REDUCTIONIST PHILOSOPHY OF TECHNOLOGY: STONES THROWN FROM INSIDE A GLASS HOUSE

Kristin Shrader-Frechette,
University of Notre Dame

Mark Twain said that, for people whose only tool is a hammer, everything looks like a nail. In *Thinking about Technology*, Joe Pitt's main tools appear to be those of the philosopher of science, so it is not surprising that he claims most problems of philosophy of technology are epistemic problems. As he puts it: 'The strategy here is straightforward. Philosophers of science have examined in detail a number of concepts integral to our understanding of what makes science what it is. . . . Following up the concept of a scientific explanation, I look at the conditions for a technological explanation. . . .The bottom line is this: philosophical questions about technology are first and foremost questions about what we can know about a specific technology and its effects and in what that knowledge consists' (pp. xii-xiii).

Although Pitt points out important disanalogies between scientific and technological knowledge, nevertheless he emphasizes that philosophy of technology is primarily epistemology. Assessing technology in terms of 'whether or not it promotes or threatens some privileged set of moral values,' or whether it poses 'a threat to our political system and our way of life,' says Pitt, 'is not the proper way to think about technologies if we are interested in exploring their philosophical implications' (p. 66). Pitt has thus stipulatively defined ethical and political analyses of technology as not part of philosophy and philosophy of technology. While claiming to assess the foundations of philosophy of technology, he has adopted a reductionist approach to his subject matter, one that ignores or denigrates the majority of work in philosophy of technology. Does Pitt's bold, reductionist move succeed?

1. OVERVIEW

Because Pitt frames the questions of philosophy of technology in a reductionist way, it is not surprising that he misunderstands or misses much of what is philosophy of technology. Subsequent paragraphs show that, in part because Pitt begins from an ideological position of value relativism, he begs the fundamental question of his book: What are the foundational questions of philosophy of technology? Because of the peculiar way that he frames

philosophy of technology, his volume illustrates the truism that those who frame the questions control the answers.

To be fair to Pitt, however, let us evaluate his volume on its own terms, the same criteria that he uses to criticize others. He uses particular criteria both to denigrate the work of persons such as the brilliant political philosopher and philosopher of technology Langdon Winner and to ignore the work of thinkers such as phenomenologist and philosopher of technology Albert Borgmann and ethicist and philosopher of technology Carl Mitcham. Surprisingly, none of Borgmann's and Mitcham's works even appear in Pitt's bibliography. Yet both are giants in the field.

Because Pitt aims to have a hard-hitting critique of others, it is reasonable to assess how well his own work fares under the same hard-hitting questions. To accomplish this end, the remainder of these remarks address six central questions. (1) What is unique and important about Pitt's volume? (2) Does it succeed on its own terms, looking at philosophy of technology by using the tools of philosophy of science? (3) Does it avoid ideology, as he claims it ought? (4) Does it avoid rhetoric, as he claims it ought? (5) Does the volume document its conclusions, as Pitt claims it ought? (6) What are the consequences of adopting Pitt's reductionist account of philosophy of technology?

The thesis of this essay is that Pitt does not succeed in doing the very things that he demands of his opponents. Although he is correct to point out the bias and rhetoric in many ethical, political, and metaphysical analyses of technology, Pitt errs when he throws out the baby with the bathwater. In throwing out the bathwater of poor ethical, political, and metaphysical analyses, Pitt throws out the baby of ethics, political philosophy, and metaphysics. As later sections of this analysis indicate, Pitt's reductionist account appears to be the product of his own ideological stance that is value-relative, positivist, autocratic, technocratic, and supportive of laissez-faire technological development. The problem is not that such a stance is *prima facie* wrong, but that Pitt does not defend his own ideological position, even though he throws stones at others for their alleged ideology. Pitt seems not to recognize his own glass house.

2. THE UNIQUENESS AND IMPORTANCE OF THE VOLUME

　　　　As an examination of the epistemic questions underlying technological explanation, Pitt's volume accomplishes three tasks that are important. *First*, he examines philosophy of technology from the perspective of philosophy of science.　Virtually no one has yet addressed philosophy of technology from this perspective, and Pitt's analysis makes a number of important points about the ways to distinguish science from technology.

　　　　Second, Pitt gives a fascinating account of how the Hubble space telescope came to be flawed (pp. 56-64), and he recounts failure to report bad test results, failure to adhere to design specifications, and failure to adhere to protocols.　In short, he provides an explanation of the causes and consequences of the behavior of key players who worked on the telescope. Although this material has appeared elsewhere, in the philosophy of science literature, including it here is important because it stresses the rightful importance of epistemological questions for philosophy of technology.　*Third*, examining the case of Galileo, Pitt shows how the technologies of the telescope and geometry changed the notion of proof, explanation, and evidence.　Both of these cases make fascinating reading for the philosopher of science, in part because they reveal the ways that tools, technology, influence science, and vice versa.

3. ADEQUACY OF THE VOLUME FROM A PHILOSOPHY OF SCIENCE PERSPECTIVE

　　　　Although he claims to use the tools of the philosopher of science, some of Pitt's stances in the volume raise a number of questions likely to trouble someone trained in philosophy of science. This section addresses only two of the disturbing aspects of the volume from the point of view of philosophy of science.

First, although a central theme of the volume is to discover the nature of technological explanation, after examining a potential analogue, scientific explanation (pp. xii-xiii), the book's account of scientific explanation is both simplistic and incomplete. Pitt examines only the Deductive-Nomological (DN) model of scientific explanation (pp. 42-43), and although he admits that this model has been criticized, elaborated, and revised (p. 43), nevertheless Pitt never provides alternative models of explanation. This is a telling failure because one of the main points of Pitt's book is to argue that technological explanation is significantly different from scientific explanation (p. 45). If Pitt examines only one model of scientific explanation, then at best he has shown only that

technological explanation (as he conceives it) is significantly different from scientific explanation conceived along DN lines.

Contrary to Pitt, it is reasonable to conjecture that technological explanation might be more analogous to scientific explanation, provided that the latter is conceived along other lines, such as retroduction, for example. My point here is not to make this alternative argument, as there is no time to do so, but simply to point out that, even without such an alternative argument, Pitt appears to have fallen victim to a hasty generalization about the nature of scientific explanation and its similarity to technological explanation.

A second problem in the volume, for the philosopher of science, is Pitt's criticism of 'rational economic man' (REM) and his appeal to an alternative account of rationality. The difficulty here is that Pitt's criticisms of REM appear to count equally against his own proposed theory of rationality. Pitt claims that the two main problems with REM are that it can explain anything and that it can not explain group decisions (p. 17). Yet in place of REM, Pitt proposes an account of rationality whose central focus is the Commonsense Principle of Rationality, CPR (p. 22). The CPR is 'Learn from experience' (p. 22). Yet Pitt's principle is so vague that anyone anywhere anytime could be said to learn from experience and therefore to be rational. More to the point, two people could be in an identical situation; they could behave in inconsistent ways, relative to each other; and yet each could claim to be rational in the sense of having learned from experience. CPR is so crude that anyone would seem to be able to appeal to it and to claim to be rational.

Pitt's CPR account also fails in terms of the second criticism Pitt makes of REM, that it cannot explain group decisions. If people following CPR could behave in inconsistent ways, if they could subscribe to inconsistent propositions, and yet if both could claim to have learned from the same experience, then it is clear CPR has no ability to unify group decisions. Pitt's CPR account fails in part because he has no second- and higher-order criteria for what, precisely, is to count as 'learning from experience.' CPR provides a trivial account of rationality, one that cannot be operationalized, because of its failure to provide higher-order epistemic criteria for its use. The CPR norm also falls victim to Pitt's own criticisms of economic rationality. Note that the point here is not to defend REM but simply to hold Pitt to the same philosophy of science standards to which he holds others accountable.

Although examples such as the DN problem and the CPR problem occur elsewhere, these difficulties may arise because of Pitt's tendency to give vague, even trivial, stipulative definitions of key terms. In addition to defining 'rationality' as 'learning from experience,' Pitt defines 'technology' as 'humanity at work' (p. 11). Although he later discusses this definition, he should not claim to have a definition of technology that so baldly fails to provide anything close to necessary and sufficient conditions for use of the term technology.   At a minimum, any philosopher would expect Pitt's definition to tell us what makes technological work different from other work.   Otherwise, all work and all actions of humans count as technology. If technology is everything, it is nothing that can be understood precisely and clearly.

4. SUCCESS OF THE VOLUME IN AVOIDING IDEOLOGY

Much of Pitt's volume is devoted to criticizing philosophy of technology that is alleged ideology.   Langdon Winner is the person that Pitt criticizes repeatedly for being 'unrelentingly ideological' (p. 72).   Pitt's problem with ideology is that it is normative. As he puts it: 'A conceptual scheme becomes an ideology when it becomes subordinate to a particular moral scheme, for the key item in ideology is the normative force it brings with its perspective. Ideologies are ways of asserting what the proper relations between and among people and the world ought to be be' (p. 79).

Pitt's account of what is wrong with ideology, however, is troubling for at least seven reasons. *First*, the success of science seems to require ideology in Pitt's sense.   That is, science requires that its practitioners relate to the world, each other, and their experiments in ways that presuppose consistent use of logic. Science, in other words, presupposes an account of how scientists ought to behave when doing their work. It presupposes an account of what 'the proper relations between and among people and the world ought to be,' and if it did not do so, if science could be done in any way whatsoever, it would not be so successful. Thus Pitt's account of ideology is so crude that it captures even science in its net.

Second, Pitt apparently wishes to call anything ideology if it employs some 'normative force it brings with its perspective' (p. 79). The obvious question Pitt's terminology raises is why Pitt believes that normative force, as such, is

ideological and therefore wrong? Why isn't biased or inappropriate normative force wrong, rather than all normative force? For example, suppose one says that her conceptual scheme for assessing technology is 'subordinate to a particular moral scheme' (p. 79), such as (A) the framework outlined in the Nuremberg Accords, according to which innocent humans ought not be subjected to serious risks without their free informed consent, or such as (B) the scheme according to which innocent children ought not be tortured solely for the purpose of testing the effectiveness of particular medical or chemical technologies. The problem with (A) and (B), if there is a problem, is arguably not that they bring normative force to one's point of view but that they do so badly or illegitimately, that they presuppose the wrong norms. Yet, according to Pitt, the problem with (A) and (B) would be that they bring any normative force at all to one's perspective. But how justified is Pitt in criticizing any normative force behind a perspective?

A *third* problem with Pitt's account is that he has only a question-begging answer to the previous question. Pitt appears to be largely unjustified in attempting to defend his criticism of norms, mainly because his stance is a logical consequence of his value relativism. Pitt writes that 'values are in principle unjustifiable by themselves. . . . [I]t is true that just because we haven't found such a justification, there could be one around the corner but I doubt it' (p. 117). He also claims 'there is no justification for claiming that one set of values is superior to another. That is, there is no demonstrably preferred form of human living' (p. 119). Thus, for Pitt, anyone who adopts any set of values falls victim to ideology. Yet Pitt himself, by virtue of subscribing to the norms of the value relativist, seems to fall victim to the ideology of value relativism.

Fourth, while criticizing ideology, Pitt also falls victim to another ideology, that of the technocrat, as evidenced by his own claims: 'the values of technology are those values that govern the process of acquiring, testing, and using knowledge for the purpose of changing the natural and social environment for the better' (p. 103). Here Pitt subscribes to the implicit value claim that technology actually changes the natural and social environment for the better. Yet there are examples of technologies (e.g., chemical pesticides that are broad-spectrum biocides, such as DDT; synthetic medical/- pharmaceutical technologies whose side effects are more dangerous than those of natural compounds) that arguably do not change the natural and social environment for the better. Yet Pitt does not even consider the possibility that not all technologies change the social or natural environment for the better. Pitt's omission, with its attendant presupposition,

suggests that he subscribes to a technocratic ideology.

Similarly, Pitt subscribes to the ideology of the autocrat, as is evident from his own words. He says that, 'It is not at all clear how technology . . . can threaten democracy. . . . Reliance on experts does not clearly represent a threat for two reasons. The interesting thing about experts is that they will ultimately be proven right or wrong, and when that happens, the results will be fed back into our evaluative system' (p. 105). Likewise Pitt claims, 'If we assume for the moment that we are in fact relying more and more on experts and technocrats, from this it does not follow that democracy is in any way threatened' (p. 101).

In making such bald claims, Pitt fails to assess, for example, the way democracy is threatened if free informed consent and if trial by jury were replaced by expert decision or expert fiat. Technological controversies arise every day because experts make some decision that threatens the health or welfare of the public, but the public has neither a vote nor a trial by jury to protect it. For example, as detailed in my 1993 volume, *Burying Uncertainty*, U.S. Department of Energy experts claim that the proposed Yucca Mountain high-level nuclear waste repository will be safe in perpetuity, yet the same experts (a) imposed a liability limit on damages that can be collected by nearby residents, in the event of nuclear disaster; (b) refused to give the state of Nevada copies of site studies; (c) argued for more lenient radiological standards, in opposition to the standards of the International Commission on Radiological Protection; (d) ignored the 70 percent of Nevadans who oppose the facility; (e) ignored the opposition of the state, that says its tourism industry will be crippled by the repository; (f) agreed to compensate the state only $5 million per year for the repository, a trivial sum completely unable to cover the damage even to the groundwater alone caused by the facility. Moreover, to save money, the same experts have (g) accepted a facility design according to which the waste will be unmonitored and nonretrievable, so that, if there is a problem, it cannot be solved easily. If the citizens of a state can be bullied by a federal agency, the DOE that has been criticized repeatedly by the U.S. National Academy of Sciences, by the U.S. Office of Technology Assessment, and by the U.S. General Accounting Office for poor scientific analyses and for failure to follow health, safety and environmental standards ó then such expert decisions clearly threaten democracy. Pitt fails to grasp this point and others like it, perhaps because he has not a single in-depth discussion of any technological controversy in his entire book. In the absence of looking at empirical data about technological controversy, Pitt resorts

to ideological claims about technology and democracy.

A *sixth* problem with Pitt's claims of ideology is that, perhaps because he subscribes to a positivist, technocratic, autocratic ideology, as already suggested, Pitt also subscribes to an ideology of laissez-faire technology: that technology is neutral and that technological mistakes will somehow be corrected and lead to good. He claims, for example, 'that tools and technical systems are inherently ideologically neutral' (p. 72) and that 'any particular tool or system is neutral with respect to ideological concerns' (p. 84). Pitt also says that 'should there be a massive DNA mistake, for example, I suspect that recombinant DNA research would be curtailed' (p. 111). Likewise he claims that 'the challenges this world produces are no different from some imaginary world where there are no technologies' (p. 120).

One wonders how anyone could claim that all technologies are ideologically neutral. Consider, for example, biotechnology designed to make food crops resistant to heavy doses of pesticides, even though the humans who eat the food are not so resistant. Or consider biological-warfare technology designed to kill combatants and noncombatants, soldiers and babies, indiscriminately. At a minimum, Pitt appears to forget that development of many technologies entails opportunity costs, and those costs often negate any neutrality. Pitt also forgets that when technologies are designed specifically for a particular purpose, such as indiscriminate killing, and when it is impossible to use those technologies in ways that thwart that purpose, the technologies therefore cannot be neutral.

A *seventh* ideological problem in Pitt's account is his assumption that massive technological mistakes will be corrected. This assumption is troublesome because it presupposes both that everyone knows about the mistakes and that vested interests do not try to cover them up. Johns Manville covered up, for years, the problems with asbestos technology and thereby threatened the lives of half a million workers. The Soviets tried for years to cover up Chernobyl, and the UK denied the hazards for several years. Such behavior, especially in situations where there are statistical casualties (deaths that are difficult to trace to a specific cause, such as a carcinogen, because they are revealed statistically), suggests that coverup may be as much the norm as correcting problems. Pitt does not even address the problem of large-scale coverup, even though there are obvious economic reasons for a manufacturer to cover up problems with its

technology, and even though the example of the Hubble telescope (which Pitt uses) is one whose failure was caused in part by coverup. If people cover up problems with a single scientific instrument, how much more likely are they to cover up problems with multiple technologies which are the source of even greater profits over many years? Pitt never addresses this question.

The upshot is that Pitt himself seems to be practicing ideology. This is the ideology of the positivist (as evidenced by his value relativism), the ideology of the technocrat (as evidenced by his belief that technological systems will be corrected and that ethical and political analyses of technology are inappropriate), the ideology of the autocrat (as evidenced by his belief that there is nothing wrong with experts' taking over much societal decision-making), and the ideology of the proponent of laissez-faire technology (as evidenced by his belief that all technologies are neutral).

5. SUCCESS OF THE VOLUME IN AVOIDING RHETORIC

Pitt also does not appear to avoid rhetoric in his claims, even though he repeatedly criticizes Winner for making a pitch to emotions (p. 75). Discussing Winner's mistakes, for example, Pitt bemoans the 'quasi-pathological misuse of conceptual schemes' (p. 77), and thus attributes use of allegedly ideological conceptual schemes to some sort of mental illness. Pitt's rhetorical language is also evident in other claims, such as his assertion that, 'Why are we so quick to point to the machines and wag our finger? Well the long and the short of it is that those who fear reified technology really fear men' (p. 99). Similarly, speaking of those who are resistant to technological change, Pitt says 'lacking a clear-cut and obvious justification for our own values, we realize the indefensible position for which we are posturing' (p. 117). Because Pitt has a tendency to attribute motives or aberrant psychological states such as pathology, posturing, fear of people to his opponents, he appears quite rhetorical. At least Winner attacks certain technologies as dangerous, whereas Pitt uses his rhetoric to attack people, something that seem far less defensible.

6. SUCCESS OF THE VOLUME IN DOCUMENTING ITS CLAIMS

Part of the reason that Pitt may fall into rhetorical excesses is that he does not document his assertions in systematic ways, even though he criticizes Winner for failing to back up his claims (p. 73). In precisely the case (nuclear

power) in which Pitt criticizes Winner for lack of documentation, Pitt himself fails to document his own opinions. Pitt challenges Winner for saying a 'catastrophic nuclear accident' is possible, but then instead of providing evidence that such an accident is unlikely evidence from the National Academy of Sciences, for example Pitt merely asks a string of rhetorical questions: How many Three-Mile-Island accidents have there been?   What counts as a catastrophe? And so on. Such rhetorical questions are not evidence for Pitt's point of view.

Indeed, in the six pages (pp. 71-76) on which Pitt criticizes Winner's writing about nuclear energy, Pitt makes numerous factually false assertions, yet he provides not a single citation to establish his alleged nuclear 'facts.' Pitt says, for example, that government's plan for dealing with radioactive waste is 'to use deep storage in salt caves' (p. 74), yet that plan has been permanently scrapped since before the 1987 Nuclear Waste Policy Act, when government opted to try disposal in geological tuff in Nevada. Likewise Pitt says that the Three Mile Island nuclear accident 'did not result in any provable loss of human life' (p. 74). Obviously Pitt is unaware of the study by Steve Wing, at the University of North Carolina, that showed elevated leukemias in the environs of Three Mile Island as a consequence of the accident.

Pitt's lack of documentation, even in the areas in which he criticizes Winner, is both inconsistent with his own alleged stance as well as unfair. Pitt's lack of documentation extends not merely to factual evidence for the erroneous assertions he makes against others but also to bibliographical and theoretical areas that should be included in his volume, but are not there.   Pitt has no treatment of technology assessment, beyond a couple of one-liners, and yet technology assessment is essential to epistemic evaluation of technology. Likewise Pitt has no treatment of risk analysis, beyond a couple of one-liners, and yet analysis of technological uncertainties and risk is essential to evaluation of technology. Apart from this lack of bibliographic and theoretical documentation, as already mentioned, Pitt has defined philosophy of technology in largely epistemic terms, while he has not documented any of the metaphysical or ethical studies in philosophy of technology. Again, as already mentioned, the work of phenomenologist philosopher of technology, Albert Borgmann, does not even appear in Pitt's bibliography, and neither does the work of ethicist philosopher of technology, Carl Mitcham. The Mitcham omission is especially telling because Mitcham literally began the field of modern philosophy of

technology, and he produced the first book in the U.S. on this topic.

7. CONSEQUENCES OF ADOPTING PITT'S REDUCTIONIST STANCE

What are the likely consequences of adopting Pitt's beliefs that technology is neutral, that flawed technology will be corrected, that one ought not do ethical and political analyses of technology, that one ought not fear the encroachments against democracy of decision-making by experts? If one does not point out the ethical, political and democratic flaws that have led to technological disasters, then it is certain that there will be more such catastrophes. Pitt's ideological stance seems likely to have the effect of sanctioning the status quo, accepting laissez-faire technology, and accepting the opinions of experts, regardless of their errors or vested interests.

Yet, according to the World Health Organization, the status quo has brought us 40,000 deaths per year in developing nations from use of chemical pesticides alone, many shipped from the U.S. because the technologies are banned for use in the U.S. On Pitt's scheme, the way of life that allows such deaths to continue is no worse than an ethical scheme that would try to protect these 40,000 victims. Likewise, Leigh's 1995 volume, *Causes of Death within the Workplace*, reveals that, just within the U.S., chemical, radiological, and other technologies cause approximately 100,000 premature deaths per year from accidents or diseases induced by workplace exposures. These 100,000 deaths are approximately 5 times greater than those induced by the illegal drug trade and approximately 4 times greater than those caused by AIDS. Yet, on Pitt's scheme, one ought not adopt a moral stance toward such deaths and attempt to prevent them. Such deaths are likely to continue and to be condoned, if philosophers do not evaluate the ethical, economic, political, and metaphysical causes of such a catastrophe. And if so, Pitt does all people a disservice by sanctioning business as usual. Even worse, he does philosophy a disservice by failing to defend his own ideological positions while he throws stones at other alleged ideologies.

8. CONCLUSION

Pitt's selective citation of the philosophy of technology literature, his countering the claims of his opponents with falsehoods and without citations, and his falling into ideology and rhetoric are problems about which this essay has been especially critical, in large part because Pitt was so brutal in his criticism of

others for allegedly making the same mistakes. When someone like Pitt proceeds from a moral-relativist, positivist, technocratic, autocratic stance, then one expects him to defend his position, particularly because he is critical of others who do not share his stance. Yet there is no adequate defense anywhere in Pitt's book. He argues for his ethical relativism, for example, in one short, 7-sentence paragraph that is nothing more than a string of question-begging claims. Ethics demands better.

Given that a philosopher of science could make a good case for an epistemic emphasis in philosophy of technology, the fundamental problem with Pitt's volume is not its overall theme. The problem is that he has handled his theme badly, that he has so many gratuitous, undocumented, ideological claims, while he criticizes others for these faults. Pitt should be wary of throwing stones at other thinkers when the glass of his own house is so extraordinarily thin.