discovery process, Tsukuba has now been forced to reveal facts that undermine any presumption of fairness and honesty that would normally be accorded an academic institution in the preparation of such a report. I and my coauthors have an online response to the Tsukuba report (see http://www.cho-teruji.org/ScientificExplanationFigss.pdf).

References

1. T. Cho et al., *Phys. Rev. Lett.* **97**, 055001 (2006).
2. T. Cho et al., *Phys. Plasmas* **15**, 056120 (2008).

Teruji Cho
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Hiroshi Mizubayashi's letter defending the University of Tsukuba's action against Teruji Cho suggests that we and our nine letter cosigners might not have had a full grasp of the incident and the procedure followed by the university. We did, however, have access to the reports that summarized the university's evidence and found them seriously wanting in reaching the conclusion of any falsification of data. It seems to us that it is the university that lacks access, since its report fails to consider the subsequent clarifying article published by Cho in *Physics of Plasmas*.[1] Mizubayashi observes that following his investigation, 23 coauthors—all at Tsukuba—asked *Physical Review Letters* to withdraw their names from the paper. Yet Vladimir Pastukhov, one of four coauthors dissenting from the university's findings and the only one outside the university's disciplinary influence, stands by the original publication. He believes that it is one of the more significant works of the GAMMA-10 group. In summary, Mizubayashi's letter does not allay our and our cosigners' concerns about whether an accurate, fair, and transparent academic procedure has been followed.

Reference

1. T. Cho et al., *Phys. Plasmas* **15**, 056120 (2008).

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Mizubayashi and Akahira reply: The University of Tsukuba finds no reason to alter its position that Teruji Cho's conduct in the preparation of the *PRL* paper[1] constitutes scientific misconduct (PHYSICS TODAY, February 2009, page 12). Cho claims that any error or insufficiency in the *PRL* paper is inadvertent and innocuous. The Investigation Committee, which included three internationally known plasma physics experts from outside the university, did not find them so after a fair and thorough investigation.

Cho also claims that the *Physics of Plasmas* paper explains any deficiencies,[2] and furthermore reaches the same conclusion as the *PRL* paper. It is our view that the *PoP* paper, which was submitted after the investigation started and without Cho's giving notice to the Investigation Committee, cannot be used to judge whether Cho carried out scientific misconduct in the preparation of the *PRL* paper. Needless to say, the conclusion of a paper reached through misconduct is meaningless.

Cho has brought a civil suit against the University of Tsukuba. We are confident that the court will fully sustain the university's position on this issue.

References

1. T. Cho et al., *Phys. Rev. Lett.* **97**, 055001 (2006).
2. T. Cho et al., *Phys. Plasmas* **15**, 056120 (2008).

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Reviewer dislikes *Hoax*, perhaps intensely

Every author has to expect that some reviewers will dislike his book, perhaps intensely. That is par for the course. But one might hope that even a scathingly negative review would be accurate in its summary of the book's contents and principal arguments. Alas, Peter Saulson's review (PHYSICS TODAY, December 2008, page 56) of my book *Beyond the Hoax: Science, Philosophy and Culture* (Oxford University Press, 2008) fails to meet that minimum standard.

Saulson implies that the whole book is a rehash of the stale science wars debates from the mid-1990s—a characterization that could at best apply to the first third of the book, whose function is simply to set the stage for the rest. Saulson does not even mention the two chapters on the philosophy of science or the long chapter on pseudoscience; and he mentions the chapter on religion only to grossly misrepresent it (see below).

Worse yet, Saulson alleges that my "method relies [solely] on finding the most ridiculous possible passages . . . to lampoon." That might be an accurate description of the "Social Text" parody article—which was indeed constructed around some rather shocking abuses of scientific terminology by prominent philosophico-literary intellectuals—but as a summary of the rest of the book, it is so far out of touch with reality that one wonders whether the reviewer actually read the book beyond part 1. In fact, those gross abuses are barely mentioned in the rest of the book, whose aim is to discuss questions that are, frankly, more substantial.

Saulson says my book displays "intellectual mean-spiritedness." I am perplexed as to how any fair-minded reader of the whole book could come to such a conclusion, and I am saddened that Saulson did. But let us suppose, just hypothetically, that the book's tone is every bit as vile as Saulson claims. So what? In what way would that affect the validity or invalidity of my arguments? Quite simply, I did not write the book to be nice or nasty to anyone but rather to analyze ideas. If Saulson thinks that some or all of my arguments are mistaken, then he should say so and say why. But he does not bother to cite any of my arguments, much less say why he thinks they are wrong.

Saulson does make one valid criticism: In preparing the annotations to chapter 1, I forgot to cite Mara Beller's excellent article (PHYSICS TODAY, September 1998, page 29) in which she quotes Niels Bohr, Max Born, Werner Heisenberg, and Wolfgang Pauli engaging in absurd extrapolations of ideas from quantum physics to politics, psychology, philosophy, and religion. I did, nevertheless, make clear my own negative view of much of Heisenberg's and Bohr's philosophical and popular writing, as well as point out its pernicious influence on a later generation of academic postmodernists (pages 12, 14, 18, and 42 of *Beyond the Hoax*).

Last but not least, Saulson reduces my 76-page analysis of religion to the assertions that I "attack" religion and consider it "stupid and dangerous." It is true that I consider religion dangerous to some extent and in some circumstances, and I spend much of the essay trying to delineate those circumstances in a nuanced way. But to say that I consider religion simply "stupid" is such a caricature of what I have written that one has to wonder, once again, whether the reviewer actually read the essay. In fact, I explicitly say the contrary:

> People who hold false beliefs are not necessarily stupid or even irrational. . . . Religion is a delusion, but one that is extraordinarily well-adapted to the human mind (in exactly the same way that the cold virus is well-adapted to the human nose); that is presumably why religion of some kind is near-universal in human societies. In particular, young minds are designed to absorb information in vast quantities from their caretakers; and even if some of that "information" is false, it can become very difficult to dislodge later (especially in matters, such as cosmology, that are not open to everyday observation and falsification). So those of us who were not exposed, in youth, to this particular intellectual virus should not be too smug towards those who were. (page 427)

Potential readers who desire an accurate overview of the book's contents and main arguments can consult the critical reviews written by philosopher Simon Blackburn[1] and physicist Philip Anderson,[2] among others.[3]

But in the end, each interested person can read the book and evaluate its arguments with his or her own brain. I welcome thoughtful critiques, both in public forums and by private e-mail. A more detailed version of this letter is available at http://www.physics.nyu.edu/faculty/sokal.

References

1. S. Blackburn, *New Republic* **239**(2), 40 (13 August 2008).
2. P. Anderson, *Phys. World* **21**(8), 40 (2008).
3. See, for example, J. Ladyman, *Philosophers' Magazine* **42**, 105 (2008) and J. Touger, *New Politics* **12**(2), 64 (Winter 2009).

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Saulson replies: It is pretty funny to read Alan Sokal's complaint that my review is not an accurate summary of his book and that I failed to respectfully engage his arguments. After all, he has made his second career by quotation out of context and by failure to respectfully engage with what others were trying to say.

Sokal claims that he has now given up all of that. The truth is that it has become so much his second nature that he no longer notices when he does it—even when he misquotes those with whom he has collaborated.

I did read all of *Beyond the Hoax*, and I tried to find a positive argument. The best I could find was this bit from the preface: "The essays in this book are all animated by a common concern—namely, for the centrality of *evidence* in all matters of public debate." But that pious standard is one that Sokal ignores as soon as it becomes inconvenient. For example, when he attempts his own positive statement of a moral code that need not be grounded in religion, the best he can do is to provide a list of failings of the Bush administration and then assert (without *evidence*, but *in italics*) that they are each *"immoral."* One can't argue with a false prophet; all one can do is to laugh at him.

Who could live up to Sokal's standard? The list of "all matters of public debate" is very broad and contains many important issues in which the habits of mind of physical science simply don't apply. Sokal seems not to understand that. The sole diagram in *Beyond the Hoax* shows a one-dimensional graph of the "continuum from genuine science to pseudoscience," with atomic theory on one end and astrology, creationism, and all of the world's religions lumped together on the other end. But that is not even wrong. Our human approach to the world is not one-dimensional, with physics at the pinnacle and everything else simply beneath it. Neither religion nor politics nor poetry is solely about, or even mainly about, truth claims that can be evaluated by evidence in the way that we physicists go about our work. We are justly proud of what physics has to offer to world culture. Let's just not make the mistake of insisting that all of culture fit its mold.

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Step away from the computer

Science and technology are supposed to make life better for humans. I'm not convinced, though, that the same is true of the internet. Many people, especially young people, are now dangerously addicted to the internet; they think they have the world at their fingertips. But it turns out that people are busier, more