

Beyond Science Wars Redux: Feminist Philosophy of Science as Trustworthy Science Criticism

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Bruno Latour is not the only scholar to reflect on his earlier contributions to science studies with some regret and resolve over climate skepticism and science denialism. Given the ascendancy of merchants of doubt, should those who share Latour's concerns join the scientists they study in circling the wagons, or is there a productive role still for science studies to question and critique scientists and scientific institutions? I argue for the latter, looking to post-positivist feminist philosophy as exemplified by Alison Wylie and Lynn Nelson, among others, as a guide. Feminist philosophers of science who ground their analysis in a detailed understanding of scientific practice are not science's champions nor its antagonists, but they do stand in a distinct relationship to science. If not merchants of doubt, are they scientific gadflies or perhaps in scientific loyal opposition? Though these notions can underwrite useful approaches to science studies, neither captures the distinctive interdependency and interestedness of feminist philosophers and science. I suggest that we would be better served by the notion of trustworthy science criticism, building on the analyses of trust and trustworthiness by Annette Baier, among others, attendant to the dynamics of interdependency in trust relationships.

Speaking with Jop de Vrieze for *Science* in October 2017, Bruno Latour resists the characterization of sometimes heated debates over science studies (in which he himself figured prominently) as Science Wars, while conceding its accuracy for more recent events. "Nothing that happened during the 90s deserves the name 'war.' It was a dispute, caused by social scientists studying how science is done and being critical of this practice," Latour says. "We're in a totally different situation now. We are indeed at war" (de Vrieze 2017). De Vrieze persists in calling both conflicts "wars" throughout the interview: perhaps the narrative is too hard to resist—Bruno Latour switching sides in the Science Wars, science critic turned science defender. Yet

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Latour makes for an unruly apostate. “There was some juvenile enthusiasm in my style,” he concedes. “I was certainly not anti-science, although I must admit it felt good to put scientists down a bit” (de Vrieze 2017). Or as he similarly observes in an October 2018 profile in the *New York Times*, “I think we were so happy to develop all this critique because we were so *sure* of the authority of science” (Kofman 2018). Latour affirms the importance of rebuilding trust in science while resisting descriptions of climate change as “just a fact,” and unlike his friend and ally Clive Hamilton (Hamilton 2014; 2017), he would not have us rebuild trust in science by refraining from questioning or criticizing it.

If not “strategic positivist deference to science” (cf. Latour 2015), what critical stance is open to science-studies scholars today that differentiates them from climate denialists and merchants of doubt (Oreskes and Conway 2011)? For his part, Hamilton rejects postmodernist and constructivist scholars as at best ill-equipped to counter denialism and at worst aiding their cause (Hamilton 2014). After the March for Science in April 2017, Norah MacKendrick asks whether sociologists of science can defend science without compromising their scholarly ideals (MacKendrick 2017). In response to MacKendrick, Owen Whooley describes himself and other sociologists of science as “in a pickle”:

We have made it our life’s work to question objectivity, to illuminate the ways in which science is shaped by “extra-scientific” concerns, and to catalog science’s problematic dealings with power. But if the alternative is Trump? If a choice must be made, count me among the scientists marching. (Whooley 2018, 252)

With this most recent antiscience turn, should philosophers and other science-studies scholars put criticism aside and join the scientists they study in circling the wagons, or is there a role for critical scholarship that questions or challenges scientific practices and institutions? For Whooley, threading the needle between supporting science and studying it presents a new and urgent challenge:

Our program has been to take science down a peg by showing how it fails to live up to its own ideals. But we have done less to articulate what those ideals should be, or what kind of expertise might warrant our support. . . . Future endeavors should look into this systematically, but the urgency of the moment cannot wait. To rise to the present challenge, we must cobble something together. (253)

But I do not think we need to cobble something together: postpositivist feminist philosophers of science have been here before, and not so long ago. The naturalized approach taken by Alison Wylie, Lynn Nelson, and others, which Kristen Intemann has characterized as *feminist standpoint empiricism* (Intemann 2010), is particularly instructive. As Wylie wrote in “The Engendering of Archeology” twenty years ago, “Given political and conceptual commitments that make corrosive hyperrelativism as uncongenial as unreflective objectivism, feminists have been exploring positions between, or ‘beyond,’ these polarized alternatives” (Wylie 1997a, 88). Feminist

philosophers of science grounding their analyses in a detailed understanding of scientific practice are neither deferential to science nor its antagonist in a war on science, but they do stand in distinct relationship to science, and taking a cue from feminist care ethics, I take this relationality as significant. How is this best described: if not merchants of doubt, are feminist philosophers scientific gadflies, or perhaps scientific loyal opposition? Though these notions might underwrite useful approaches to science studies, neither of them captures the distinctive interdependency and interestedness of feminist philosophers of science toward their objects of inquiry. We would be well served by understanding postpositivist feminist philosophy of science as an exemplar of *trustworthy science criticism*, building here upon the analysis of trust and trustworthiness by Annette Baier, among others, particularly well attuned to the dynamics of interdependency in trust relationships.

I. WHY (NOT) REFRAIN FROM QUESTIONING SCIENCE?

Before turning to the virtues of postpositivist feminist philosophy of science as a model for trustworthy science criticism, let us consider some possible reasons to refrain—and conversely, not refrain—from questioning science during wartime (and notice the militaristic rhetoric that carries throughout here):

The enemy of my enemy is my friend. We must oppose climate denialism and other antiscience movements by any means necessary, or so says this particular line of reasoning. Even granting the opposition of science studies to climate denialism and the wisdom of this platitude, the problematic assumption remains that we should not question or challenge our friends. Yet the most that follows here is that query and critique should be done in good faith, with good will toward those scientists (and attendant scientific work, practices, and institutions) questioned and engaged—which is to say, an approach to questioning science that is compatible with and actively grounded in trustworthy relationality.

One cannot fight on two fronts. Although peacetime might allow for questioning science, this line of reasoning grants, we cannot afford the luxury of questioning science given the simultaneous challenge posed by antiscience forces. Some working scientists might take themselves to be under attack in such a way. Yet this line of reasoning commits an error that is complementary to the previous one: as we need not refrain from questioning our friends, questioning science need not put us in antagonistic opposition to scientists or their work. Here is one more way in which the militaristic framing of “Science Wars” privileges one reading (and closes off others) of the relationship between scientists and science-studies scholars.

Save our powder. We should use the limited time or resources spent questioning science instead for questioning and criticizing climate denialists and other antiscience movements—the primary driver for this line of reasoning is opportunity cost. And certainly, some of the best work in science studies in recent years has squarely engaged with manufactured doubt, from second-hand smoke to climate change (cf. Michaels 2008; Oreskes and Conway 2011). Yet Latour would rightly remind us that

these projects are not mutually exclusive (Latour 2017): they might not even be different projects, as when critical engagement with climate science builds the hermeneutical resources needed to critically engage climate denialism as well. Recall also Latour's suggestion that the best way to rebuild public trust in science is to demythologize scientists and their work. The argument that we should question science denialism rather than science presumes a rather clear demarcation between scientists and science denialists, which overlooks the problem of hyperextended expertise, as credentialed and seemingly credible scientists adopt an authoritative pose on issues beyond their disciplinary expertise. Finally, this line of reasoning seems to presume that to be an object of study is to be undermined or delegitimized—that is, science criticism as an entirely negative enterprise. This may be an understandable reaction when critics approach their work as taking science down a peg, but this is not the only critical stance open to us.

Give no aid to the enemy. Even if unintended, might questioning scientists bolster climate denialism and other antiscience forces? This seems to be Hamilton's worry about postmodernism in science studies and public understanding of science (Hamilton 2014). Even if this is cause for concern, however, it is less a reason to refrain from questioning science than it is a reason to do it well. My suggestion is that post-positivist feminist philosophy of science shows us a particularly fruitful way of doing it well.

The inadequacy of reasons to refrain. If we take questioning and critically engaging science as a default position for science studies, then sufficiently compelling reasons to refrain must be provided in order to warrant a change. If merchants of doubt and climate denialists are unaffected by science-studies scholarship, this could underwrite a deflationary argument for the default position; we might also worry that strategic essentialism or positivism might backfire and thereby strengthen antiscience rhetoric. But my argument for trustworthy science criticism does not take either of these approaches. I agree with Latour that questioning science is important for rebuilding trust, but I also want to affirm the symmetry of that proposition: that is, to affirm the value of trustworthy science criticism for science, as well as the value of trustworthy science for society.

II. TRUSTWORTHINESS AS A CRITICAL STANCE

My suggestion, which is not a novel insight so much as a timely reminder, is that trustworthy science criticism is a methodological stance that avoids the presumptive dichotomy between challenging science and defending it, and postpositivist feminist philosophy of science offers a good exemplar for trustworthy science criticism in action. This is not to say that trustworthy criticism is the only methodological stance available to differentiate one's work from merchants of doubt or "normatively inappropriate dissent" (de Melo-Martin and Intemann 2018) in general. Consider the loyal opposition in parliamentary systems of government (Durkin and Gay 2006; Gerken 2014): like trustworthy science criticism, a loyal opposition is built on a

recognition that serious disagreement can be coupled with shared commitments, such as the commitments to representative democracy and procedural justice. Another critical stance in the conceptual space between simple deference and outright hostility is the anarchist approach by Paul Feyerabend, who adopts the role of a pesky but useful *gadfly* to science, not to distract or detract from science but to generate the productive conflict and tension necessary for progress (Feyerabend 1978; Lloyd 1997a).

Though interesting and possibly worthwhile stances, neither of these entirely align with trustworthy criticism. I think Baier gives a particularly perceptive account of the nature of trust, starting with the point that trust is crucial and messy (Baier 1986; 1991). Trust can be placed in us without our consent or even our recognition; it can be morally healthy or corrupt, rational or irrational. Rational trust, Baier explains, requires “good grounds for such confidence in another’s good will, or at least the absence of good grounds for expecting their ill will or indifference” (Baier 1986, 235). Making space for normative evaluation allows for a distinction between being trusted and being trustworthy, though the fact that one is not trusted might be some evidence against one’s trustworthiness. This account models trust as a three-place relation of entrusting. *A trusts B with C* (237): trust and trustworthiness so understood are not generalized but standing in relation to specific trusting (A) and trusted (B) parties, either of whom may be individual or group agents, and entrusted objects (C) both material and abstract. This sort of analysis makes space for both reciprocal and nonreciprocal trust relationships—B may or may not also trust A, with C or something else—as well as self-trust (or distrust) and self-trustworthiness (or untrustworthiness), where A and B are the same party. It also allows for the possibility that trustworthy science criticism can come from either outside or within a scientific community.

Perhaps most significant is Baier’s identification of trust as a form of dependency distinct from mere reliance: trust not just as predicting or relying on others’ steady habits but relying on their competence and goodwill toward oneself and entrusted objects. Karen Jones characterizes trust as “an attitude of optimism that the good will and competence of another will extend to cover the domain of our interaction with her, together with the expectation that the trusted will be directly and favorably moved by the thought that we are counting on her” (Jones 1996, 19). Paul Faulkner makes a similar point regarding trust in testimony as affective trust: when a listener affectively trusts a speaker’s testimony, he expects the speaker recognizes his need to know something, and thus expects that the speaker’s telling him is done given this recognition of his need to know (Faulkner 2007, 888). Along these lines, we may understand trustworthy science criticism such that the epistemic agent or agents is competent and conscientious in formation and presentation of their critical analyses of science. Genuinely trustworthy science-studies scholarship is offered not just reliably but conscientiously: sincerely, affectively responsive to epistemic interdependency and attendant to successful uptake by trusting parties toward objects of trust. This account of scientific trustworthiness is compatible with Miranda Fricker in her characterization of a good informant as someone who will tell us the truth about a

proposition at hand, with distinguishing traits of competence, trustworthiness, and indicators of both (Fricker 2007, 144). Competent knowers cannot be good sources if others cannot tell as much, so the good informant must evidence her status as a good informant, which is audience-oriented in a way that takes seriously the interpersonal dimensions of our specific relationships such as differential expertise, social location, mutual expectations, and context-sensitive conversational implications.

III. BETWEEN OBJECTIVISM AND HYPERRELATIVISM

Feminist philosophers of science stand in interested relationality to science: as Wylie rightly reminds us, “feminists have a *prima facie* interest in the sciences and scientific methods as in principle a crucial source of just the kind of understanding we need to proceed effectively in the pursuit of our goals of creating a gender-equitable world” (Wylie 1997b, 36). In her article “Science and Anti-Science,” Elizabeth Lloyd systematically and exhaustively responds to critics of feminist science studies (Lloyd 1997b), such as Paul Gross and Norman Levitt, and Lewis Wolpert (Wolpert 1992; Gross and Levitt 1994). Among the many misconceptions of their targets that Lloyd finds in these critics are misattributions of motive and intent: “The critics’ most profound error is that they have misidentified feminist and social scientists as being overly *hostile* to science, rather than accepting them as *allies* who genuinely share their concerns and foundational political goals regarding science” (Lloyd 1997b, 224). So, my suggestion is that those seeking a model of trustworthy science criticism as an alternative and corrective to contemporary science denialism need not cobble something together, but instead find it in postpositivist feminist philosophy of science, explicitly positioned between unreflective objectivism and hyperrelativism. By design, as Nelson and Wylie observe, feminist values and politics are deeply and constructively contrary to relativism even as feminists also refuse to cede objectivity, empiricism, or evidential assessment to unreflective objectivism (Nelson and Wylie 1998). They resist a total reduction of evidential or empirical considerations entirely to political ones—the world pushes back—but also dispute the presumptive dichotomy between factive and value-infused inquiry. The driving goals here are not only negative denigration but positive identification and promotion of *better science*, in which better is understood not just hypothetically but in reference to actual exemplars from scientific practice: for example, on gendered practices in archeology (cf. Gero 1991; Wylie 1992; Wylie 1993; Conkey and Gero 1997; Wylie 2002). For this reason, naturalism is another distinctive feature, with methodological emphases on detailed case studies and attention to the details of science in historical context and actual practice. As Nelson and Wylie put it, “many feminist philosophers of science are just as firmly committed to naturalized and socialized programs of research in philosophy of science as they are to feminist modes of inquiry in philosophy” (Nelson and Wylie 1998, 2).

What does this approach have to teach us about questioning science in uncertain times? I would suggest three lessons:

Challenge dichotomous thinking and rhetoric. The options for engagement with science are not only deference or delegitimation. Although this may seem obvious considered abstractly, when scientific institutions and values face antagonistic, politically influential opposition, it can be difficult to see anything else short of deferential defense. Feminist philosophy has been here before, where the specter of hyperrelativistic critique so rattled some working scientists and self-appointed defenders that multiple approaches to science studies were lumped together in books such as *Higher Superstition* (Gross and Levitt 1994) and *A House Built on Sand* (Koertge 1998), in dichotomous framings exposed and pulled apart by Elizabeth Lloyd (Lloyd 1995; 1997b) and Elizabeth Anderson (Anderson 2006).

Values and politics—both relevant and open to critique. A particular form of dichotomous thinking upended by postpositivist feminist philosophers of science is the recognition of values and politics in science. Consider the familiar claim that good science is at least ideally value-free science, accompanied by suspicion and denigration of scientific projects or institutions for failure to stay sufficiently pure, sufficiently value-free, on the assumption that values and politics—any values and politics, regardless of specific content—undermine scientific credibility. But rejecting a value-free ideal need not imply that anything goes, in terms of guiding values or politics; indeed, the presumption that it must retain the underlying dichotomous thinking. Anderson reminds us that recognition of values or politics as scientifically relevant does not elevate them beyond critical engagement (Anderson 2006). Bringing together feminist epistemology and ethics, Anderson rejects the presumptive asymmetry that scientific knowledge ought to be generalizable, public, and objective, whereas values are hopelessly subjective. On climate change, for example, she argues that value-forward questions (justice and injustice, accountability and obligation, rights and responsibilities) demand reasoned, reflective investigation as well. If the credibility of scientific claims or institutions is undermined by their value-ladenness, what matters is not the mere fact of value-ladenness but the specific values themselves, which then must be discussed, debated, and defended.

Virtues of naturalistic methodology. Postpositivist feminist philosophy of science is generally characterized by a methodological commitment to engage with science in practice and in piecemeal, not just abstractly or broadly. Exemplars like Lloyd's work on androcentric bias in evolutionary explanations of female sexuality (Lloyd 1993; 2005) and Wylie's work on gender bias in archeology (Wylie 1992; 2002) derive their force from skilled interactional expertise (Collins 2004; Plaisance and Kennedy 2014). The guiding questions of feminist philosophy of science "cannot be pursued from philosophical armchairs" (Nelson and Wylie 1998, 21). The details matter; they are where feminism and empiricism meet. Androcentric science is not merely politically unacceptable but bad science for its empirical inadequacies, silence on important questions, and thinly justified androcentric premises. Philosophy of science and science-studies scholarship taking this methodological tack is better equipped than strategic positivism to expose the inadequacies of manufactroversies (cf. Ceccarelli 2011) and other denialist rhetoric. Doubt and uncertainty are not ends in themselves; identifying them is not a cogent stopping-point without further argumentation within

which such points serve as initial premises. Denialist rhetoric raising doubt without further argumentation is vulnerable to the sort of careful evidential assessment that feminist philosophers of science have used to great effect in exposing inadequacies of androcentric science.

IV. CLARIFICATIONS AND CONCERNS

My suggestion then is that we can and often do critically engage science within trustful relationships, such that our work takes the form of trustworthy science criticism, neither deferential nor antagonistic to scientific practice. With Baier, a three-place account of trust shows the importance of not only reliability but also good will, and not only among trusting parties but also with regard to that which is entrusted, where objects of trust in this case refer less to material objects and more to scientific practices and their epistemic basis.

By this point I hope it has become clear how this approach to questioning science is meaningfully different from that taken by merchants of doubt. It is not merely a difference of intention, but of function and methodology. For postpositivist feminist philosophy of science, uncertainty and doubt are not stopping-points for critique; there is no presumption of a value-free ideal for good science, whether explicitly endorsed or tacitly assumed in tactical antagonism to insufficiently pure science. For a merchant of doubt it is not necessary to provide a pure alternative so long as their object of criticism loses credibility, and merchants of doubt fail to meet Baier's moral test for trust that, by contrast, feminist philosophy of science as trustworthy science criticism must certainly prioritize.

Recall also the ideas of scientific gadflies and scientific loyal opposition, neither deferential nor antagonistic to science. Like trustworthy criticism, a loyal opposition is predicated on recognition that significant disagreement is coupled with shared commitments. But the relationship between government and a loyal opposition is symmetrical in a way that scientists and science-studies scholars are not: today's loyal opposition may be in government after the next election, and vice versa—this is a defining feature of the relationship, as each side knows, and knows that the other side knows. Generally speaking, science studies is not in opposition, loyal or otherwise, to science. The notion of a loyal opposition to science carries connotations of partisan politics, which may be particularly unhelpful in the contemporary US political context; the point is not to invite a reading of science studies as in loyal opposition to the Trump administration or climate-denialist and antiscientific forces ascendant in the EPA or other government agencies. Where the relationality in question is between science studies and scientists, the notion of loyal opposition might then be misleading.

A trustworthy science critic and Feyerabendian gadfly share similar outsider positioning, not necessarily of science but engaged with it, and specifically engaged, questioning, and challenging with the aim of improving it. They also share a principled refusal to accept as given whatever paradigmatic or hegemonic assumptions happen to govern a scientific community or society at a certain time. Yet the gadfly is self-

avowedly ironic (Feyerabend 2010, xvii) and Dadaist (xiv): worth engaging but not especially meant as trustworthy, like a useful trickster coyote (cf. Haraway 1991) rather than the interested interrelationality of postpositivist feminist philosophy and science.

To conclude, let us consider three questions concerning the possible inadequacies or at least implications of this approach:

Do scientists actually trust philosophers and science-studies scholars? Perhaps they don't, either because they actually distrust, don't particularly care, or don't even know about our work. Even if this is so, however, we can be trustworthy and aspire to trustworthiness whether or not we are actually trusted; and even if we are not trusted by working scientists, we can be trustworthy in how we present and direct science criticism to other audiences.

Are philosophers and other science-studies scholars actually trustworthy?—for scientists, or various nonexpert publics? Perhaps we are not, and so scientists are right to refrain from trusting our work. If this is so, however, it is perhaps even more reason to aspire and work toward trustworthiness.

Should philosophers and other science-studies scholars even aspire toward trustworthy criticism? Perhaps we should not, perhaps our relationship to science should be characterized by clinical detachment or antagonism rather than goodwill or conscientiousness. Alternatively, perhaps we should not because we should be trustworthy to other parties, which is taken to be at odds with being trustworthy to scientists.

These questions cannot be easily dismissed, nor should they be. I take it that one explanatory and directive strength of postpositivist feminist philosophy of science as an exemplar for trustworthy science criticism is that it forces these questions of specifying trustworthiness. Taking this approach seriously means asking *With whom am I in relationships of trust or not?* and *To whom am I or should I be trustworthy or not?* It is true that the particular approach to feminist science studies I have been discussing is not positioned against or antagonistic to scientists: as Wylie puts it, “where feminism is a political perspective based on empirical presuppositions about the way the world actually is . . . it is crucial that feminist not reject science as a mode of inquiry” (Wylie 1997b, 51). Criticism of androcentric science comes alongside recognition and indeed celebration of good science, which might be done by marginalized individuals or groups not granted the credibility or authority they deserve, but rightly recognized as scientific nonetheless. This approach is well-suited for science criticism that looks to illuminate marginalized or ignored knowledge as properly scientific, and less so for science criticism that looks to completely upend the social-epistemic status of scientific knowledge altogether.

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