Normativity and Nostalgia: A Reply to Pitt
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On behalf of the Collective, we thank Professor Pitt for his contribution to our venture and willingness to develop and exchange meaningful ideas on the conduct of Science and Technology Studies (STS). We hope this reply encourages additional discussion about the important issues Pitt raises.

You Cannot Be Serious[1]

> Sokal's most critical charge here is that there is a lack of *seriousness* on the part of literary theory types and anyone else who endorses relativism and subjectivity. (original emphasis)

Professor Pitt's polemic begins with a test. Pitt tests the seriousness of our commitments to scientific inquiry. As a manner of test preparation, Pitt primes our philosophical intuitions by inviting questions regarding what we would risk, and ignore, to expose intellectual and academic malpractice. Would we endorse the deliberate use of deception, through hoaxes, to uncover malpractice? If not deception, would a proper scientific experiment uncover quackery? [2] Given your intuitions on these questions what, then, does Leibniz demonstrate in punking a secret society of alchemists? And what does Alan Sokal demonstrate in punking a group of "social scientists/literary theorists?" How we, and Pitt, frame and answer these questions affords a sense of how we may regard the place and purpose of scientific inquiry.

For Pitt, scientific inquiry tends to be a rather cut and dried affair. Sokal's self-proclaimed "experiment" would not pass scientific muster. Nevertheless, Sokal is right. Any ambiguity surrounding using a hoax to reveal fraud gets instantly clarified by understanding the righteous anger one should feel over the pretense and preening of pretenders to the throne of knowledge. Pitt shows the clever Leibniz and the cunning Sokal unveiling the respective arrogance of alchemists and "social scientists/literary theorists." Both Leibniz and Sokal, knowing little more about alchemy or postmodern theory than how to ape the bombastic linguistic mannerisms of educated fools, gained acceptance, even money, from these intellectual imposters.[3] Leibniz and Sokal admitted

[1] An exclamation (and title of his book, 2002) shouted by tennis player John McEnroe in disputing a line call with a referee during a match at the 1981 Wimbledon championship. Pitt brings to mind McEnroe's temperament given his attributions of relative seriousness, personal calls as to which inquiry is in- or out-of-bounds, and reference to justified anger.

[2] I am reminded of Malcolm Ashmore's (1993) retelling of the N-ray saga åand the controversial "experiment" used to expose French physicist Prosper-René Blondlot's malpractice.

[3] Here, I refer to Alan Sokal and Jean Bricmont's *Intellectual Impostures*.

to writing gibberish. By accepting, praising and, in Sokal's case, publishing gibberish, these hapless alchemists and literary theorists confessed their fraud.

Given his instruction on how to identify, and feel about, revelations of apparent fraud, Pitt proceeds to test directly our notions of scientific inquiry.

To gauge how seriously you take scientific inquiry, Pitt weds two assertions and requires a 'yes' or 'no' reply to both of them: 1) Scientific inquiry, *undeniably*, " … has produced and continues to produce the best and most successful methods we have for understanding the world and universe around us." 2) Scientific inquiry corrects itself. On replying to the two assertions, your scientific disposition stands as follows:

Affirming both assertions means you take science seriously indeed. Your seriousness entails a commitment to the epistemic privilege and authority of science. Defending and enhancing science's privilege and authority, even if you fail being scientific in the process (e.g., Sokal's "experiment", Gross and Levitt's "data"), honors that commitment. For STS — or STS-1 on Pitt's account — affirming both assertions means affirming, and fully describing, scientific exceptionalism through an apolitical, epistemic agenda.

Denying both assertions means you are decidedly unserious.[4] Your sympathies lie with the postmodernist "gang". Your unseriousness leads you to treat science "just like" other social institutions. Questioning and undermining science's privilege and authority, even if you get punked by a hoax (e.g., Sokal) and become the object of derision (e.g., Gross and Levitt), exhibits your distain. For STS — or STS-2 on Pitt's account— denying both assertions means denying, and proliferating contextual accounts regarding, scientific hegemony through a political, exploitative agenda.

Self-Correction

> One of the strongest features of scientific inquiry is its self-correcting nature. Faulty assumptions are exposed and rejected, new procedures are tested and new instruments are calibrated and retested, theories are proposed, explored, elaborated, and tested, only to be finally rejected or replaced by a new set of conjectures and methods.

[4] Further, you may be decidedly unserious about Sokal's work. Pitt asks us to "hear" — take seriously — Sokal's complaint over the inane observation that: "Theorizing about 'the social construction of reality' won't help us find an effective treatment for AIDS or devise strategies for preventing global warming." Of course, neither will theorizing about the social construction of reality *hurt* science. Either science is a self-correcting, epistemic engine, or it's not. If so, social interests — postmodern silliness or fights over research dollars — ultimately do not matter. If not, social interests do matter. Defenders of science, like Sokal and Pitt, want it both ways. For them, science is not social in any way other than the way scientists say it is — when funding is at stake, for example.

Pitt depicts science's self-correction as both a settled matter and a desirable feature of inquiry. [5] Does science inquiry self-correct? Pitt's argument by assertion notwithstanding, the answer remains a firm "yes and no". One can point to historical instances where science corrected along the lines Pitt describes.[6] Yet social studies of science, of contemporary scientific inquiry in particular, render more accurately our understanding of the process.[7] Scientific inquiry has become so complex, specialized and beholden to funding and publishing priorities that the opportunity for experimental replication, the basis for self-correction, stands virtually nonexistent. As Carl Zimmer points out, quoting John Helmann (a microbiologist at Cornell), scientists have their own science to perform.[8] Generally, scientists do not have the time, funding, and/or resources to reproduce the experiments of others. Science's incentive structure actively discourages regular replication. Helmann's sentiments are echoed by Rosie Redfield (a microbiologist at the University of British Columbia) who adds " … trying to replicate the claimed results is a waste of time."

Technology, as Pitt well knows,[9] further complicates replication. The technologies necessary for cutting edge experiments conducted in unusual environments (e.g., nominal gravity) do not reside in common laboratories.[10] Less exotically, technologies readily

[5] We certainly wish to correct error. Pitt posits self-correction as a unique, and perhaps defining, feature of science. However, Pitt fails to confront the complexities of self-correction and further confuses the issue in his concluding examples. In these examples, self-correction becomes an exercise in having a self-appointed referee (Pitt) declare a winner in a debate with an ideologically preordained outcome. Keeping Pitt's examples in mind as a collective cautionary tale, we might well contemplate the question of why, normatively or otherwise, we should prefer self-correction to correction by others.

[6] Throughout the essay, Pitt relies on the old time religion of using physics and astronomy as experimental exemplars of all the sciences.

[7] I note the astounding breath and complexity of contemporary scientific experimentation and the general, if not absolute, lack of resources and rewards for replicating experiments. Replication is neither a routine, nor automatic, activity as Pitt suggests. In STS, Collins and Harrison's "Building a TEA Laser: The Caprices of Communication" (1975) serves as the *locus classicus* in demonstrating the difficulties surrounding the transfer, and replication, of scientific knowledge and experimentation.

[8] Zimmer, Carl. 2011. "It's Science, but Not Necessarily Right." *New York Times*, June 26. Accessed January 19, 2012. http://www.nytimes.com/2011/06/26/opinion/sunday/26ideas.html

[9] I refer to Pitt's *Thinking About Technology* (1999).

[10] We get an indication of Pitt's counter to my claim in Alan Shapiro's debate with Simon Schaffer: "Schaffer situates Newton's experiment and use of prisms in such a local situation that, he argues, Newton and his conspirators held that the conspirators will succeed only with prisms made of British glass. This odd claim is what initially led me to distrust his account, especially when I found that the sources he cites to establish his argument said nothing of the kind." Shapiro takes a swipe at Schaffer's over determination of locality (or hyper-locality), and the apparent

available and commonly used in well-funded research universities defeat the budgets of less well-endowed universities, colleges and some private labs. Practically speaking, experimental replication requires specific conditions belying objective, universal standards.

Despite the impracticalities of replication and self-correction, Pitt goes a step further:

> And despite this dynamic constant reassessment and reconfiguration, science continues to produce results which give us greater and greater control over our lives, giving us the ability to improve our life styles and our understanding of how it all hangs together.

Let's make plain Pitt's teleology. On Pitt's account science, unceasingly, reassesses, self-corrects, produces results, "gives" understanding and control, and makes life better. Pitt's characterization of science at once strains credulity and reduces the study of science to an arid form of accountancy. For what, other than scoring instances of inevitable progress, and correctly entering them in the historical balance sheet, remains? Moreover, accepting Pitt's idea, why do we need STS practitioners, of any type, to perform this task? If science corrects itself, science can account for itself. Pitt makes no case for the particular methods of STS, or history, other than extreme scrupulousness — and, for Pitt, science has that in abundance — and self-correction — a feature originating in science itself — in studying science.

Pitt persists in claiming the virtues of self-correction for STS. He makes a closing case for the self-correction of STS in five instances occurring in the early- to mid- 1990's. In these emblematic exchanges, standard bearers of STS done poorly (STS-2) — Mario Biagioli, Steven Shapin, Simon Schaffer — have their historical knuckles rapped by STS-1 stalwarts — Pitt, Moti Feingold and, among others, an unidentified "younger scholar." In case you miss the obvious didacticism, these exchanges show members of the STS pantheon (with their privileged, if not canonical, accounts) being leveled by intrepid, if lesser known, interlocutors. Pitt declares: "We may take a bit longer than scientists do, but we too police our own, which is what makes what we do self-correcting." Is "policing", then, self-correction?

Here, if I understand Pitt correctly, self-correction in STS is a process whereby right-minded (STS-1) practitioners offer charges, counter-arguments, or differing evidence to

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lack of evidence of the same, on Newton's experimentation. Shapiro's poke at Schaffer, and Pitt's reference to the exchange, illustrates the unfortunate rhetorical opportunism in such debates. Shapiro chides Schaffer for an inaccurate interpretation of a source (Pitt suggests the exchange means something more about relative standards of historical evidence.). If true, such an inaccuracy does not reject the deeper claim that specific conditions, and new or uncommon technologies, may significantly affect the conduct and potential replication of scientific experiments.

existing historical accounts given by wrong-headed practitioners (STS-2).[11] Such encounters result in the "irrefutable", take down of either a part, or the whole, of the argument or book (Pitt does not note the particulars). STS-2 types try rebuttals or responses, but seem mortally wounded in the exchange. STS-1 declares victory.

Pitt's self-congratulatory, deterministic tales of STS-1 triumphs lack detail and dimension.[12] On Pitt's account, an historical dispute ends and results in self-correction when the bad guys (STS-2) lose to the good guys (STS-1). A host of questions follow, including: Are the disputes that Pitt describes representative cases (is hearsay, in example 4, a "conclusive" refutation)? Did the disputes end, (fifteen to twenty years ago) with a permanent correction to the historical record? Did Shapin, for example, admit to a correction? Would such an admission matter? Can self-appointed referees, like Pitt, simply declare that correction happened absent evidence? [13]

In an earlier article, Pitt argues " … that even very good case studies do no philosophical work." Why? Pitt reasons that case studies " … give the false impression that history is on our side, sort of the history and philosophy of science version of Manifest Destiny." [14] Pitt's own cases of self-correction illustrate just this problem.

Normativity, Didacticism and Nostalgia

> We can give our students theories of right and wrong, pointing out their strengths and weaknesses, and we can explain the science and the technology with its possible ramifications. But we must leave it to them to draw out and defend their own conclusions about value.

At the root of Pitt's self-contradiction, one finds his didacticism. Pitt's overwhelming desire to impart an unmistakable moral lesson leads to heedless oversimplifications. Tracing these oversimplifications — among them the blithe characterization of postmodernism, the brushing aside of political concerns,[15] the facile bifurcation of STS

[11] One wonders, on Pitt's ontology, if practitioners can occupy both sides of his STS divide at a given time (or use the methods and perspectives of one camp while bearing allegiance to the other), move between the categories or, if once a modernist or postmodernist, then always so.

[12] From Pitt: "The Past is what happened, the whole thing, all of it, every minute, second and detail in the non-stop flow of time." Past accounts of STS self-correction do not seem to aspire to Pitt's criteria for doing history.

[13] Or with evidence as flimsy as hearsay and impression?

[14] Pitt, Joseph. 2001 "The Dilemma of Case Studies: Toward a Heraclitian Philosophy of Science." *Perspectives on Science* 9: 373-382.

[15] Pitt claims: "… STS-1's agenda is not political … If every agenda is a political agenda, then the use of 'political' to characterize an agenda loses its force." I support Pitt's inclinations (and logic) in dealing with ready-made, taken for granted, claims that this (e.g., power) or that (e.g.,

— we find Pitt's paternal leanings in wanting to rein in an STS that does not respect, and may threaten, its scientific betters. We also find a nostalgia that undermines a goal we both seek — a renewed place for philosophy in STS.

Pitt longs for an era before the Edinburgh School's founding. Pitt locates the beginning of this era — the historicist movement in the philosophy of science — in, roughly, 1956 corresponding with the founding of Indiana University's History and Philosophy of Science (HPS) department by Norwood Russell Hanson. Hanson, not Thomas Kuhn, serves as a patron saint of HPS and of STS-1 (on Pitt's schema STS-1 corresponds to HPS). Kuhn, for Pitt, " … can perhaps be seen as the first popular Anglo-American postmodernist" [16] and thus resigned to the STS-2 side of the ledger. Seduced by the siren call of *The Structure of Scientific Revolutions* nascent STS (-2) seized an opportunity to " ... attack … the universality of scientific method" and " … take science down off its pedestal." Of course, we might tell this story quite differently locating the "take down" of science with earlier philosophical attacks on the unity of science movement. George A. Reisch notes:

> Nostalgia, of course, carries little philosophical weight. Most contemporary philosophers, however much they may appreciate logical empiricism as their profession's founding movement, agree that in the 1950s and '60s logical empiricism was revealed to be a catalog of mistakes, misjudgments and oversimplifications about science and epistemology. (2005, 1)

I accuse Pitt of also making oversimplifications about STS.

Moreover, we might tell quite a different story of Kuhn's conservative, cold war influence. [17] Yet, for Pitt, Kuhn marks the beginning of the postmodern tragedy.

On Pitt's telling the Sokal Hoax marks the apogee of the postmodern tragedy, and the culture war, precipitating the diminution of science. Now, we must live with the right-

wing consequences.[18] However, in examining these consequences, Pitt's account pulls up short. The essay ends with five "corrective encounters" (if you will) dating roughly from

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politics) always, already prefigures *any* argument, or observation, and awaits timely excavation by an interlocutor. Yet, following the pattern of his reductive account, Pitt denies the possibility of a *specific* understanding of an epistemic agenda as a political agenda. That one might proclaim "every agenda is a political agenda" does not necessarily entail that every political agenda is politically equivalent.

[16] I note Kuhn's presence in the *Wikipedia* entry for postmodernism (http://en.wikipedia.org/wiki/Postmodernism). So it must be.

[17] Steve Fuller (2001). *Thomas Kuhn: A Philosophical History for Our Times.*

1992 to 1996. Pitt does not (and perhaps need not) show how the sins of the "academic left" [19] infect the political right. In fact the academic, or postmodern, left in none other than the personage of Bruno Latour, bemoans right-wing anti-science. Latour may well succeed, on Pitt measure, in a bit of self-correction, declaring:

> Was I wrong to participate in the invention of this field known as science studies? Is it enough to say that we did not really mean what we meant? Why does it burn my tongue to say that global warming is a fact whether you like it or not? Why can't I simply say that the argument is closed for good? [20]

Despite Latour's self-admonition, Pitt's conception of postmodernism, and of STS-2, leaves little room for correction.

Given the local, idiosyncratic, historically contingent cases Pitt cites, one wonders what inferences we might draw about not only the continued prevalence of STS-1's self-correction, but also, if self-correction is not just the province of STS-1, how we identify it if conducted by STS-2. Pitt's nostalgia for the way STS ought to be, found in his examples and idea of STS-1 (which is, to say, HPS with a dash of "the social" [21]) does not allow the possibility that STS-2 may have changed, so, taken on aspects of the criticism he levels.

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[18] See, for example: Chait, Jonathan. 2011. "Why Right-Wing Anti-Science Matters." *The New Republic* August 25. Accessed January 19, 2012. http://www.tnr.com/blog/jonathan-chait/94198/why-right-wing-anti-science-matters

[19] I underscore the subtitle of Gross and Levitt's *Higher Superstition — The* Academic Left *and Its Quarrels With Science.*

[20] Latour, Bruno. 2004. Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry* 30. Accessed January 18, 2012. http://www.uchicago.edu/research/jnl-crit-inq/issues/v30/30n2.Latour.html

[21] Pitt proposes a case for doing STS in such a way as " … to seek to understand science in its historical context as a *social process* whose domain is the real world." (emphasis added) The proposed definition seems odd as Pitt holds his nose throughout the essay in referring to "social process" (especially regarding STS-2): "Science is here presented as *merely* a *social process* …"; "The importance of the Strong Programme was the general position it opened up, which was that science should be considered a *social process*. For now the question became which *social process*?"; "The sociological study of science, concentrating as it does on the *social processes* within the scientific community …" (emphasis added)

Conclusion

Normative arguments can emit an odor of despotism. We all want to tell others what they should do, particularly with regard to something about which we care deeply. We care deeply about knowledge — how we recognize it, who holds it, how we get it, how we can give it to others, and how we use it. We care deeply about science in relation to knowledge. Pitt wants to tell us how we should relate to science. We, those who study science and technology in particular, should be respectful if not reverential. We should use the means and methods of other disciplines, such as history and philosophy, to make science understood more fully and cogently. To not take science seriously by promulgating radical views derived from unconventional theories and demonstrably wrong claims promotes ignorance and ill-logic.

Pitt struggles to avoid normative despotism. STS, for Pitt, should have methodological and dispositional standards. However, he mentions "normative" just once — in relation to what "many people" want from STS-2 studies. Pitt worries that STS-2 practitioners seek to coerce us into how we ought to think about science. The example of the Humanities, Science and Technology program at Virginia Tech, the purpose of which Pitt depicts as offering intellectual tools for the uncoerced evaluation of science and technology, illustrates what the thinks the true aim of STS should be.

In trying to avoid normative despotism, Pitt resorts to a kind of paternalism. The moral lessons, posed as unambiguous examples of when STS goes wrong, deterministically reinforce his assertions. We, too, should support the assertion of science's epistemic privilege and emulate science's ceaseless, implacable self- examination and correction.

Ultimately, Pitt's views are anachronistic. Pitt must, or should, contend with the function of philosophy in the "intellectual maintenance" [22] of contemporary STS. Pitt recognizes, and too easily pushes aside, relevant STS problems — the constant stream of idiosyncratic case studies that offer little hope shared knowledge, let alone self-correction; the infinite, irreconcilable contexts of critique; and the complex dynamic between the study of science and science itself. These problems cannot be, and should not be, addressed through reclaiming a disciplinary past. Rather, STS needs the resources of philosophy unbowed by scientism. I urge Professor Pitt's help with this project.

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[22] I refer to Gary Gutting's conception in answering what the use of philosophy is: "Even though basic beliefs on ethics, politics and religion do not require prior philosophical justification, they do need what we might call 'intellectual maintenance,' which itself typically involves philosophical thinking." Gutting, Gary. 2012. "Philosophy — What's the Use?" *New York Times* January 25. Accessed January 25, 2012. http://opinionator.blogs.nytimes.com/2012/01/25/philosophy-whats-the-use/

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