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## Anti-social Epistemologies

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The recent First Amendment litigation in *Kitzmiller v. Dover Area School District* (2005) raises many issues of interest to social science and humanities scholars. This paper will focus on just two: the *scope* afforded to Steve Fuller to present his STS perspectives; and the way the Court appears to have put this expertise *to work*. The Court's formal receptiveness to Fuller's testimony reflects the symbolic significance of science–religion encounters and is inextricably linked to ongoing skirmishes at the margins of *public science* (Turner, 1980). The appropriation of Fuller's evidence, in ways that appear contrary to his expressed intentions, is consistent with the peculiar reception of other STS scholarship in legal settings in recent years. Fuller's intervention and the treatment of his evidence reinforce the need for more sophisticated approaches to courts, jurisprudential traditions, and legal rules and processes.

### Recognising Fuller: No 'Exclusionary Ethos' Here

In a recent issue of *Social Studies of Science*, Simon Cole and Michael Lynch reflected upon attempts to have Cole's STS expertise admitted in criminal proceedings (Cole, 2004; Lynch & Cole, 2005). Cole's expertise had been sought and proffered to challenge the admissibility and scientific standing of the state's latent fingerprint evidence. Confronted with active judicial *gatekeeping*, along with opposition to his standing and expertise, Cole meditated on the need for fingerprinting expertise and how, in the process of critiquing existing fingerprinting techniques and translating his evidence for the court, he often finds himself providing expedient simplifications of (STS views about) the nature of science and being responsible for the discomfiting task of speaking for a *field*. In response, several courts have expressed doubts about the kind of expertise STS actually constitutes. In one New York case a judge went as far as describing Cole's testimony as 'junk science'.<sup>1</sup> Cole's interventions provide an interesting counterpoint to the experiences of Fuller.

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In the *Kitzmiller* litigation, Fuller was not confronted with the same kinds of formal objections, known as *Daubert* challenges (more below), and did not appear to have experienced the same kinds of self doubt or reticence as Cole. Echoing Collins and Evans' (2002) call for STS scholars to come forward as *referred experts* (experts about expertise), under direct examination from counsel (Gillen) for the Dover Area School District, Fuller explained what he could offer:

**Fuller:** Now if what we're doing here in this case is making judgments about what is science and not science, we're making very general global kinds of judgments, right, the kinds of information and knowledge and forms of reasoning that one needs to have would not normally be part of an ordinary scientific education, but would in fact, require this additional kind of knowledge, the kind of knowledge one gets from studying the history, philosophy, and sociology of science.

**Gillen:** So is it true then that the training you have actually makes you better equipped to answer that issue than a scientist that's practicing?

**Fuller:** Yes. (Transcript, Day 15, 24 October 2005: 33)

Fuller was challenged, later during cross-examination, about his expertise in biology, and in various other specialized branches of science and science education. In cross-examination, for example, Walczak (representing the ACLU) sought to downplay Fuller's significance: 'So you are only an expert on the nature of science?' Fuller replied: 'Yes. That's a pretty big thing here, though' (Transcript, Day 15, 24 October 2005: 16). There was, however, no objection to Fuller presenting himself as an STS expert on science.

Reading through the transcript reveals comments between the judge and counsel about the openness of proceedings. There are in this context relatively few attempts to systematically deconstruct Fuller's claims (compare Lynch, 1998 and Edmond, 2001). Rather, the cross-examination involved some boundary work and attempts to elicit strategic qualifications and concessions. Much of Fuller's testimony is peppered with ironic *humour*, with asides about his energetic idiosyncratic manner. Leading into a break in Fuller's testimony Judge Jones advised: 'water or decaff only' for the witness (Transcript, Day 15, 24 October 2005: 60).

Interestingly, the closest thing to an admissibility challenge that appeared in the trial resembling the experiences of Cole were objections raised by lawyers for the Dover Area School District in relation to the evidence of the witness Barbara Forrest. With Paul Gross, Forrest had authored *Creationism's Trojan Horse: The Wedge of Intelligent Design?* (2004). This work is a critique of the so-called 'Wedge Strategy' used by proponents of intelligent design (ID). Forrest's most recent research involved sustained empirical study of the creation science movement. Like Fuller, she held a PhD in philosophy. Her expert evidence was seen (by plaintiffs) to be important for discrediting the suggestion that proponents were advancing ID as science rather than religion. Like Cole's knowledge of fingerprinting – involving an understanding of techniques along with their

social and institutional dimensions – Forrest was primarily an expert on creation science, ID, and their promulgation.

During cross-examination Muise (appearing for the plaintiffs) suggested that the methodology employed by Forrest to develop her evidence meant that her expertise was inadmissible under the standards stipulated by *Daubert* (and reiterated in *Kumho* – see Edmond, 2002).<sup>2</sup>

**Judge Jones:** Well an expert's conclusion is necessarily subjective. Can we all agree on that?

**Muise:** To some point your Honor. I mean, that's the whole point of the *Daubert* is to understand that there's some sort of a methodology that it is a reliable methodology that you're going to apply.

**Judge Jones:** Well even if I open the gate under *Daubert* for an expert, that expert is testifying in a subjective fashion, isn't it? Or she?

**Muise:** Your Honor, if you have a historian who for example only looks at statements from southerners and they conclude that the South won the Civil War, I think you could say that there's a problem with the reliability of that testimony.

**Judge Jones:** Admittedly there is a somewhat indistinct line here, and I understand that you're trying not to cross the line. This is a hybrid expert. The expert I think we can all agree doesn't fit within the express criteria of *Daubert*. (Transcript Day 6, 5 October 2005: 47)

Judge Jones' willingness to accept Forrest as some kind of 'hybrid expert' in the history and sociology of creation science – along with the admission of Fuller's history, philosophy and sociology of science evidence – offers a contrast to the rejections encountered by Cole in his endeavours to be admitted as an (STS) expert on the history and sociology of fingerprinting in criminal prosecutions.<sup>3</sup>

The lack of judicial gatekeeping in *Kitzmiller* distinguishes the case from the pattern of exclusion of expert evidence that occurred in the aftermath of *Daubert* (SKAPP, 2003; Edmond & Mercer, 2004a). There has been a tendency in tort and product liability litigation for well-credentialed scientists, particularly those appearing on behalf of plaintiffs, to experience difficulties having their evidence admitted in federal courts. In criminal cases, perhaps against expectations, the *Daubert* standards have been applied asymmetrically. Expert evidence adduced by criminal defendants – and here Cole might be considered exemplary – has often been vigorously challenged and more closely scrutinized than much of the scientific and technical evidence advanced and routinely relied upon by the state.<sup>4</sup> In attempting to understand these valencies, it is important to recognize that *Kitzmiller* was merely the most recent and sensational of a series of constitutional cases concerned with the First Amendment, particularly the boundaries between science and religion in the public school curriculum (Greenawalt, 2004).

More conspicuously than in the ordinary course of civil and criminal cases, *Kitzmiller* inhabits the realm of symbolic politics. *Kitzmiller* was a kind of show trial. Even before the decision was delivered the Dover Area

School District Board had been reconstituted. In the absence of a local ID agenda it was unlikely that Judge Jones' decision would be appealed to a higher court. Nevertheless, the broader implications and publicity associated with the litigation influenced the tactics, the administration of the trial, and the length and detail of the judgment. Following the *tradition* around the *Scopes* trial (Larson, 1997), *McLean v. Arkansas Board of Education*, and more recent 'creation science' litigation, *Kitzmiller* can be understood as an opportunity for interested parties to engage in the creation of *public science* (Gieryn et al., 1985; Edmond & Mercer, 1999; Mercer, 2006).<sup>5</sup>

In relation to *Kitzmiller*, the contest around 'public science' seems to have been occurring at multiple sites: in written reports and oral testimony, in *amicus curiae* briefs, in the judgment and in media accounts. A detailed reading of Fuller's contributions, for instance, suggests that they were more of an attempt to promote his idiosyncratic version of STS than a coherent or spirited defence of ID. To the extent that Fuller's claims actually appear in the judgment they are enlisted *against* the pretensions of ID. An indication of the way the case is used as a surrogate for a series of wider concerns can be observed in some of the *amicus* briefs submitted on behalf of 'organized science' and on the web pages of ID proponents.

In this context, an *amicus* brief submitted by the *SciPolicy Journal of Science and Health Policy* provides an illuminating example. Though critical of the Dover Area School District Board and the ID movement, the journal's brief devoted an equal amount of space to the issue of the 'science wars'. In what may have been an attempt to inoculate against Fuller's contribution to the case – Fuller is a member of the journal's editorial board – the brief seems to be preoccupied with specifying the limited role that philosophers of science and social theorists should play in the definition and description of science.

While 'philosophers of science' may participate in the debate about intelligent design, they are not themselves 'scientists'. Although there has been some support for ID from social theorists plying postmodern ideas, many of them have a track record of hostility to natural science. The 'Science Wars' is an ongoing, decades-old conflict between physical scientists and sociologists of science, the latter claiming that all science is socially constructed and relative to the subgroups and culture within the several scientific disciplines. Though the conflict continues, the social theorists' ideas have not prevailed among either philosophers of science or working scientists.<sup>6</sup>

Of course, the *Kitzmiller* litigation and Fuller's significance were open to other interpretations. During the proceedings, a pro-ID website suggested that regardless of the legal outcome the presence of ID in the public spotlight was a form of 'science education'. The fact that partisans were compelled to address opposing arguments was, the website claimed, one of the ways in which the rigidity of existing scientific paradigms is broken down (consider Locke, 1999). Fuller's work on Kuhn and his testimony were used to support these propositions.<sup>7</sup>

To those of us who have been in the ID debate for a long time, one of the best [sic] evidence of Fuller's thesis is the vast improvement in journalists' understanding of ID . . . The same process of improving understanding of ID presumably is also going on among the public, including students and scientists. The witness testimonies of his [sic] trial both for and against ID will help *enormously* the public understanding of ID, and not just in the USA. (Jones, 2005; italics in original)

Subsequently, the energetic drubbing of Fuller in the popular press and by regular critics of science studies, such as Norman Levitt, suggests that Fuller *and STS*, and *not ID*, may turn out to be the real losers in the post-*Kitzmiller* publicity stakes (Levitt, 2006).

At this stage we turn to our second substantial issue, the role played by Fuller's *evidence*.

### Legal Appropriations: Can 'STS' play Devil's Advocate?

Fuller *appears* in the *Kitzmiller* judgment on several occasions. All of those appearances are reproduced below:

. . . Professor Steven William Fuller testified that it is ID's project to change the ground rules of science to include the supernatural. (30)

This definition was described by many witnesses for both parties, notably including defence experts Minnich and Fuller, as 'special creation' of kinds of animals, an inherently religious and creationist concept. (33)

There is hardly better evidence of ID's relationship with creationism than an explicit statement by defence expert Fuller that ID is a form of creationism. . . . Although contrary to Fuller, defense experts Professors Behe and Minnich testified that ID is not creationism . . . (35)

. . . it is indeed telling that even defense expert Professor Fuller agreed with this conclusion by stating that in his own expert opinion the disclaimer is misleading. (41)

Defendants' own expert witnesses acknowledged this point . . . (Fuller) ('. . . ID's rejection of naturalism and commitment to supernaturalism . . .') (67)

. . . defence expert Professor Fuller agreed that ID aspires to 'change the ground rules' of science . . . (68)

Defence experts concede that ID is not a theory as that term is defined by the NAS and admit that ID is at best 'fringe science' which has achieved no acceptance in the scientific community. (. . . Fuller Dep. At 98–101, 21 June 2005; 28: 47 [Fuller]) . . . (70)

Science cannot be defined differently for Dover students than it is defined in the scientific community as an affirmative action program, as advocated by Professor Fuller, for a view that has been unable to gain a foothold within the scientific establishment. (70–71)

Additionally, even if irreducible complexity had not been rejected, it still does not support ID as it is merely a test for evolution, not design (. . . 28: 63–66 [Fuller]). (79)

In addition to failing to produce papers in peer-reviewed journals, ID also features no scientific research or testing. (28: 114–15 [Fuller]) . . . (88)

Most of these extracts are used as *concessions* or statements against interests. In the adversarial tradition ‘concessions’ from a party’s own witness are used to strengthen the opposing party’s case. In the majority of these examples Fuller is used as a foil. His concessions are used to bolster the case advanced by the plaintiffs. Judge Jones draws on Fuller’s testimony to support the way(s) he links ID to religion and demarcates science from religion on this particular occasion.

Perhaps a more interesting point emerging from the foregoing extracts is that Fuller’s presence and participation in the judgment seem to bear limited resemblance to and cast little light upon anything that is distinctively associated with STS. The last of the extracts from *Kitzmiller* (88) refers to Fuller in support of the proposition that ID has failed to produce peer-reviewed papers or generate a research programme involving testing. The association of Fuller with peer review and testing in *Kitzmiller* is particularly illuminating if we compare it with the Supreme Court’s seminal *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993) decision.

In *Daubert*, Sheila Jasanoff’s *The Fifth Branch* (1990) was cited for the proposition that peer review has limitations and publication does ‘not necessarily correlate with reliability’.<sup>8</sup> *The Fifth Branch* helped the Supreme Court to rationalize a formal change to the interpretation of the *Federal Rules of Evidence* (1975) in relation to the admissibility of scientific evidence. In practice, however, federal court judges have ignored these qualifications and aggressively invoked peer review and publication to manage admissibility decisions and busy trial dockets (Edmond & Mercer, 2004b).<sup>9</sup>

This curious *accommodation* of STS materials is also apparent in the way *Laboratory Life* (Latour & Woolgar, 1979) was cited in the case of *American Geophysical Union v. Texaco Inc.* (1994). This was an appeal in a copyright infringement action. The publishers of scientific journals alleged that unauthorized reproduction of copyright-protected papers, by Texaco scientists and engineers, was inconsistent with ‘fair use’. In a spirited dissent in defence of the Texaco scientists, another federal judge quoted the work of Latour and Woolgar.

The anthropologist Bruno Latour spent 2 years studying scientists at the Salk Institute for Biological Sciences. During the course of his study, he conducted anthropological observations of a neurobiologist working on a paper for a journal. This scientist’s desk was littered with copies of journal papers authored by other scientists:

Xeroxed copies of articles, with words underlined and exclamation marks in the margins, are everywhere. Drafts of articles in preparation intermingle with diagrams scribbled on scrap paper, letters from colleagues and reams of paper spewed out by the computer in the next room; pages cut from articles are glued to other pages; excerpts from draft paragraphs change hands between colleagues while more advanced drafts pass from office to office being altered constantly, retyped, rechecked, and eventually crushed into the format of this or that journal.

Bruno Latour and Steve Woolgar, *Laboratory Life: The Social Construction of Scientific Facts*, 49 (1979). One essential step toward this drafting process is the accumulation over time of the journal articles that reflect the current state of knowledge that the journal author seeks to advance. Latour confirms that the photocopying of journal articles, and the use of them, is customary and integral to the creative process of science.<sup>10</sup>

In this context *Laboratory Life* stands for the proposition that: ‘the photocopying of journal articles, and the use of them, is customary and integral to the creative process of science’.

Judges in *Daubert*, *Texaco* and *Kitzmiller* drew upon STS products to support different approaches to peer review and publication. Judge Jones’ decision demonstrates flexibility in the way representations of science and expertise are employed to achieve, or practically manage, particular ends (Edmond, 2000; Edmond & Mercer, 2002). *Kitzmiller* was decided in the aftermath of *Daubert*. Nevertheless, in developing a version of science for the purposes of the First Amendment, Judge Jones made no explicit reference to the influential model of science devised by the Supreme Court for admissibility decision-making just one decade earlier.

### Misunderstanding Law?

The legal discourse generated around and beyond *Daubert* has led senior appellate courts to seek answers to questions such as: What is the scientific method? How do we identify reliable knowledge? And what uniquely demarcates science from other forms of knowledge? Science studies may be well positioned, on the basis of empirical, historical and theoretical studies, to inform us about the nature of the sciences and perhaps to problematize, as philosophically naive or inconsistent, such questions and some of the images presented in *Daubert* and other cases including *Kitzmiller*. However, the multidisciplinary origins and variety of hermeneutic approaches underlying STS and SSK perspectives may deter the promotion of simple, prescriptive or consensual answers to questions about method, demarcation and reliability.

These observations should not be understood to imply that STS is unable to offer valuable insights into the ways science and expertise may enter and intersect with legal processes. Rather, they suggest that the style of metanarrative (especially metascience) sought by the legal system, particularly after *Daubert*, may not be compatible with much of the scholarship produced under the rubric of science studies. The idea that the sciences are susceptible to description in terms capable of being operationalized for legal contexts while accommodating the breadth of perspectives and philosophical preoccupations of science studies (and other) literatures may be naive.

*Public science and technology studies* have not fared particularly well in legal debates around public science (Mercer, 2005). In part, this reflects the fact that legal practice has social dimensions that are not reducible to evidentiary and epistemological issues. What STS seems to require is a

second generation of law–science studies particularly attentive to substantive law, the rules of evidence and procedure, jurisprudential trends, and the importance of strategy, along with sensitivity to institutional, professional and tacit aspects of legal practice (Edmond, 2004; see also Lynch, 2006).

Here we can make a few preliminary observations. First, it is important to recognise that Judge Jones was not strictly required to answer the question of whether ID was science. On the basis of the documentary evidence and testimony he concluded that the Dover Area School District's policy violated the First Amendment. Applying the legal tests governing the Establishment Clause Jones found that the policy *endorsed* religion and that its *primary purpose* was to advance creationism. Nevertheless, Judge Jones admitted Fuller's evidence and undertook the task of trying to demarcate between science and ID. Indeed, Jones was 'confident that no other tribunal in the United States is in a better position than we are to traipse into this controversial area' (63). Why, though, was Judge Jones willing to consider Fuller's evidence and why did he produce such a detailed decision?

In this kind of symbolic constitutional litigation judges are more inclined to admit evidence and to address the weight of evidence in their reasons. Similarly, parties seem less inclined to challenge evidence. There is no 'exclusionary ethos' associated with First Amendment litigation: in part because it takes up little of the Federal Courts' time and resources, but, more importantly, because the decision was not going to result in a lethal injection, bankrupt a large corporation, or deter future expenditure on research and innovation.<sup>11</sup> In consequence, Fuller, as one of the defendants' experts, was allowed to testify. Indeed, allowing Fuller to testify added to the apparent fairness of the process. The generous approach to admissibility and the attention Fuller received in the judgment made it more difficult to appeal the decision (on evidentiary grounds). Appellate judges would have to identify an abuse of judicial discretion. In such an inclusive process with a detailed and critical judgment it is hard, though perhaps not impossible, to imagine an appellate court disagreeing with the trial judge.

In terms of Fuller's (or STS) influence on the Court's understanding of science, concern with Fuller's intervention is exaggerated (contra Fuller, 2006). Fuller's performance and its reception have more to do with debates about the broader standing of STS and whether science studies scholars should intervene in what are widely considered to be unsavoury causes. In just about any other type of case Fuller would not have been admitted or would have had his evidence and expertise more aggressively contested. Indeed, Fuller's experience may highlight a dilemma confronting science studies and the ability of its proponents to act as referred experts in legal settings. The latitude between the sciences and STS may create difficulties, especially for those who, like Cole, are not technically trained. Few professions, including the judiciary, seem willing to defer to STS. Even those referred experts who are admitted become *merely* part of



more complex, contingent and strategic legal processes.<sup>12</sup> On average, it will probably be easier for STS scholars to enter legal proceedings where their skills are not perceived as vital. Other groups do not, after all, perceive the *need* for science studies or other critical traditions to practically demarcate the sciences from creation science for the purposes of an educational curriculum or applying the US Constitution.

Perhaps Fuller's greatest mistake (or misunderstanding) was not to give solace and succour to audiences implacably opposed to science studies but to presume that his limited intervention could deflect a long and arguably venerable tradition of First Amendment jurisprudence.

## Notes

1. In the Supreme Court of New York: *The People of the State of New York v. James Hyatt: County of Kings – Part 23. Decision and Order; Indictment # 8852/2000* (10 October 2001): 5. On those occasions where trial judges have warmed to Cole's evidence and expertise, appellate courts seem to have been less receptive.
2. *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 113 S.Ct. 2786 (1993); *Kumho Tire Co. v. Carmichael* 119 S. Ct. 137 (1999).
3. See also the reception of Gorman (2006).
4. A prominent example is *Barefoot v. Estelle* 463 US 880 (1983).
5. *McLean v. Arkansas Board of Education* 529 F.Supp. 1255 (D.C. Ark. 1982). See also *Edwards v. Aguillard* 482 US 578 (1987).
6. 'Brief Amicus Curiae', *SciPolicy Journal of Science and Health Policy* (2005): 4.
7. See also Lambert (2006).
8. *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 113 S.Ct. 2786, 2797 (1993).
9. Peter Huber, author of *Galileo's Revenge* (1991), which was not cited in the *Daubert* judgment, has exerted a more conspicuous influence on federal jurisprudence and law-science discourse. Compare Edmond & Mercer (1998, 2002).
10. *American Geophysical Union v. Texaco Inc.* 60 F.3d 913, 934–935 (1994). References to the work of Jasanoff, Latour and Woolgar emerged from briefs and submissions written by others rather than their own efforts and interventions.
11. These are contested images. See, for example, Haltom & McCann (2004).
12. Consider the response of French historian Henry Rousso (2002) when summoned to provide evidence to a superior French court. See also the influential work of Hay (1975).

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