophy into meta-science—it even has the same tone of deferentialist triumphalism, kowtowing to the sciences while puffing up philosophers' importance. For—somewhat as the old positivists insisted that the only legitimate task of philosophy is the articulation of the supposed "logic of science"—Ladyman and Ross insist that the only legitimate task of metaphysics is the search for a "global consilience network," meaning an account that, instead of trying to "domesticate" what they condescendingly call "folk pictures" of the world, [۵۳] will unify the ontologies of the various sciences.[۵۴]

For present purposes, it's not necessary to go into the details of what Ladyman and Ross take this unified ontology to be; which is fortunate, because this would mean fighting our way through dense thickets of what they call "dialectical argument"—i.e., protracted criticism of almost every other philosopher who has ever written on this or any related matter. However, it's worth noting that, maintaining the "primacy of physics,"[۵۵] Ladyman and Ross focus largely on the ontology of fundamental physical theory;[۵۶] which, according to their "ontic structural realism," consists of patterns or mathematical models[۵۷]—presumably,

mathematical models *of* patterns or structures.[۵۸] So, you might wonder, where does the concern for "consilience" come in?—apparently, under what they call their "Rainforest Realism," according to which the ontologies of the "special sciences" (by which *they* mean, every science except fundamental physics)[۵۹] are constrained by, but not reducible to, the ontology of fundamental physical theory. They have remarkably little to say, however, about the specifics; and while they devote many pages to quantum mechanics, serious references to the work of psychologists, sociologists, economists, anthropologists, etc., are notable by their absence.

Physical objects, Ladyman and Ross aver, are merely constructions, apparently mental constructions, made by humans and other intelligent social animals as "second-best tracking devices" of certain really-real patterns.[۶۰] This explains their curious title: things are out; patterns are in. But it leaves one puzzled about why, though they deny that there are things, they insist that this doesn't "impugn the everyday status of objects like tables and baseballs";[۶۱] and why they believe that, because the fact that there are kinds is (they claim) the *same* fact as the fact that there are relatively stable local patterns, it follows that there *are no* kinds.[۶۲] (Part of the problem is that it's hard to know when, like Bishop Berkeley, they're speaking with the vulgar, and when we're hearing their official story.) But since what primarily concerns us here is Ladyman and Ross's conception of the relation of philosophy to the sciences, I can set all this aside.

Hinting that only someone desperate enough to turn to "natural theology or speculative [by which they mean, a priori] metaphysics" for answers could possibly deny this, Ladyman and Ross write that "with respect to anything that is putatively a matter of fact about the world, scientific institutional processes are absolutely and exclusively authoritative."[۶۳] This is an astounding statement. Can they really have they forgotten the kinds of factual question that require historical research or legal scholarship or detective work or, etc., to answer, and even such everyday kinds of factual question as what building the physics department is in, or what they had for breakfast the day they wrote that extraordinarily incautious, and paradigmatically scientistic, line? Ironically enough, evidently unaware that in ordinary English the word has long been pejorative, they adopt "scientism" as their *own* word for their approach[۶۴]—and "scientism" certainly is the *mot juste*, negative connotations and all.

I trust it's unnecessary for me to say that I'm not for a moment suggesting that natural theology or a priori metaphysics is any substitute for well-conducted science; nor am I denigrating either the legitimacy or the importance of questions about how the various sciences hang together, or denying that, with respect to many kinds of factual question, our best bet is indeed to look to what the relevant science currently has to say. But generic references to the "institutional processes of science," which are apparently all Ladyman and Ross have to offer on this score, don't even begin to

explain *why* looking to the sciences is so often our best bet[۶۵]—a task that would require real epistemological work, not to mention serious attention to the susceptibility of those institutional processes to corruption.[۶۶] And the thesis that psychology is constrained by, but not reducible to, physics[۶۷] (which is pretty much all you find when you follow Ladyman and Ross's index entry for "psychology"), though true enough, doesn't even begin to explain *how* states and processes of the brain relate to mental states and processes such as belief and inference, a task that requires real metaphysical work of a kind undreamt of in their scientistic philosophy.

And finally I turn to—oh my goodness!—Alex Rosenberg. Ladyman and Ross are turgidly academic; Rosenberg writes in the breezy, jokey, mildly profane style of the blogosphere. Ladyman and Ross acknowledge that the currently-accepted scientific theories on which they rely may turn out to be mistaken; Rosenberg simply takes these theories for granted. Ladyman and Ross reveal their anti-religious feeling mostly in snippy asides; Rosenberg wears his anti-religious agenda on his sleeve—or rather, on the dust-jacket of his 2011 book, *The Atheist's Guide to Reality*. And while Ladyman and Ross's philosophy is, for sure, scientistic, Rosenberg takes the scientistic game of philosophical chicken to a whole new level, far beyond even the Churchands' wildest eliminativist dreams.

Like Ladyman and Ross, and apparently no more aware of the pejorative overtones of the word than they, Rosenberg calls his position "scientism." But as *he* uses the word what it refers to is—wait for it—*the view that all atheists share*.[۶۸] This is downright perverse. For one thing, there's already a perfectly good word for the view that all atheists share: "atheism." For another, there have been, and still are, plenty of atheists whose atheism has nothing to do with science; many religious scientists; and, I'm sure many people (myself among them) who don't buy the idea that, if theological explanations fail, the only possible conclusion is that the sciences must explain everything. His boastful title, "The *Atheist's Guide* …," notwithstanding, Rosenberg certainly doesn't speak for all us.

In fact, Rosenberg goes *beyond* the false dichotomy of religion or science, insisting that, since theological explanations fail, *physics* can explain everything. (Sometimes, however, he forgets which is the cart and which is the horse, and you find him arguing that physics *must* explain everything, because otherwise there would be wiggle-room for religious explanations to weasel their way in.)[۶۹] Anyhow, according to Rosenberg, what physics tells us is really real is (not patterns or mathematical models, but) fermions and bosons. And physics, he tells us not once but umpteen times, "fixes all the facts"[۷۰]—including not only the facts of chemistry, but also the facts of biology, and therefore, he claims, all the facts about ourselves.

Anything physics *can't* explain, according to Rosenberg, must be an illusion. The universe has no purpose, he begins, and human lives no meaning.[۷۱] "Doesn't this

'nihilism' about the physical and biological worlds put us on the slippery slope down to nihilism about the social and the psychological worlds, as well as the moral and political ones?" he asks; and answers, "Yup."[۷۲] The notion that there are moral values is an illusion that evolution has somehow tricked us into accepting; really, all moral claims are false.[۷۳] And the same goes, apparently, for values of other kinds, including the epistemological.[۷۴] The mind is the brain, Rosenberg avers;[۷۵] and almost everything we believe about ourselves and our minds is false. The title of his chapter 8—where our old friends the sea-slugs turn up yet again[۷۶]—puts it like this: "The Brain does Everything without Thinking about Anything at all."[۷۷] If this were true, the conclusion would be unavoidable: Rosenberg wrote his book, and physicists developed the theories on which he relies, *without thinking about anything at all*. My reaction might be best expressed in Rosenberg-ese: "is this guy for real?"

No wonder, these days, I so often find myself thinking with a wry smile of that splendid passage towards the end of Aldous Huxley's *Brave New World*, where the Controller asks the Savage if he knows what a philosopher is, and the Savage—he has read only Shakespeare, whose works are banned in the "civilized" world—answers, quick as a flash: "a man who dreams of fewer things than there are in heaven and earth."[۷۸]

2. Coping with Complexity: The Path to Scientific Philosophy

So, as usual, I'm the cannibal among the missionaries. For, in the midst of all this scientistic hubbub, I've been trying to develop an approach that's neither purely a priori nor scientistic but, as I put it in *Defending Science*, "worldly":[۷۹] not restricted to our concepts or our language, but focused on the world, and acknowledging the contributory relevance of results from the sciences, but not expecting them to do our philosophical work for us. And part of this project has been to articulate an understanding of the world and of our distinctive human mindedness that, while acknowledging that the only stuff there is, is physical, is neither reductionist nor eliminativist. As I wrote in 2003, "it's all physical, all right; but it isn't all physics."[۸۰]

I begin, as my temperament inclines me, and in what I take to be the spirit of Peirce's recommendation,[۸۱] with a host of everyday observations. Everyday experience reveals a world of astonishing variety—on the earth, oceans and deserts, mountains and rivers and plains, jungles and forests and savannahs, a multitude of kinds of physical stuff, plants, animals, reptiles, birds, creepy-crawlies, bugs, slugs, mold, etc. and, beyond the earth, a sun, a moon, stars, etc. It also reveals regularities amidst this vast variety. The sun rises and sets, the moon waxes and wanes, tides rise and fall, and stuff, things, plants, and animals of a kind behave in predictable ways: wood burns, but rocks don't; acorns don't grow into pea-plants, or peas into oak trees; crocodile eggs hatch into baby crocodiles, not cardinal birds, and cardinal eggs

into baby cardinal birds, not baby crocodiles; wolves eat meat but not grass, rabbits grass but not meat; and so on.

Here on earth, by now an astonishing array of human artifacts overlays and interpenetrates this natural reality. These artifacts might be categorized into the physical—huts and hats, books and bombs, cutlery and computers, roads and railways, farms and factories, pepper-mills and power stations, slaughterhouses and spacecraft, laboratories, beakers, and Bunsen burners; the social—economies, currencies, marriage customs, governments, religions, legal systems, codes of honor and of etiquette, scientific societies, conferences, customs, and conventions; the imaginative—legends, myths, stories, ballads, poems, plays, novels, cartoon characters, soap operas, video games; and the intellectual—codes, maps, diagrams, mathematical and musical notations and theories, philosophical systems, works of history, *and* scientific concepts and theories. But, as my list already intimated, everywhere there is crisscrossing of categories: a language, for example, is both a social artifact and an intellectual one; Harriet Beecher Stowe's novel, *Uncle Tom's Cabin*, is an imaginative artifact, but copies of the book are physical artifacts, and the system of slave labor and slave trading it depicts so vividly was a social artifact; legal systems are social artifacts, but court-rooms, prisons, books of statutes and rulings, English judges' wigs, etc., are physical artifacts, and the contents of those legal books and rulings are intellectual artifacts; and there are scientific artifacts in all these categories, including the imaginative.

Everyday experience teaches us that we can make physical artifacts by exploiting the natural properties of natural stuff, putting those properties to some purpose of ours; that knowledge of how to make things is passed from one generation to another and, in the process, prompts further innovations; and that this cultural transmission was enormously amplified by the invention of writing. Moreover, our experience is that sometimes we can explain how people behave, and even predict what they will do—not just that if you push a person off a tall building, he will fall to the ground, but also that if a Chinese infant is raised in a Spanish-speaking environment, he or she will grow up speaking Spanish, not Chinese; that if people are afraid of mad-cow disease in the beef supply, sales of chicken will go up; that if you give professors raises only if they publish a lot and run around talking at lots of conferences, most will find some way to do what they're given this incentive to do. And so forth.

By now, thanks to the work of many generations of scientists, much, much more has been found out about our planet, our galaxy, our universe, the composition of the distant stars, the accretion of matter, the evolution of the elements on earth, the origin of species, the commonalities and the differences among human societies, and about ourselves. To be sure, by now commonsense conceptions of kinds, stuff, phenomena, laws, etc., have been rethought and reconfigured by generations of biologists, chemists, physicists, and other scientists;

and a good deal of what was once taken to be commonsense knowledge is now known to have been mistaken. But long before there was modern science people knew that the world isn't a chaos of random events, that there are kinds of stuff, kinds of thing, and laws of nature. (Indeed, if there weren't kinds and laws, there couldn't have *been* people.) And long before there was modern science, people knew, too, that we have some capacity to represent, and to devise possible explanations of various aspects of, the world.

Of course, the serious philosophical work of figuring out "the little that can as yet be found out about the universe of mind and matter" from those everyday observations begins only when we start asking such questions as: What, exactly, is the difference between the real and the imaginary? How does natural reality differ from socially-constructed reality? What's involved in there being laws of nature? What are kinds, and what kinds of kind are there? How did there come to be kinds and laws? What is inquiry, and what makes it better or worse conducted? What factors determine whether the evidence for a claim or theory is strong or weak? What's the role of perception, of memory, of inference? What, if anything, is distinctive about the human mind? How did our human mindedness come about? Are human infants born minded, or do they become minded, and if so, how? What exactly is going on when someone believes that the earth revolves around the sun, wonders whether peptic ulcers might be caused by a bacterium, figures out how to test the theory that cholera is waterborne, hypothesizes that ours is only one of many multiverses, etc.? And it's on the answers to these questions in metaphysics, epistemology, and philosophy of mind, and the many further questions those answers inevitably raise, that the very possibility of scientific inquiry depends.

In what follows, referring you elsewhere for further thoughts on the metaphysical and epistemological dimensions,[۸۲] I shall focus on a cluster of questions in philosophy of mind—the most straightforward way to see what's so wrong-headed about the Churchlands' supposedly tough-minded eliminativism and Rosenberg's supposedly even tougher-minded whole-hog nihilistic physicalism; what's so disappointing about Ladyman and Ross's rather perfunctory treatment of the relation of mind and matter; and why the survey methods of experimental philosophy couldn't even scratch the surface of the key questions. Human mindedness, I shall argue, is neither a myth nor a mystery. But it can't be understood exclusively in evolutionary terms, or exclusively in terms of neurophysiology, and certainly not exclusively in terms of physics; even a halfway adequate understanding will involve an ineliminable socio-historical element.

To say even this much, of course, is already to invite the scorn of scientistic philosophers. Some, doubtless, will dismiss me as a stick-in-the-mud still wedded to the old folk-psychological mythology. But sneering at the idea that we can sometimes explain a person's actions by reference to what he wants and what he believes by calling it "folk psychology" hasn't the slightest tendency to show that it's

mistaken; and neither, if my account is even roughly on the right lines, does the failure to locate beliefs, desires, etc., in the brain. Others, doubtless, will object that, unless I'm covertly smuggling in a soul or some crypto-Cartesian mental substance, my position must be incoherent; that, if there is only physical stuff, everything *must*, ultimately, be explicable by physics. In due course we'll see that this argument is a fallacy of equivocation. But now I'm getting ahead of myself.

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Let me begin by assuring you that there are no Cartesian or theological cards up my sleeve—*none*.

Human beings are physical creatures in a physical world, subject to the same physical laws as everything else—laws that, in combination with facts about our build and theirs, explain why (most) birds can fly unaided but we can't, why cheetahs can run at almost 60 miles an hour [۸۳] but we can't, and so on. Our brains are made of physical stuff;[۸۴] and, most to the present purpose, the nature of the physical stuff of which our brains are made enables our mental capacities, because it's plastic, adaptable, capable of forming complex internal connections and external associations, while at the same time it constrains our capacities, because it's not *infinitely* plastic and adaptable.

Moreover, our species is the product of a long process of evolution, a process that explains our ability to walk upright, our vestigial appendices, our big brains, and maybe even such psychological characteristics as our capacity for altruism, our *penchant* for induction, or (as Peirce thought)[۸۵] our aptitude for making correct abductions more often than chance. And, since all species are the product of this same evolutionary process, it's not surprising that there are striking continuities between humans and other creatures: birds build nests, and bower birds even decorate their nests elaborately; beavers build lodges; rabbits dig warrens. Some primates, and even some crows, use tools.[۸۶] And some animals, like the troop of Japanese macaques that picked up the habit of washing their sweet potatoes to get rid of sand before they eat them,[۸۷] transmit know-how from one to another. But of course those macaques don't, like us, *grow* sweet potatoes, make lists of the pests and diseases to which they are susceptible, or invent recipes for cooking them, let alone publish sweet-potato cookery books. In short: human beings really do have mental capacities far beyond those of even their closest and cleverest primate relatives.

This is not to say that there must be one single, simple capacity that humans have and other creatures don't; more likely, a *combination* of characteristics that humans have *in significantly greater degree* than other animals explains why we are, as I shall say, "minded"[۸۸] in a way no other creatures are: self-aware, able to speak, to read, and to write, to form explicit designs and plans, tell stories, crack jokes, paint pictures, make music, venerate ancestors, relics, and holy sites, etc., etc.—*and* to devise explanations and theories, including scientific theories.

"If everything is physical," today's scientistic philosophers will no doubt ask at this point, "what could the explanation of our unique abilities possibly *be*, if not the greater size and complexity of the human brain?" "And who could possibly tell us about *that*," enthusiasts of neurophilosophy will no doubt chime in triumphantly, "if not neuroscientists?" I'm tempted to say they're barking up the wrong tree; but it would be more accurate to say that what we're looking for isn't to be found in *any* tree. To be sure, the human mind would be impossible without the human brain; but *the brain isn't all there is to it*. Rather, it's culture that makes mindedness possible—even as, at the same time, mindedness makes culture possible.[۸۹]

Perhaps you find that last remark opaque; and it's certainly in need of much more articulation—at least some of which I'll supply in due course. Or perhaps you suspect that, after all, I'm smuggling in something non-physical; but on this score I can offer some reassurance right away. "Physical" has a double usage, rather like the double usage of "healthy." We describe a diet, a climate, etc., as healthy, meaning that it is conducive to healthy humans (or, depending on context, to healthy polar bears or healthy dolphins or healthy soy-bean crops, etc.). In a roughly similar way, physical laws are laws *governing* physical stuff, physical kinds are kinds *of* physical stuff, physical phenomena are phenomena *involving* physical stuff, and physical relations are relations *among* physical things or kinds or bits of physical stuff. So, when I say "it's all physical," this should be understood as shorthand, not for "nothing but physical stuff is real," but for "all the stuff there is, is physical"[۹۰]—and as acknowledging that, besides physical stuff and physical things made of physical stuff, there are events involving physical things and physical stuff, physical kinds, physical laws, physical phenomena, physical relations, i.e., kinds, laws, phenomena, and relations *of* physical stuff.

So the challenge is whether, and if so how—on the assumption that everything is physical in this double-layered sense—we can answer the second of Kornblith's good questions: "what are we, that we can know the world?" Well, I begin: such knowledge as we have of the world ultimately derives from our experience of it and the conjectures, inferences, and beliefs we form to account for that experience. Perceptual relations, our sensory interactions with things, events, etc., are a sub-class of the innumerable physical relations between humans and the rest of the world.[۹۱] But conjectures, inferences, beliefs, and the like, the mental states and processes sometimes classified as "propositional attitudes," are less straightforward; to understand these, we need to refer to the enormously complex meshes of humans' *semiotic* relations to the world: their relations to stuff, things, and events in the world and to words and other signs, and the relations of those words, etc., to that stuff, those things, those events. To call a relation "semiotic" doesn't mean, however, that it's not, in the broad sense explained, physical; rather, it is to identify it as a triadic relation involving persons, signs, and things. The semiotic relation of a pattern of

word-usage to things and events in the world, for example, is a relation of (i) language-users, (ii) the sounds and marks they make, and (iii) things, events, etc., in the world.

I will focus here on belief—a phenomenon to which my epistemological work has obliged me to give a good deal of thought. I begin with a platitude that, as Bain wrote in 1859, is "admitted on all hands": the unmistakable test of sincerity, of whether a person really believes what he says, is his "[p]reparedness to act on what he affirms.[۹۲] In accordance with this, the first element in my account of belief is behavioral. But the second element, in accordance with the idea that the only stuff there is, is physical, is neurophysiological. And the last element, the one that accounts for the *content* of his belief, is social.

So, at a very approximate first approximation: if Tom believes, say, that tigers are dangerous then, normally:

- Tom has a complex, multi-form disposition[۹۳] (a) to assent to, and to assert, sentences in his language to the effect that tigers are dangerous, that tigers don't make suitable house-pets, that tigers shouldn't be allowed to wander the streets, etc.; and (b) to behave in appropriate ways—to avoid venturing into the tiger cage at the zoo, to run away if he sees a tiger approaching him, to be surprised if he sees a tiger curled up like a domestic cat on someone's hearthrug, and so on. This is the *behavioral* element.

  This complex, multi-form disposition is somehow physically realized in Tom's brain and central nervous system, in the form of manifold interconnections between whatever registers input from the world ("receptors," as I shall say), and whatever activates behavior, verbal and non-verbal ("activators"). This is the *neurophysiological* element.

And:

- The relevant words in Tom's language (not just "tiger" and dangerous," but all the words involved in the whole raft of sentences this belief involves a disposition to assert or to assent to) are associated, in the patterns of usage in his linguistic community, with the things and events in the world involved in these behavioral dispositions of his. This is the *social* or *cultural* element.

Since its second clause speaks of "receptors" and "activators" without saying anything more about what these are than that they are physical aspects of the brain and/or central nervous system, this account is only schematic; but, schematic as it is, I hope it's enough to make clear that we should be looking, *not* for some neuro-physiological kind of brain-matter corresponding to the proposition that tigers are dangerous, but for associations of bits of generic brain-matter with tigers, with

things that are dangerous, and with "tiger," "dangerous," etc. So far as I know, brain scientists haven't had much to say about this; but I stumbled by chance on one tiny but intriguing piece of evidence: a study of patients awaiting brain surgery in which neuroscientists reportedly found that in each subject there was just one generic neuron that fired when the patient saw an image of Homer Simpson or heard the name "Homer Simpson," or even Homer's catch-phrase, "Doh!"[۹۴]

Obviously, also, this account addresses just one element of a whole complex mesh of interrelated problems. More work would be needed to move beyond believing that p to other propositional attitudes such as hoping that p, fearing that p, wishing that p, and, most relevant to the work of the sciences, wondering whether p, conjecturing that q, inferring that r, and so on; and *much* more work would be needed to articulate what exactly is involved in talking of propositions or theories, let alone of culture. And even with respect to the one issue it addresses directly, this account is only the most approximate of first approximations, needing an enormous amount of amplification and many refinements.[۹۵]

For one thing, the "normally" with which I began needs a lot of work; eventually the story would have to be spelled out in terms of (non-natural) sign-use generally, rather than of language-use specifically. For another, the belief I chose as my example, that tigers are dangerous, made the task relatively easy; a lot more work would be needed to accommodate mathematical beliefs, theoretical beliefs, religious beliefs, etc. The account will need to be made less atomistic, to accommodate the interaction of beliefs both with each other and with other propositional attitudes. And more will have to be said about how, over the first few years of life, a human infant gradually becomes minded as, through his interactions with others and with the world, he learns language; and about our habit of attributing beliefs, or at least "beliefs," to those animals that satisfy some but not all the elements of this account.

Still, even in its present crude and incomplete form, this approach has some explanatory power. For example, it suggests a partial explanation of why it's so hard to give tidy conditions for the individuation of beliefs: different languages, and even different idiolects of the same language, don't always map words and world in exactly the same ways. And, without needing to appeal to mysterious non-physical causes of physical movements, it provides a partial explanation of how what a person believes and what he wants can explain what he does. When, for example, wanting a glass of cold orange juice, I go to the cupboard to get a glass and then to the fridge to get the orange juice, it's those "activators"—which, to repeat, are physical aspects of my brain and nervous system—that get me moving; but *which* activators fire, and hence *what* I do, depends on which activators are associated with the things, events, etc., and with the words associated with the things and events, involved in my desire and my belief.

This approach is both *worldly* and *social*, giving key roles to the relations of people to things and events and to words, and to relations of word-usage in a linguistic community to those things and events. This is why, as I said earlier, while the human mind would be impossible without the brain, the brain isn't all there is to it. And, sketchy as this has been, if you've followed me this far you'll see that the survey methods of experimental philosophy, even if they were far more rigorous and sophisticated than they've been up till now, are not the way to understand such mental states and processes as belief, conjecture, inference, etc. You'll see, too, that the reason the Churchands imagined they'd discovered that there are no beliefs was that they hadn't thought hard enough about what belief *is*—and, more generally, that the sub-title of Patricia Churchland's well-known book, *Neurophilosophy*, "*Toward a Unified Science of the Mind-Brain,*" already revealed a crucial misstep. And you'll also see that, while Ladyman and Ross are quite right to say that the physical constrains, but doesn't determine, the psychological, this leaves us still in need of an account of the "particular go" of it—something not to be found by looking to physics or even to narrow-sense psychology, but an unavoidably philosophical task.

OK, you may say; still, the fact that beliefs, etc., are not reducible to physical states *of the believer*, but involve complex relations and relations of relations to the world and to others, doesn't show that the ultimate explanation of these relations couldn't be given by physics. So how can you be sure that it isn't, in the end, all physics, that physics-fixes-all-the-facts-ism in the style of Rosenberg can't possibly do the job? After all, mightn't the obstacle to reducing these relations to physics be only like the difficulty of predicting exactly where a hurricane will make landfall—not an in-principle irreducibility, just a matter of enormous complexity?

I don't think so. It's not just that the idea that physics, even the most sophisticated future physics, could tell us how humans became capable of language-use in the first place, how all the myriad human languages there have ever been evolved, how to interpret Portia's "quality of mercy" speech in *The Merchant of Venice*, how to understand Watson and Crick's article on the structure of DNA, or how to make sense of the 900-odd pages of President Obama's Affordable Care Act, etc., etc., boggles the mind—though it certainly does. It's also, and more importantly, that reducing the socio-historical-linguistic loop of human sign-usage to physics would be possible only in a completely deterministic world, the kind of world Laplace imagined, in which there were no probabilistic laws and no elements of randomness. The *real* real world isn't like that;[۹۶] it has a history, a history marked by the singularities of the origin of our universe, the evolution of the elements from hydrogen, the evolution of species on earth, etc., and by contingencies, probabilities, coincidences.

I hasten to add that of course this isn't to deny that there are real natural laws; it is only to say that there are also elements of chance, of randomness[۹۷]—as,

notwithstanding his repeated insistence that physics fixes all the facts, even Rosenberg seems implicitly to recognize. Physics, he tells us, explains why there are "blind" variations, imperfections in the copying of genes, for natural selection to work on.[۹۸] He doesn't claim, however, that physics explains why mutation resulted in *these* variations rather than others; and he says explicitly that the emergence of our species was an improbable accident.[۹۹] And this is tantamount to admitting that, after all, there are facts that physics *doesn't* fix. Moreover, even tiny elements of randomness may have very large consequences.[۱۰۰] At the very least: if not for the random variations that eventually gave rise to humans, there would be no human languages, no human cultures, no human artifacts, and so—unless intelligent life has come about elsewhere in our (or another) universe—no science.

So the argument that, if it's all physical, all the truths there are must be reducible to the truths of physics is a kind of fallacy of equivocation. It relies on the premise that physics is the science of physical stuff. But in the interpretation in which this is true, it doesn't yield the conclusion; while in the interpretation in which it *would* yield the conclusion, it's not true. It's true that physics is the science to which we look to understand the nature of matter itself, the processes that created it, and the laws that govern it; but it's *not* true that the laws of physics can explain every phenomenon that has arisen in the course of the many contingencies and coincidences in the history of the world and of human civilizations—and this is what would be needed to yield the conclusion. It's all physical, yes; but physics *doesn't* fix all the facts.

3. Adjusting our Attitudes: The Problem of Perverse Incentives

By now you may be wondering why, if is as fundamentally flawed as I have suggested, scientistic philosophy of one kind or another has prove so attractive to so many. My diagnosis would begin by noting that one thing today's scientistic philosophers seem to have in common despite their many differences is an inchoate sense that something's badly amiss with our discipline, that we can't just go on with philosophical business-as-usual. And, indeed, I would continue, something *is* rotten in the state of philosophy. Our discipline becomes every day more specialized, more fragmented into cliques, niches, cartels, and fiefdoms, and more determinedly forgetful of its own history.[۱۰۱] More and more journals are crammed with more and more unread, and sometimes unreadable, articles about what X said about Y's interpretation of Z's response to W. Anyone with enough frequent-flyer miles to upgrade to publication-by-invitation is relieved to bypass a relentlessly conventional peer-review process often crippled by tunnel-vision, cronyism, and self-promotion. I won't even *mention* the decades of over-production of Ph.D.s, or the disastrous effects of that horrible, and horribly corrupting, "ranking" of philosophy graduate programs.

Combine this with the fact that the neo-analytic establishment, though institutionally still pretty firmly entrenched, seems close to intellectual exhaustion, and it's certainly no wonder that many philosophers are bored and restive, casting around for something new; and no wonder, either, that we're beset by passing fads and fashions—among them the scientistic fads and fashions I've been criticizing here. Unfortunately, far from solving the problems of our profession, this hydra-headed scientism makes things, not better, but worse; for, as we have seen, it is a kind of confession of philosophical failure.

Up till now, it has been the first of Peirce's themes—that, because philosophy is about the world, it requires experience, but that it differs from the sciences in requiring close attention to everyday experience rather than elaborate efforts to secure experience of a recondite kind—on which I have relied as I put mindedness, generally, and belief, specifically, under the microscope of philosophical reflection. But Peirce's other theme— that philosophical inquiry should be conducted in the same spirit, from the same desire to figure out how things are that, he believes, has motivated the best work of the sciences—also has a role to play, this time in my reflections on the causes of the more general malaise of which those scientistic fads and fashions are just some recent manifestations.

Like the serious inquirer in every field, Peirce writes, the serious philosophical inquirer must "[draw] the bow upon truth, with intentness in the eye, with energy in the arm."[۱۰۲] As this evocative metaphor suggests, if you're seriously inquiring, you really want *the truth*, not just some comfortable or convenient conclusion—that's why you need "intentness in the eye"; and you *really want* the truth, you don't just vaguely wish you knew it—that's why you need "energy in the arm."[۱۰۳] This is, to say the least, not easy. It doesn't just require intellect; it demands a brutal honesty, the humility to recognize when you've been on the wrong path, the fortitude to pick yourself up and start over when necessary, and the persistence needed to stick with a problem in the face of difficulty and in the full knowledge that you may very well fail.

Isaac Newton was well aware of this, telling an admirer who wanted to know how he had made his remarkable discoveries: "by always thinking unto them."[۱۰۴] So was Santiago Ramon y Cajal, who wrote in his *Advice for a Young Investigator* that the most essential thing for a scientist is sustained concentration, what the French call "*esprit de suite*";[۱۰۵] and so too was Francis Crick, who wrote in his memoir of his and James Watson's discovery of the structure of DNA that "if we deserve any credit at all, it is for persistence and the willingness to discard ideas when they became untenable."[۱۰۶] And so was Peirce, who wryly attributed his own achievements to "peirceistence" and "peirceverance."[۱۰۷] I'm sorry to say, however, that when I read those experimental philosophers, or Ladyman, Ross et al., or Rosenberg,[۱۰۸] I'm so

struck by their remarkable assurance of intellectual superiority that I find another painfully shrewd phrase of Peirce's coming unbidden to mind: "the vanity of cleverness."[۱۰۹]

None of this is very surprising. For the sad fact is that, these days, almost everything about the way universities are organized conspires against the spirit of serious inquiry. The professional administrators who now "manage" universities stress "productivity," the need for everyone to be "research-active," and above all, anything and everything that could possibly be described as "prestigious." It's bad enough that professors are constantly distracted by conference calls, requests for referee's reports on the ever-growing flood of submissions, pointless meetings, time-consuming electronic noise, and such. But the demands for abstracts of the paper or the lecture you haven't yet written and for proposals spelling out the important discoveries you will make in the next few years, as well as the tyranny of the annual review demanding lists of the honors, the prestigious publications, and the coups in landing grant money you have pulled off over the last twelve months (!) are much *more* corrupting. For these erode the very virtues needed to get good work done: they positively discourage patience and painstaking and encourage, instead, efforts to create the *appearance* of progress, genuine or not.[۱۱۰]

These problems extend across the entire academy—to every field, including not only the humanities, but the sciences too. Indeed, the perverse incentives I just described are (some of) the same pressures threatening the health of the sciences, where they have encouraged "salami publishing,"[۱۱۱] those often-misleading multiple attributions of authorship, the corruption and manipulation of the peer review process, the bureaucracy, the endless hours spent "writing grants," attending seminars on writing grants, reading others' grant applications, etc., etc. But it's only to be expected that the consequences for the humanities in general, and for philosophy in particular—where the pressure to accommodate hard facts is looser and more indirect, and there's a long tradition of never-resolved disputation—have been even worse.

More than a century ago, Peirce wrote movingly of his hopes for the future of philosophy:

> We must expect arduous labours [*sic*] yet to be performed before philosophy can work its way out of the jungle and emerge on the high road of science. But the prospect is no longer so desperately gloomy, if philosophers will only resign themselves to the toilsome procedure of science, and recognize that a single generation can make little headway, but yet may faithfully clear away a few obstacles, and lying down to die, resign the axe to their successors.[۱۱۲]

When perverse incentives tempt us from our task, however, the jungle grows every day thicker than ever.

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Almost done!—but there are still a few loose ends.

Peirce's talk, in the passage I just quoted, of "the high road of science" and "the toilsome procedure of science" may provoke the objection that the approach I am recommending is itself scientistic—specifically, that Peirce's phrase, "scientific philosophy" is a clear case of the honorific use of "science" and its cognates that is one sign of scientism. I reply, first, that far from suggesting that the work of philosophy could be handed over to the sciences, Peirce observes that to conduct an experiment to determine whether induction is valid would be "like adding a teaspoonful of saccharine to the ocean in order to sweeten it";[۱۱۳] and, far from suggesting that philosophical problems that the sciences can't handle must be pseudo-problems, he gives a long list of metaphysical questions in need of "solid and industrious [philosophical] investigation."[۱۱۴]

Still, it can't be denied that he *does* use the word "scientific" in what looks like an honorific way. When he speaks of "science" here, however, it is in the old, broad sense in which it refers to any kind of serious investigation—which is why he needs the phrase "the special sciences" for what we, today, would call "the sciences." So when he urges that philosophy become scientific, Peirce is urging, in effect, that it become serious inquiry. True, he takes for granted that, at its best, the work of the special sciences has manifested the spirit in which serious inquiry should be undertaken; but this idea is not, by my lights, scientistic—though a warning note to the effect that the integrity of the sciences is presently under severe strain would surely be in order.

The other concern that needs addressing is that Peirce's idea that the special sciences need instruments of observation, voyages, excavations, etc., while philosophy does not, might after all provide a criterion of demarcation of science. Well, I reply, it does suggest a rough-and-ready way to draw the line between philosophy and the special sciences (though I would add that, while those ancient Chinese astronomers had no telescopes, computers, etc., they were undeniably astronomers, nonetheless). But what's much more important is that, while Peirce's approach is helpful both as a way of understanding what's peculiar about philosophy and as suggesting something of how the sciences grew out of everyday inquiry and the philosophical reflections it prompted, it certainly doesn't suggest that all or only inquiry in the sciences is good inquiry—the characteristic motivation of the scientistic concern with demarcation; on the contrary, its core theme is that that philosophy too can, and should, be a field of "solid and serious investigation."

But it's the light that Peirce's conception of philosophy sheds on what's peculiar about our discipline with which I will conclude, because his account explains *both* why the idea that philosophical work can be conducted entirely a priori is an illusion, *and* why, nevertheless, this idea is so seductive. It's an illusion: being about the world, philosophy must call on experience. But it's a seductive illusion: the experience philosophy requires is in no way recherché, but is available to everyone.

A philosopher doesn't need to conduct surveys or experiments, run fMRI machines, go on field trips, etc.; he needs to pay close attention to, and to reflect on, the experience he has every day. I'm sure you'll be relieved to hear that, if you happen to find your armchair a good spot for such reflection, then after all there's no need to burn it.[۱۱۵]

Notes:

1 C. S. Peirce, *Collected Papers*, eds. Charles Hartshorne, Paul Weiss, and (vols, 7 and 8) Arthur Burks (Cambridge, MA: Harvard University Press, 1931-58) 1.126-27 (c. 1905). References are by volume and paragraph number, followed by the original date.
2 Peirce, *Collected Papers*, 8.110 (c.1900).
3 Peirce, *Collected Papers*, 1.129 (c.1905).
4 Peirce, *Collected Papers*, 5.450 (1905).
5 Or maybe I should say—as Peirce says of Descartes' distinction of clear and distinct ideas—an "antique *bijou*" that belongs in the curio cabinet. Peirce, *Collected Papers*, 5.392 (1878).
6 Peirce, *Collected Papers*, 7.232 (1873), 5.409 (1878), 6.427 (1878), 7.492 (c.1898).
7 See. e.g., E. O. Wilson, *Consilience: The Unity of Knowledge* (New York: Knopf, 1998), which is remarkable in part because of the way it combines two books in one: a modest book arguing that there can't be incompatible truths, that all the truths there are must somehow fit together; and an ambitious, scientistic book suggesting that the truths of ethics, aesthetics, etc., can be derived from truths of biology. The papers in Antonio Demasio et. al., eds., *Unity of Knowledge: The Convergence of Natural and Human Sciences* (*Annals of the New York Academy of Sciences*, 935 (May 2001), seem mostly to have been inspired by the more ambitious idea; though Stuart A. Kauffman, "Prolegomenon to a Future Biology" (18-36) is an honorable exception.
8 Moritz Schlick, "The Turning Point in Philosophy" (1930-31), in A. J. Ayer, ed., *Logical Positivism* (New York: Free Press, 1959), 53-59, p. 56.
9 W. V. Quine, "Epistemology Naturalized," in Quine, *Ontological Relativity and Other Essays* (New York: Columbia University Press, 1969), 69-90.
10 "Two Dogmas of Empiricism" (1951), in Quine, *From a Logical Point of View* (1952; second ed., New York: Harper Torchbooks, 1961), 20-46.
11 See generally W. V. Quine, *Word and Object* (Cambridge, MA: MIT Press, 1960).
12 Quine, *Word and Object*, chapter 6.
13 Ambiguities identified in careful textual detail in chapter 6 of my *Evidence and Inquiry* (1993; second, expanded edition, Amherst, NY: Prometheus Books, 2009).
14 In *Evidence and Inquiry* I marked this distinction typographically: "SCIENCE" for the broad sense, and "*science*" for the narrow (p. 274).
15 Alvin Goldman, *Epistemology and Cognition* (Cambridge, MA: Harvard University Press, 1986).
16 Stephen P. Stich, *From Folk Psychology to Cognitive Science* (Cambridge, MA: MIT Press, 1983). Subsequently, in *The Fragmentation of Reason* (Cambridge, MA: Bradford Books, 1992), Stich acknowledged that we do, after all, have beliefs; but argued that to care whether your beliefs are true is nothing but superstition. Gosh.
17 Paul M. Churchland, *A Neurocomputational Perspective: The Nature of Mind and the Structure of Science* (Cambridge, MA: MIT Press, 1979); Patricia Smith Churchland, "Epistemology in the Age of Neuroscience," *Journal of Philosophy*, 84, no.10, 1987: 544-53.
18 The argument is made in detail in Haack, *Evidence and Inquiry*, pp. 226-36.
19 Timothy D. Wilson, "Strangers to Ourselves: The Origin and Accuracy of Beliefs about One's Own Mental States," in John. H. Harvey and Gifford Weary, eds., *Attribution: Basic Issues and Applications* (Orlando, FL: Academic Press, 1985), 9-36. (Needless to say, there is absolutely *no* suggestion in Wilson's paper that beliefs are mythical.)
20 Haack, *Evidence and Inquiry*, 215-26.
21 Haack, *Evidence and Inquiry*, pp. 210 and 216.

22 As early as 1986, however (the same year that Patricia Churchland's *Neurophilosophy: Toward a Unified Science of the Mind-Brain* appeared), we find Thomas Nagel complaining about scientistic tendencies in philosophy, which "[put] one type of human understanding in charge of the universe and what can be said about it" (p. 9); and writing of the "powerful reductionist dogmas which seem to be part of the intellectual atmosphere we breathe" (p. 82) Nagel, *The View from Nowhere* (New York: Oxford University Press, 1986).

23 Quine, "Epistemology Naturalized" ; Quine, "Natural Kinds," in *Ontological Relativity and Other Essays*, 114-36.

24 See, e.g., Chauncey Wright, "The Evolution of Self-Consciousness" (1873), in Wright, *Philosophical Discussions* (New York: Henry Holt, 1877), 199-266; Konrad Lorenz, "Kant's Doctrine of the 'A Priori' in the Light of Contemporary Biology" (1941), in H. C. Plotkin, ed., *Learning, Development, and Culture: Essays in Evolutionary Epistemology* (Chichester: Wiley, 1982), 121-43; Donald T. Campbell, "Perception as Substitute Trial and Error," *Psychological Review* 63 (1956): 330-42.

25 Karl R. Popper, "Evolution and the Tree of Knowledge" (based on a lecture delivered in 1961), in Popper, *Objective Knowledge* (London: Oxford University Press, 1972), 256-84; "Natural Selection and the Emergence of Mind," in Gerard Radnitsky and W. W. Bartley III, eds., *Evolutionary Epistemology, Rationality, and the Sociology of Knowledge* (La Salle, IL: Open Court, 1987), 139-54. (On p. 144 of the latter paper, Popper acknowledges that earlier ["Evolution and the Tree of Knowledge," p. 241] he had suggested that natural selection was a tautology rather than a genuinely scientific, falsifiable statement.)

26 Michael Ruse, "The View from Somewhere: A Critical Defense of Evolutionary Epistemology," in Ruse, ed., *Philosophy after Darwin: Classic and Contemporary Readings* (Princeton: Princeton University Press, 2009), 247-75, p. 251.

27 Hilary Kornblith, *Inductive Inference and Its Natural Ground* (Cambridge, MA: Bradford Books, 1993).

28 Kornblith, *Inductive Inference and Its Natural Ground*, p. 2.

29 Kornblith, *Inductive Inference and Its Natural Ground*, p. 3. I will add, however that, much to his credit, Kornblith firmly rejects Jaegwon Kim's misreading of Quine as simply proposing to make epistemology descriptive, which is all too often taken to be canonical. Jaegwon Kim, "What is Naturalized Epistemology?" *Philosophical Perspectives* 2 (Atascadero, CA: Ridgeview, 1988), 381-405.

30Nicholas Rescher also seems assume, with Quine, that empirical questions must be scientific. Rescher, *A Useful Inheritance: Evolutionary Aspects of the Theory of Knowledge* (Savage, MD: Rowman and Littlefield, 1990), p.74, n.11. But because his main concern is only to argue that epistemology may appeal to evolutionary considerations without falling into a vicious circle, Rescher is not, like Kornblith, in danger of falling into scientism.

31 The Wikipedia article on Experimental Philosophy makes a passing reference to this earlier use. "Experimental philosophy," available at http://en.wikipedia.org/wiki/Experimental_philosophy (last visited July 11, 2016), p.1, citing P. Anstey and A. Vanzo, "The Origins of Early Modern Experimental Philosophy," *Intellectual History Review* 22, no.4 (2012): 499-518. It's not clear, however, how many supporters of the current movement have any awareness of this history.

32 Peirce, *Collected Papers*, 4.71 (1893). Peirce's target, by the way, is Descartes, who, he writes, marks the time when philosophy "put off childish things and began to be a conceited young man."

33 If you Google "experimental philosophy anthem" you find a YouTube video showing an armchair gradually burning to ashes, accompanied by the very loud but almost unintelligible anthem. After several painful attempts to listen to it, all I can tell you is that I *think* I caught the words "take it to the street" and "find out who we really are."

34 Joshua Knobe and Shaun Nichols, eds., *Experimental Philosophy* (Oxford and New York: Oxford University Press, 2008), p. 10.

35 In this context, Stich is sometimes mentioned as having done pioneering work. So I feel obliged to note that when, in *The Fragmentation of Reason* (Cambridge, MA: Bradford Books,

1990), Stich claimed that the concept of knowledge was culturally variable, he did so on the basis of nothing more than *one article* about the Yoruba language! See *Evidence and Inquiry*, p. 256.

36 Thus far they seem to have focused primarily on western vs. other and on male vs. female subjects. I noticed that the non-westerners were sometimes (presumably) Chinese students in Hong Kong—the most westernized part of China—and sometimes students at U.S. universities from India, Pakistan, and Bangladesh; and that in the latter case we weren't told whether these students had come to the U.S. from the sub-continent of India, or were Americans of east Asian descent.

37 Arne Ness, "'Truth' as Conceived by Those who are not Professional Philosophers," *Skrifter Utgitt av der Norske Videnskap-Akademi i Oslo II, Hist.-Philos. Klasse*, no.4 (1938): 11-118. Ness's work is not, by the way, something obscure that experimental philosophers can easily be forgiven for not knowing about; Tarski refers to in it the shorter and less technical of his well-known papers on truth, "The Semantic Conception of Truth" (1944); which was what first led me to it. (At a 2007 workshop, after Prof. Knobe had conducted one of his "experiments" on the participants, I tactfully drew him aside and told him about Ness's work. I was somewhat shaken that he seemed not in the least embarrassed but, instead, delighted that Ness had, as he put it, anticipated him.)

38 Peirce, in particular, stresses that words acquire meaning and concepts become richer and thicker, as our knowledge grows. See, e.g., *Collected Papers* 2.302 (c. 1895), 7.587 (c. 1866-67.). See also Haack, "The Growth of Meaning and the Limits of Formalism, in Science and Law" *Análisis Filosófico* XXIX, no.1 (May 2009): 5-29.

39 In *Evidence and Inquiry* I also marked this distinction typographically: "PSYCHOLOGY" for the broad sense, and "*psychology*" for the narrow (p. 210).

40 Indeed, Jesse Prinz proposes this as a distinguishing mark of *experimental* philosophy, as opposed to *empirical* philosophy, by which he means philosophy that calls on the work of professional psychologists. Jesse Prinz, "Empirical Philosophy and Experimental Philosophy," in Knobe and Nichols, 189-208, p. 196. (Of course, I reject the idea that "empirical philosophy" can only be scientistic philosophy, Goldman-style.)

41 Joshua Alexander, *Experimental Philosophy: An Introduction* (Malden, MA: Polity Press, 2012), gives numerous examples.

42 See, e.g., Edward Machery, Ron Mallon, Shaun Nichols, and Stephen P. Stich, "Semantics, Cross-Cultural Style," in Knobe and Nichols, 47-60: questions were presented in English to students in the U.S. and Hong Kong (p. 52). Robert L. Woolfolk, John M. Doris, and John M. Darley, "Identification, Situational Constraint, and Social Cognition," *id*., 62-80: questions were put to 72 subjects, all undergraduates in philosophy classes at the University of California, Santa Cruz (p.65). Shaun Nichols and Joshua Knobe, "Moral Responsibility and Determinism," *id*., 105-28: all their studies were conducted on students from the University of Utah (p. 110). Harry Cushman and Alfred Mele, "Intentional Action," *id*., 171-88: all the subjects in one of their studies were students at Florida State University (p. 180). I found one exception: Jonathan M. Weinberg, Shaun Nichols, and Stephen P. Stich, "Normativity and Epistemic Intuitions," *id*., 17-45, where the subjects in one study were all undergraduates at Rutgers University (p. 26), but another study actually approached people on the street in New Brunswick (p. 39). (The latter subjects, we are told, had to be paid to induce them to participate; I could find no indication, however, of how many declined.)

43 Edmund Gettier, "Is Justified True Belief Knowledge?" *Analysis* 23 (1963): 121-23.

44 Peirce, *Collected Papers*, 5.12 (1902).

45 Alexander Bain, *The Emotions and the Will* (London: Longman's, Green and Co., 1859; third ed., 1875).

46 For example, in many of the studies in Knobe and Nichols the number of subjects (when it is given) was quite small; the authors of the studies described in note 42 don't tell us who handed out the questionnaires, or in what terms; but several tell us that they predicted such-and-such result, and this prediction was confirmed—which, in the circumstances, leaves one wondering about the possibility of confirmation bias.

47 James Ladyman and Don Ross, with David Spurrett and John Collier, *Every Thing Must Go: Metaphysics Naturalized* (Oxford: Oxford University Press, 2007). In what follows, rather than spend a lot of time trying to figure out exactly who is responsible for what in the book, I will, with apologies to Spurrett and Collier, refer to the authors simply as "Ladyman and Ross."
48 Ladyman and Ross, *Every Thing Must Go*, p. vii.
49 Ladyman and Ross, *Every Thing Must Go*, §1.2.
50 Ladyman and Ross, *Every Thing Must Go*, p. 27.
51 There is one actual quotation from Peirce (p. 129). But I suspect this may be second-hand; in any case, it is taken entirely out of context, and the bibliographical reference, to "Peirce (1960-6)," is hardly reassuring. There is also one crashing misconception: that Peirce conceived of induction as "inference to the best explanation" (p. 255); a misconception that seems to come, not from Putnam, but from the kind of folk history of philosophy popular in our now blithely ahistorical profession. If the index can be relied on, there are *no* references anywhere in the book to William James, John Dewey, or George Herbert Mead.
52 This caveat is meant quite seriously. The book is written in such impenetrable prose, so heavily larded with the painful jargon of recent debates in philosophy of science, and so constantly interrupted by long parenthetical strings of names and dates, that I found it hard to keep going.
53 Ladyman and Ross, *Every Thing Must Go*, p. 1.
54 Ladyman and Ross, *Every Thing Must Go*, p. 28. Looking for further explanation of this idea, I discovered that the book has no index entry for "consilience," and that the bibliography includes neither William Whewell (who coined the word in 1840) nor E. O. Wilson (whose 1998 book, *Consilience: The Unity of Knowledge*, put the word into circulation and made it famous).
55 Ladyman and Ross, pp. 38-45.
56 There is some discussion of biology. But there are no entries in the index of Ladyman and Ross's book for "sociology," "social sciences," or "economics" (or for "mental states," "mind," "propositional attitudes," etc.) and the entry for "psychology" takes you to three pages most of which are devoted to arguing that the mind is not a computer.
57 Ladyman and Ross, *Every Thing Must Go*, p 119.
58 I wanted to ask, "patterns *of what*?" But since they tell us that relata are constructed from relations (p. 154), apparently Ladyman and Ross think this question somehow answers itself.
59 Ladyman and Ross, *Every Thing Must Go*, p. 195.
60 Ladyman and Ross, *Every Thing Must Go*, p.121 and, especially, p. 242.
61 Ladyman and Ross, *Every Thing Must Go*, p. 5.
62 Ladyman and Ross, *Every Thing Must Go*, p. 292.
63 Ladyman and Ross, *Every Thing Must Go*, p. 28.
64 Chapter 1 of Ladyman and Ross, *Every Thing Must Go*, is entitled "In Defence of Scientism."
65 Ladyman and Ross's reliance on appeal to the "institutional processes" of science seems to be motivated by their rejection of the idea that there is a special scientific method (p. 28). I agree that there is no method used by all and only scientists—a point I first argued in print in 1993 (*Evidence and Inquiry*, p. 187). But Ladyman and Ross tell us nothing about what "institutional processes" they have in mind, let alone what it is about these processes that they believe makes science "authoritative."
66 See, e.g., Susan Haack, "The Integrity of Science: What It Means, Why It Matters" (2006), in Haack, *Putting Philosophy to Work*, 121-40 (text) and 283-88 (notes); "Peer Review and Publication: Lessons for Lawyers" (2007), in Haack, *Evidence Matters: Science, Proof, and Truth in the Law* (New York: Cambridge University Press, 2014), 156-79. William Wilson, "Scientific Regress" *First Things* (May 2016): 37-42. (2015).
67 Ladyman and Ross *Every Thing Must Go*, p. 209.
68 Rosenberg *The Atheist's Guide to Reality*, p. 6.
69 Rosenberg *The Atheist's Guide to Reality*, p. 52.
70 Rosenberg *The Atheist's Guide to Reality*, pp. 20, 81, 113, 162, 194, 219, 220, 222, 223, 242, 242, 313.

71 I get the impression that he thinks the second claim follows from the first; if so, it involves significant fudging. See Susan Haack, "Worthwhile Lives" (2001-02) in *Putting Philosophy to Work*, 229-32 (text) and 310 (notes).
72 Rosenberg, *The Atheist's Guide to Reality*, p. 93.
73 Rosenberg, *The Atheist's Guide to Reality*, p.109.
74 This is not said explicitly in the book; but it follows from what *is* said, and at the 2014 conference in Amsterdam to which I alluded in my introduction, Rosenberg seemed to acknowledge it.
75 Rosenberg, *The Atheist's Guide to Reality*, p. 195.
76 Rosenberg *The Atheist's Guide to Reality*, p. 180.
77 Rosenberg *The Atheist's Guide to Reality*, p.164. Subsequent chapters tell us that we can learn nothing from history and that free will is an illusion; and recommends that, if we find all this depressing, we try Prozac. (For just a moment, I wondered unkindly if Rosenberg's problem mightn't be that he'd taken his own advice!)
78 Aldous Huxley, *Brave New World* (1932; New York: Harper Perennial Modern Classics, 2006), p. 231.
79 Haack, *Defending Science*, p. 52.
80 Haack, *Defending Science*, p. 160.
81 Peirce's route from those observations anyone can make in any hour of his waking life to metaphysics relies on his "phaneroscopy," or as we would say, "phenomenology" (*Collected Papers* 1.284 ff., c.1904, 1905); my procedure here, however, will run more directly parallel to his Critical Common-sensism (5.497 ff., c.1905).
82 On the metaphysical issues, see Susan Haack, "Realisms and their Rivals," *Facta Philosophica* 4, no.1 (March 2002): 67-88; *Defending Science*, chapter 5; "The Real, the Fictional, and the Fake," *Spazio Filosofico* 8 (2013): 209-17; "The World According to Innocent Realism" (first published in German in 2014), in Julia Göhner and Eva-Maria Jung, eds., *Susan Haack: Reintegrating Philosophy* (Berlin: Springer, 2016), 33-58. On the epistemological questions, see *Evidence and Inquiry* chapter 4; *Defending Science*, chapters 3 and 4; "The Integrity of Science" (2006); "Epistemology: Who Needs It?" (2011).
83 "The fastest [cheetah], appropriately named Ferrari, hit a top speed of 59 mph." http://io9.com/we-finally-have-an-accurate-measurmentof-a-cheetahs-512903920.
84 As we now know, chemical imbalances can affect a person's mood, and a brain tumor can change someone's personality quite drastically. See, e.g., Jessie A. Seiden, "The Criminal Brain: Frontal Lobe Dysfunction Evidence in Capital Proceedings," *Capital Defense Journal* 16, no.2 (2004): 395-419, p. 395, summarizes the story of a Virginia schoolteacher who had "begun collecting child pornography, soliciting prostitutes, and making sexual advances to his stepdaughter." He was found to have a large tumor displacing his orbitofrontal lobe; when the tumor was removed, "the deviant urges subsided."
85 Peirce, *Collected Papers* 6.476 (1908).
86 Thomas Suddendorf, *The Gap: The Science of What Separates Us from Other Animals* (New York: Basic Books, 2013), p. 147.
87 Suddendorf, *The Gap*, p. 173.
88 I borrow the word from Mead; and those who know his work will see that it has been a significant influence on my thinking about these matters. George Herbert Mead, *Mind, Self, and Society from the Standpoint of a Social Behaviorist* (Chicago: University of Chicago Press, 1934).
89 Nicholas Rescher wrote in 1990 that evolution may account for *the physical processes involved in mental operations*, but can't account for their content; he even added that to understand the intentional we need to refer to the social, to culture. Unfortunately, however, he hadn't a great deal to say about the details of this, which are what will concern me in what follows. Rescher, *A Useful Inheritance*, pp. 123-24.
90 Am I claiming that this was what I meant in 2003? Not exactly; if I'd got this far in 2003, I wouldn't have had to spend so much time over the next decade or so figuring it out! But now I *have* figured it out, I see that it was implicit is what I said in *Defending Science*.

91 I suspect, by the way, that when aficionados of "neuro-art" and "neuro-aesthetics" tell us that artists are really neuroscientists studying the brain and the visual system, they are somehow forgetting that perception is a sensory interaction with something external, in this case an artwork.
92 Bain, *The Emotions and the Will*, p. 505.
93 This useful concept is borrowed from a now almost-forgotten philosopher, H. H. Price. Price, *Belief* (London: Allen and Unwin, 1969), pp. 267ff.
94 Robert Lee Hotz, "A Neuron's Obsession Hints at Biology of Thought," *Wall Street Journal*, October 9, 2009, A14.
95 I've been very gradually amplifying and refining the core idea for many years since I first suggested it in 1993, in chapter 8 of *Evidence and Inquiry*—in chapter 6 of *Defending Science*; in "Belief in Naturalism: An Epistemologist's Philosophy of Mind," *Logos & Episteme* 1, no.1 (2010): 1-22; and in "Brave New World: On Nature, Culture, and the Limits of Reductionism," forthcoming in Bartosz Brozek and Jerzy Stelmach, eds., *Explaining the Mind* (Kraków: Copernicus). But there's plenty more still to be done.
96 This is the idea Peirce calls "tychism." Peirce, *Collected Papers*, 6.7 ff (1891), and "Man's Glassy Essence," *id*., 6.238 ff. (1892).
97 I *think* Ladyman and Ross acknowledge this; at least, that's what a brief passage on pp. 25-26 of *Every Thing Must Go* suggests.
98 Rosenberg, *The Atheist's Guide to Reality*, pp. 53 ff.
99 Rosenberg, *The Atheist's Guide to Reality*, pp. 88-89.
100 As Peirce writes in "Man's Glassy Essence," "protoplasm is in an excessively unstable condition; and it is the characteristic of unstable equilibrium that near that point excessively minute causes may produce startlingly large effects. Here, then, the usual departures from regularity will followed by others that are very great… ." *Collected Papers*, 6.264 (1892). See also "The Doctrine of Necessity Examined," *Collected Papers* 6.35-65 (also 1892).
101 See Susan Haack, "The Fragmentation of Philosophy, the Road to Reintegration," in Julia Göhner and Eva-Maria Jung, eds., *Susan Haack: Reintegrating Philosophy* (Berlin: Springer, 2016), 3-32.
102 Peirce, *Collected Papers*, 1.235 (1902).
103 See also Susan Haack, "Serious Philosophy," *Spazio filosofico* 18 (2016): 395-402.
104 I rely on Charles Coulston Gillespie, *The Edge of Objectivity: An Essay in the History of Scientific Ideas* (Princeton, N.J.: Princeton University Press, 1960). p.117.
105 Santiago Ramon y Cajal, *Advice for a Young Investigator* (1923; translated by Neely Swanson and Larry W. Swanson, Cambridge, MA: MIT Press, Bradford Books, 1999), p. 32. The wonderful French phrase means, roughly, "the spirit of following-through."
106 Francis Crick, *What Mad Pursuit: A Personal View of Scientific Discovery* (New York: Basic Books, 1988), p. 74.
107 I rely on Joseph Brent, *Charles Sanders Peirce: A Life*, (Bloomington and Indianapolis: Indiana University Press, 1993), p. 16.
108 I suppose I'm naïve; but I was stunned when, after his talk at the Amsterdam conference I described earlier, Rosenberg happily filled a silence by observing that if Alex Rosenberg didn't exist, he would have to be invented.
109 Peirce, *Collected Papers*, 1.131 (c.1897).
110 See also Susan Haack, "Out of Step: Academic Ethics in a Preposterous Environment," in *Putting Philosophy to Work: Inquiry and Its Place in Culture*, 251-68 (text) and 313-17 (notes).
111 That is, boosting the number of your publications by cutting your work into many small pieces and publishing the pieces as stand-alone articles—which makes it harder for others to build on your findings.
112 Peirce, *Collected Papers*, 8.170 (c.1903).
113 Peirce, *Collected Papers*, 5.522 (c.1905).
114 Peirce, *Collected Papers*, 6.6 (c.1903).
115 Thanks to Mark Migotti for his helpful comments on a draft.

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