

## Science Studies Goes Public

### A Report on an Ongoing Performance

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**Editor's Note** Steve Fuller was asked to blind-referee the paper 'Evolution and Conservative Christianity' by Christine James, which appears in this issue (p. 185). He offered to write a response. We gladly accepted his offer.

#### *Living the Life of the Tenured Metascientist*

I believe that *tenured* historians, philosophers, and sociologists of science—when presented with the opportunity—have a professional obligation to get involved in public controversies over what should count as science. I stress 'tenured' because the involved academics need to be materially protected from the consequences of their involvement, given the amount of misrepresentation and abuse that is likely to follow, whatever position they take. Indeed, the institution of academic tenure justifies itself most clearly in such heat-seeking situations, where one may appear to offer a reasoned defense for views that many consider indefensible. To be sure, the opportunities for involvement will vary in kind and number, but I believe that we are obliged to embrace them. In the specific case of 'demarcation' questions of what counts as science, the people who possess the sort of general and comparative knowledge most relevant for adducing this matter are historians, philosophers, and sociologists of science—not professional scientists unschooled in these areas.

Unfortunately, there is no professional incentive for us to engage in such controversies. This is true even if you side with the 'angels,' as Michael Ruse did in his landmark participation as expert witness for the plaintiffs in *McLean v. Arkansas* (1982), where he testified that creationism did not satisfy the demarcation criteria for science. Ruse, who proffered a simplified version of Popper, was professionally denounced for having misrepresented the lack of consensus over the matter. Nevertheless, I find it difficult not to treat such critics as highbrow versions of 'Monday morning quarterbacks' who complain that the law should have framed the dispute so as to allow the expert to address a more epistemologically appropriate question. The critics are not so much wrong as

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historically irrelevant, which is of course their prerogative as academic commentators. Thus, *contra* Ruse, Larry Laudan (1982) held that creationism more obviously promotes false belief than bad science. But Laudan did not then leverage this criticism into a campaign to alter the epistemology of public school instruction. Instead he used it as an argument for our refraining from participation in cases like *McLean*. It is too bad that this skeptical posture is so easily worn as a badge of honor, since it effectively squanders the unique opportunity afforded the tenured academic to take risks with ideas in the public sphere.

Beyond the perennial complaint that public life does not provide a suitable context for intellectual disagreement, the most serious objection to Ruse-like moves is that they bring our fields into disrepute by becoming attached to particular clients. The sense of academic objectivity that derives from our neutrality vis-à-vis ongoing disputes over epistemic authority is shattered once we agree to take sides. However, the value of this point is much overrated. On the one hand, the long-term practical consequence of studied neutrality is that expert knowledge is arbitrarily invoked by all sorts of interests, fair and foul, without direct expert involvement, and thus becomes a pure means to the ends of others. On the other hand, the point assumes erroneously that one hires an expert in exactly the same spirit one hires a lawyer. Sometimes experts are hired simply to argue that matters are not as black-and-white as the opposing party maintains. This was the pretext of my own involvement as a defense witness in *Kitzmiller v. Dover Area School District* (2005). The plaintiffs' expert witnesses presented a very black-and-white view of the history and philosophy of science expressly designed (at least by my lights) to exclude intelligent design theory as a viable alternative to the Neo-Darwinian orthodoxy.

I was—and remain—comfortable with my performance. Moreover, it did not deviate from what lawyers on both sides expected from me. No one thought I would give a free pass to intelligent design. However, the defense team gambled that my more complex rendering of the demarcation question would inspire the judge to be more tolerant of intelligent design—at least in theory, even if not in the particular case, which was hobbled by easy-to-spot misdemeanors by devious school board members who promoted intelligent design as a fig-leaf for creationism. (This explains why the Discovery Institute, the intellectual hub of intelligent design, pulled out of the case in midstream.) The gamble failed: The judge condemned both the school board and intelligent design in one omnibus ruling, in which I was cited a dozen times, namely, whenever I cast some doubt on intelligent design's scientific credentials. (My many critics fail to take this point seriously—that the judge used me to bolster his case rather than simply dismiss and ridicule me, as he unfairly did to the main witness for intelligent design, Michael Behe.) To be sure, the ruling did not attempt to capture the overall spirit of my remarks, but the judge clearly wanted to make it as difficult as possible for intelligent design to recover as a viable scientific subject. And in fairness, that is his prerogative. I had tried to speak truth to power, but power

always has the final word. But that does not make the exercise any less instructive.

Interestingly, by Laudan's lights, the *Kitzmiller* ruling would also be considered an epistemological failure, since the judge made a point of arguing that he offered no opinion on the *truth* of intelligent design, only its status as a scientific theory. So, while intelligent design would be excluded from science classes, it might flourish elsewhere in the curriculum. The double or multiple truth doctrine implicit here seems not to have elicited the philosophical outrage that it deserves. After all, the judgment conveys the impression that science classes are the preserve of state-sanctioned knowledge, whereas religiously inspired notions may be taught in other classes. It would seem, then, that what matters is the official character of the knowledge, not its truth, strictly speaking. Perhaps this explains why the *Kitzmiller* ruling leaned so heavily on the authority of those like the US National Academy of Sciences who are empowered to speak for a 'scientific consensus,' despite the absence of any credible sociological evidence that such a thing literally exists (Fuller 2008a, chap. 1). It also explains one of my most notorious claims in the trial, namely, that without some sort of 'affirmative action' policy to promote intelligent design, it is doubtful that it would ever get a foothold in science classes because at stake here is not the evidence *per se* but what the evidence is permitted to be taken as evidence *for*.

The public responses to my participation in *Kitzmiller* from the social studies of science community have been almost uniformly negative. I see this as reflecting the long shadow that the Sokal Hoax continues to cast over our field. It is sometimes forgotten that the field's knee-jerk reaction to the hoax was to draw a sharp distinction between 'real' science studies people (i.e. ones who do proper case studies and careful historical work) and the interlopers from cultural studies and other such 'theorists,' all of whom Sokal had lumped together in his academic parody (cf. Fuller 2006, chap. 4). In that respect, Sokal could not have hoped for a better result—a purging of the ranks! The most interesting negative responses turned on my failure to abide by reflexively relativist scruples. In other words, instead of respecting the various norms governing legal, scientific, and educational discourse, I simply made arguments that were founded on my own social-epistemological principles, however much they deviated from those norms. Indeed, as my subsequent writing on this topic has made clear, my dissent even extended to the presumptive distinction between science and religion. According to my critics, this failure to respect convention rendered my arguments ineffectual, perhaps even helping to lose the case for the defense.

In response, I am happy to concede that the critics may be right, but my reasons for participating in *Kitzmiller* were never exactly those of the defense team, the Dover school board, the US legal system, the Discovery Institute, let alone the editorial board of *Social Studies of Science*. I was more interested in providing an alternative public face of the science studies scholar. In the politics

of evolution and creation, science studies has so far featured two types of public exemplars: On the one hand, there is the Michael Ruse figure who supplies a historical and philosophical hinterland to the dominant scientific paradigm so as to complement its purely empirical success with a broader cultural and conceptual grounding that will appeal to those unfamiliar with the technical science. On the other hand, there is the Robert Pennock figure, more typical of the younger generation, who outright collaborates with established scientists in their research, providing a running legitimizing narrative in co-authored articles published in technical and popular forums. In both cases, the science studies scholar functions as an underlaborer to science, as opposed to a true *metascientist*.

A metascientist evaluates science from a standpoint that does not presuppose the legitimacy of the dominant paradigm. He or she starts by asking why we pursue science in the first place—the question of ends—and then turns to consider the extent to which the normal pursuit of science satisfies those ends. This is the role I have tried to exemplify. It follows from my robustly normative approach to social epistemology, which is concerned not only with methodological but also axiological issues relating to the pursuit of knowledge (Fuller 2002). The approach is ‘constructivist’ without being ‘relativist’ in the way these two terms are normally understood in epistemology. While I do not believe that there is a fact of the matter about how science should proceed other than by convention, I believe that because *science* is at stake the convention should be universally binding. In terms of the evolution-creation controversy, the bottom line for me, then, is not to satisfy the wishes of particular communities by allowing creationism to be taught, but to avoid the opportunity costs to everyone if creationism is not allowed to be taught. Here I have in mind the overwhelmingly positive role that belief in an intelligent designer has played in motivating religious people to enter and stick with scientific careers, which have resulted in findings that command the assent of even those who lack faith.

In short, the mark of metascience is the ability to rise above the partisanship of first-order disputes to make second-order judgments of what is best for science in the long term, no matter how ironic or perverse those judgments may appear in the short term. Nevertheless, the distinction between first-order and second-order judgments, while easy to draw with a modicum of logical dexterity in the confines of one’s own text, is difficult to sustain in the public sphere, where one is in an ongoing struggle with others to define the frame of reference for understanding and evaluating a situation of mutual concern. Thus, because Neo-Darwinism happens to be the dominant paradigm in biology and also happens to be underwritten by a naturalistic metaphysics, it is rhetorically easy to argue that good biology requires a commitment to naturalism, in which case naturalism can be re-positioned as a ‘methodological’ rather than a ‘metaphysical’ principle.

Such a collapse of second-order into first-order questions has characterized the public debates over evolution and creationism. When philosophers like Ruse and Pennock contribute to this process, they effectively exchange their identities as metascientists for underlaborers. They are traitors to their training. Nevertheless, this intellectual treason is committed in the name of Thomas Kuhn, whose *Realpolitik* of scientific change legitimized a winner-take-all approach, whereby to gain control of a discipline's research agenda is also to gain control of its historical and philosophical self-understanding. Left conveniently ignored—or institutionally repressed—is the fact that key parts of the dominant paradigm were contributed by people who were not trying to contribute either to it or its metatheory. Indeed, given the number of notable if somewhat exotic Christians who contributed to fathoming the genetic bases of evolution (Mendel, Wright, Fisher, Dobzhansky), there would seem to be no good historical or philosophical reasons for engaging in a campaign to purge the pursuit of contemporary biology of 'supernaturalism'—that is, unless one has already decided that promoting the future of science is tantamount to promoting the future of its orthodoxy.

Since even those trained in the science studies disciplines seem to have difficulty fathoming where I am coming from, let me summarize my metascientific perspective. In a nutshell, I read Kuhn's historiography with Popperian philosophical lenses. The history and philosophy of science then looks like this: Science aims for knowledge that potentially covers all and potentially is known to all. But of course, at any given time, science is in the hands of relatively few who know relatively little, though it may grow along both dimensions over time, though not without direct and opportunity costs along the way. In any case, change is endemic to science and can be quite radical, especially when it comes to conceptual frameworks that aspire to explain widely disparate data. Rival frameworks typically find quite different aspects of the data salient, based on the rather different explanations that are trying to provide, and thus may co-exist in an 'incommensurable' state for considerable periods without disrupting day-to-day empirical inquiry. In that case, whenever only one paradigm seems to dominate and/or shows no sign of shifting, other factors must be in play—namely, the institutionalized concentration of various resources that keeps science in an intellectual holding pattern. In short, there is always something artificial about the status quo. It seems to me that without this general perspective, metascience will never be truly independent of epistemic commitments to first-order science.

#### *Confronting the Dark Side of Philosophical Underlaboring*

A blatantly obvious feature of today's evolution-creation debate (including intelligent design) is the general tolerance—if not outright promotion—of anti-Christian bigotry. The point applies in both public and academic settings, where

the sheer identification of, say, intelligent design theory with Christianity is *ipso facto* to reveal its scientific fraudulence. I say 'anti-Christian' rather than simply 'anti-religious' because clearly not all religions are subject to this bigotry, only religions prominent in advancing anti-evolutionist views, and moreover only those that are not protected by the implicit codes of political correctness that rein in defamatory comments about the other monotheists—namely, Jews and Muslims—who have equally strong traditions of anti-evolutionary thought. The paranoid rhetorical pitch of this anti-Christian bigotry is comparable to Cold War Anti-Communism, except that such self-styled 'new atheists' as Richard Dawkins and Daniel Dennett, who juxtapose their accounts of the spread of religious memes to accounts of child abuse (Dawkins 2006, chap. 9) and mental disorder (Dennett 2006, chap. 11), limit their political ambitions to an intellectual immunisation strategy of counteracting specific home-based religious instruction with school-based instruction in comparative religion.

If you find the Cold War precedent hyperbolic, then consider the hysterical response to the so-called Wedge Document, inspired by some speeches made by the Berkeley lawyer Philip Johnson, which the Discovery Institute floated as a blueprint for reclaiming the Christian heritage of the United States (Forrest and Gross 2004). The plan called for driving a 'wedge' between science and naturalism at all levels of the educational system as a prelude to more general Christian cultural and political control of the country. However, there were no plans to overthrow the government by violent means or deliver it to foreign powers. Rather, the document reads like the long-range campaign strategy of a fringe political party. In a free society, regardless of one's personal views, it is difficult to see why the Wedge Document should be considered such a cause for alarm. Even from a strictly epistemological standpoint, the argument that science does not presuppose naturalism should be a familiar one from the likes of Pierre Duhem and Rudolf Carnap, both of whom wanted to detach the pursuit of science from substantive metaphysical commitments.

Nevertheless, in the context of the current constitutional interpretation of the separation of church and state, simply to demonstrate that intelligent design is religiously motivated—to which the Wedge Document clearly testified—has been sufficient to disqualify it as unfit for public school science classes. To be sure, whether or not the textbooks promoting intelligent design promote good teaching of science is a relevant but decidedly secondary consideration. In other words, the debate is pitched not at the level of actual educational practice but at the level of the ideas themselves, and more specifically the intentions of those promoting them. Of course, *Kitzmiller* presented a complicated story, since the texts and possibly the pedagogical practice were also at fault. However, the decisive role played by the revelation that the textbook chosen to represent intelligent design, *Pandas and People*, existed in an earlier edition as a creationist text showed that motivation was indeed sufficient to condemn intelligent design as a body of thought. It is perhaps no accident that the philosopher credited with this finding, Barbara Forrest, is a scholar of Sidney

Hook, a student of John Dewey's who was one of the foremost Red-baiters in the US philosophical establishment in the 1940s and '50s, who made life miserable for the émigré logical positivists (Reisch 2005, chap. 8).

When we start to judge ideas rather than texts, intentions rather than practices, we become complicit in the erosion of academic freedom. Perhaps the most widely publicized recent case to cross that line was the forced resignation of Michael Reiss as director of science education for the Royal Society. Reiss had the temerity to suggest that science teachers should take seriously—albeit critically—creationist queries raised by their students. Reiss, who also holds a chair at the University of London's Institute of Education, based this judgment on his own research on science pedagogy. It is worth noting that he did *not* propose that teachers should themselves introduce the creationist ideas—yet the Royal Society deemed he still had to go. Moreover, this was no misunderstanding on the part of the Fellows. As they spoke publicly about the matter, it became clear that several had misgivings about Reiss' status as an ordained minister in the Church of England, as if one could not sincerely serve both God and science at once (Fuller 2008c).

Such doubts recall the suspicions pervasive across many nations in the modern era that patriotism was incompatible with being, say, a Jew, a Catholic, or a Communist. Among the mutant spawn of such suspicions were members of the outcast groups who took great pains to show that they could be patriotic 'in spite of' their other identity. They usually accomplished this by some sort of self-effacement, so that they became indistinguishable from 'normal' patriots. So too for self-styled 'theistic evolutionists' in the evolution-creation debates. The underlying principle is that if one can demonstrate ideological conformity—or better still, a substantive contribution—to the dominant scientific paradigm, then one's religion can be tolerated and perhaps even excused. Thus, the decisive witness against intelligent design in the *Kitzmiller* verdict was Kenneth Miller, a practicing Catholic, a biology professor at an Ivy League university, and the co-author of the best-selling high school biology textbook in the United States. His very existence appeared to disprove the widespread creationist claim that Darwinism is inherently anti-Christian. But, of course, as typically happens in these cases, no one checks to see how much of the problematic identity has been compromised in the process of self-effacement. Interestingly, and perhaps even to his credit, Miller subsequently published a book (Miller 2008) that tries to reverse that sceptical impression by arguing where he thinks the divine hand might be found in the evolution of the universe. Needless to say, it has disappointed the atheistic admirers he acquired during the *Kitzmiller* trial.

The pervasive anti-Christian bigotry surrounding the evolution-creation debate has had other knock-on effects on the conduct of intellectual discourse. It becomes an excuse to lower the tone in both academic and public discussions. Anyone prepared to defend any form of creationism should expect enormous

negative attention in the blogosphere, ranging from occasional derision to outright invitations to trash the defender. At first I believed that my own intervention would clarify misunderstandings but it only seemed to intensify them, not least because I addressed my opponents in the spirit they addressed me. They were not prepared to entertain the idea that it was they and not I who misunderstood. Here I was hobbled by the peculiar epistemic predicament of facing mostly pseudonymous assailants who nevertheless seemed to know each other well, as their blog served as an intellectual echo chamber—a monadological hell for the hapless interloper! Thus, I was increasingly exposed to stereotyped arguments that bore no relation to anything I was saying but appeared to match the blog's collective expectations. This tendency extended to reviews of my books, perhaps the most egregious case in point being A.C. Grayling's purported review of my *Dissent over Descent* (Fuller 2008a) in *The New Humanist* (Grayling 2008). While he and his co-humanists managed to generate many words in response to the book, I remain unconvinced that either he or they ever read it. The amassed verbiage struck me as little more than anti-creationist boilerplate, which perhaps served some cathartic function for the bloggers.

Nevertheless, I have been much less surprised by this torrent of abuse than the difficulties I have faced in trying to respond to it as an equal in the discussion. In this respect, *The New Humanist* was relatively generous, in that I was actually given the opportunity to exchange words with my reviewer in the same forum, however futile that turned out to be. One would think that an academically respectable publication that chose to review a book taking an unpopular stance in a controversial matter like the evolution-creation debate has a special duty of care. For example, the editor might grant the reviewed author a right of response or at least check that the review, however critical, meets the basic requirement of adequately representing the book's argument. If neither is policy, perhaps the critically reviewed author could be invited to review a book by an opponent, so that at least over time readers would get an even-handed sense of how each side regards the other. But none of this happened in three of the most distinguished forums in which my books defending intelligent design were reviewed: *Notre Dame Philosophical Reviews*, *The Lancet*, and *Science*. In one case, *The Lancet*, I was actually portrayed as defending William Paley's original version of intelligent design, a theory from which I specifically distanced myself (Rose 2008)

However, *The Lancet* review was a relatively uninspired hatchet job, when compared to the *NDPR* review, which soon after publication I dissected on William Dembski's website, *Uncommon Descent* (Sarkar 2008; Fuller 2008b). Unlike the other negative reviews, this one displayed a veneer of familiarity with the book formally under review by quoting several passages from it. However, on closer inspection, these quotes were often taken several lines, if not several pages, apart from each other—an underhanded move not normally practiced by reviewers in *NDPR*. To be sure, the reviewer caught me in a couple of technical



errors, which I duly acknowledged. But ultimately I was being condemned for not conforming to what the reviewer had expected from someone defending intelligent design. This complaint, rather common among my critics, points to the routinized, if not ritualized, character of the evolution-creation debate. It would seem that the debate has become a self-contained social practice unrelated to the larger questions of science and philosophy in which it is supposed to be embedded. This would certainly explain the relative prominence of Ruse and especially Pennock, who are not normally seen as cutting edge contributors to the philosophy of biology.

The case of *Science* was perhaps most disappointing because the review editor actually solicited copies of *Dissent over Descent* from me (the book is published in the UK but not the US), enlisted Michael Ruse to review the book (presumably the editor's idea of a fair reviewer), but then once the review was in press regretted having set off the process, since (as he belatedly informed me) *Science* has no policy of author response. After some pestering on my part, a response was published in the on-line letters section (Fuller 2008d). Ruse's review is noteworthy in its special pleading for Darwin and his entitlement to the '-ism' bearing his name that currently governs biology (Ruse 2008). A common debating point made against creationists is to deny the existence of a biological theory called 'Darwinism.' Instead, evolutionists assure us, one speaks of 'modern evolutionary theory' or simply the 'modern synthesis.' Too bad they never told the philosophers like Ruse who take pride in their underlaboring work for the Neo-Darwinian cause. As Ruse's review illustrated, there remains considerable intellectual and cultural capital—not to mention rhetorical force—in continuing to give the impression that virtually every version of evolutionary theory countenanced by today's biologists can trace its ancestry back to Darwin himself. A good part of *Dissent over Descent* is devoted to debunking this Darwin fetishism—and almost all of Ruse's review is aimed at that feature of the book.

Let me close with a general puzzle about the role the philosophy of science has played in the evolution-creation debates. First, the guise of underlaborer has been much more enthusiastically embraced by philosophers working in the biological sciences than in, say, the social sciences or perhaps even the physical sciences, where philosophers are more inclined to cast a critical eye on established wisdom or take established forms of knowledge in new directions. The contrast with philosophy of the social sciences is especially striking. Indeed, it partly inspired the metascientific stance I adopted in *Dissent over Descent*. The social sciences have thrown up many general theories that have aspired to cross-disciplinary unification, such as structural-functionalism, rational choice theory, Freudianism, Marxism, and behaviorism. Yet very few philosophers—even when broadly sympathetic with such theories—have devoted as much effort to the actual construction of the aspiring synthesis as philosophers preoccupied with the Neo-Darwinian synthesis. In the Neo-Darwinian case, the task of construction

has extended from filling in inferential links between, say, phylogenetics and the fossil record to finding precedents for novel theories of evolution in Darwin's original texts. When comprehensively and expertly done, as in Elliott Sober's recent *Evidence and Evolution* (Sober 2008), the practice looks very much like biology's own version of apologetics. It serves to tighten the claims to unchallenged supremacy that Neo-Darwinism has over all of biology, past and present—and future.

What is strange about all this is that one would never guess that 'evidence' remains a contested concept within epistemology and the philosophy of science. Yet, both evolutionists and creationists argue as if they never read chapter one of Alan Chalmers' *What Is This Thing Called Science?* Thus, creationists routinely infer 'evidence of absence' from 'absence of evidence' (in the fossil record) to argue against evolutionists, while evolutionists return the compliment by supposing that if the evidence coheres with their theory it cannot possibly cohere with a creationist theory. Moreover, both sides seem to entertain the idea that at some point a crucial experiment will—if it hasn't already done so, as in, say, Kenneth Miller's star turn with the bacterial flagellum in *Kitzmilller*—settle the differences between evolution and creationism. This epistemologically shallow fixation of evidence merely displaces proper consideration of the larger institutional, political, and cultural contexts in which the evolution-creation debate is embedded—something with which both sides are profoundly uncomfortable. Creationists are just as reluctant to stress their oppression as evolutionists are to stress their dominance because that would insert them both into a 'power' language-game that would force them to admit that their struggle is specifically against each other rather than simply a competition to comprehend some common body of evidence. Nevertheless, just as the academic side of philosophy of science remained stagnant as long as it ignored science's larger historical and sociological dimensions, the same applies no less to its public side, no matter how tense and shrill the arguments become. The frustrating holding pattern that continues to mire the evolution-creation debate is a perfect case in point—and will be remedied only by more tenured science studies practitioners taking a stand.

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