////// studie / article /////////////////////////////////////

CRITICAL CONTEXTUAL EMPIRICISM AND THE POLITICS OF KNOWLEDGE

Abstract: *What are philosophers doing when they prescribe a particular epistemology for science? According to science and technology studies, the answer to this question implicates both knowledge and politics, even when the latter is hidden. Exploring this dynamic via a specific case, I argue that Longino's "critical contextual empiricism" ultimately relies on a form of political liberalism. Her choice to nevertheless foreground epistemological concerns can be clarified by considering historical relationships between science and society, as well as the culture of academic philosophy. This example, I conclude, highlights a methodological challenge: philosophers of science should consider the political ideals and accountability entailed by their prescribed knowledge practices.*

Keywords: *objectivity; democracy; co-production; philosophical methodology; science and technology studies*

Kritický kontextuální empirismus a politika znalostí

Abstrakt: *Co dělají filosofové, když předepisují vědě určitou epistemologii? Odpověď na tuto otázku z hlediska studia vědy a technologie zahrnuje jak vědění, tak politiku, a to i v případě, že je tato politika skrytá. Tuto dynamiky prozkoumám na konkrétním případě a ukážu, že „kritický kontextuální empirismus" Helen Longino se nakonec opírá o určitou formu politického liberalismu. Její volbu postavit do popředí epistemologické otázky lze nicméně objasnit na základě úvahy o historických vztazích mezi vědou a společností, jakož i o kultuře akademické filosofie. Tento příklad nakonec poukazuje na metodologickou výzvu: filosofové vědy by měli zvážit politické ideály a odpovědnost, které s sebou nesou jimi předepsané postupy poznání.*

Klíčová slova: *objektivita; demokracie; koprodukce; filosofická metodologie; studium vědy a technologie*

MATTHEW SAMPLE
Institute for Experiential AI
Northeastern University
Huntington Ave 177, Boston, MA, USA
email / m.sample@northeastern.edu
ⓘD 0000-0001-5290-1458

1. Introduction: Co-productionist Challenges for Epistemology

What are philosophers doing when they present a particular epistemology or procedure for science? The simple answer might be that they are describing how a knowledge practice does work or should work, which may suggest ways to change existing scientific institutions or to evaluate suspect claims to knowledge. I once overheard a philosopher of science explain that they were "just trying to devise better epistemologies for science." Recent theoretical work in science and technology studies (STS) directly suggests that this line of thinking is deeply misleading. Sheila Jasanoff's *States of Knowledge*, in particular, synthesizes decades of science studies research in terms of an "idiom of co-production," referring to the ways in which knowledge practices and social order are mutually co-produced.[1] In the context of STS and in social theory more broadly, this way of speaking is often used to avoid the social reductionism implied by "(mere) social construction" as well as simplistic progressivist narratives about the history of science and technology.

The idiom of co-production is also relevant beyond the academic study of scientific practice. It suggests that, as in science, there is a political and ethical side to every epistemology, even in pages of philosophy journals and in debates over evidence-based policy. Why? Almost immediately an epistemology excludes certain people and ways of speaking from authoritative processes of knowledge production. These excluded individuals are not always bad faith actors or incapable of reasoning but are often implicated publics who do not appreciate their diminished standing. Even in the news during the recent global pandemic, we saw proponents of treating COVID-19 with hydroxychloroquine resent institutional preference for randomized control trials, calling for anecdotal methods and even citing infamous philosopher Paul Feyerabend as an intellectual ally. Thinking beyond momentary controversies of the present, STS scholarship provides more consequential examples from every century, like the fight for epistemic credibility between AIDS treatment activists and the 1980s biomedical establishment.[2] In one widely cited text in STS, Steven Shapin and Simon Schaffer document the connections between experimental methods and public reason in 17th century England, concluding with a bold declaration: "Solutions to the problem of knowledge are solutions to the problem of social

---

[1] Sheila Jasanoff, "The Idiom of Co-Production," in *States of Knowledge: The Co-production of Science and the Social Order*, ed. Sheila Jasanoff (New York: Routledge, 2004), 1–13.
[2] Steven Epstein, *Impure Science: AIDS, Activism, and the Politics of Knowledge* (Berkeley: University of California Press, 1996).

order. […] Hobbes was right."[3] On the basis of such cases, a methodological sensitivity to the entanglement of knowledge and politics has become a key pillar of STS scholarship.

This feature of knowledge practices has not been lost on all philosophers of science, with analogous insights dating back even to the Vienna Circle (according to some accounts). Feminist philosophy of science, in general, has made the consideration of knowledge and social order a core component of philosophical inquiry, refusing to arbitrarily bracket questions of power. But as described by Sandra Harding, co-productionist STS, feminist science studies, and philosophy of science represent at best partially overlapping subfields, kept apart by pretenses of neutral descriptive scholarship and exclusionary academic norms.[4] In response to this intellectual and institutional disconnect, the present paper will re-interpret the works of Helen Longino in light of the co-productionist idiom. Specifically, I will examine some ways in which her "critical contextual empiricism,"[5] as a prominent exemplar of prescriptive and value-sensitive epistemology of science, is grounded in a form of liberalism. Out of this political interpretation of her epistemological account, a more fundamental question will emerge for philosophical scholarship on science: with what authority or argument can a philosopher propose a set of epistemic-political ideals? Just because a philosopher publishes a vision of a well-ordered society doesn't mean that said vision deserves any uptake among our fellow citizens; any claim to a philosophical brand of expertise needs to be elaborated. I pursue these issues in turn, arguing that i) Longino indeed pursues a co-productionist strategy but problematically preferences epistemological registers, and ii) that her authority as a philosopher rests on an implicit political commitment to advocate for others.

The present paper thus advances two overlapping projects, each with slightly different audiences. For commentators on critical contextual empiricism and sympathetic STS scholars, I conduct an interpretive inquiry intended to lend further clarity about the structure and significance of Longino's scholarship. This specialist audience is likely to find the entanglement of politics and knowledge in critical contextual empiricism unsurprising, but my proposal may provide new ways of approaching existing debates,

---

[3] Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump* (Princeton: Princeton University Press, 2011), 344.

[4] Sandra Harding, *Objectivity and Diversity: Another Logic of Scientific Research* (Chicago: University of Chicago Press, 2015).

[5] Helen Longino, *Science as Social Knowledge* (Princeton: Princeton University Press, 1990).

such as unsettling the distinction between "cognitive" and "non-cognitive" (or feminist) values in recent philosophical debates about Longino's program.[6] In the process, I also hope to contribute to a very small literature[7] on how we might advance her account in direct conversation with STS theory and its political sensibility.

For a more general audience of philosophers of science and prescriptive epistemologists, however, the project is somewhat more provocative. If we take critical contextual empiricism as only a case study, representative of any attempt to delineate proper reasons for belief, then a more universal challenge emerges: the political implications – who is included and who is silenced, the distribution of epistemic authority, etc. – of one's epistemology of choice. This is not to say that belief should be motivated directly by political considerations but rather that we cannot order knowledge practices without simultaneously ordering society, thus creating a higher burden of proof for scholars in epistemology and philosophy of science. It is this methodological insight that motivates the last sections of the paper. Responsible scholarship, I conclude, requires a careful attentiveness to this dynamic, bringing the concerns of political theory back into conversations regarding science, objectivity, truth, and knowledge.

2. Connecting Critical Contextual Empiricism and STS: A Historical Detour

The entry point into my interpretive inquiry is the still unspecified relationship between critical contextual empiricism and a core tenet of STS theory, the co-productionist idiom. To what extent does Longino's account employ a co-productionist approach to knowledge, equally epistemic and political? As hinted above, these first-order hermeneutic questions also have broader significance. The connection between epistemology of science, political theory, and STS (or lack thereof) has been an important and divisive subject at least since the publication of Kuhn's *The Structure of Scientific Revolutions* and the Science Wars that followed. Even today, scholars continue to disagree about the proper place of sociality and political considerations in knowledge practices, as evidenced by explicit

---

[6] Miroslav Vacura, "Lacey's Concept of Value-Free Science," *Teorie vědy / Theory of Science* 40, no. 2 (2018): 211–29.
[7] Jaana Eigi, "'Knowing Things in Common': Sheila Jasanoff and Helen Longino on the Social Nature of Knowledge," *Acta Baltica Historiae et Philosophiae Scientiarum* 1, no. 2 (2013): 26–37.

debates over the value-free ideal and social constructivism, as well as by the implicit separations of disciplinary communities from one another. It is useful, I think, to re-visit these concerns but through a more focused case study on critical contextual empiricism.

For understanding how Longino's work fits into these debates, the most relevant passages are in *The Fate of Knowledge*[8] where she evaluates a widely cited historical example of co-production: Shapin and Schaffer's *Leviathan and the Air-Pump*.[9] In their analysis, Shapin and Schaffer propose that the success of Robert Boyle's empiricist program (symbolized by his experiments centered on the air-pump) is "co-produced"[10] with a particular vision of social order in Restoration England; the beliefs of the English public are to be managed not by a monarch's decree but by publicly performed experimental and sensory demonstrations. Thomas Hobbes, to the contrary, is portrayed as a sort of competitor to Boyle, who fails to find an equally persuasive mode of politics for his non-experimental, Reason-based epistemology. Longino admits that the story does an excellent job illustrating the "parallels between conceptions of political authority and cognitive authority," but she is not convinced by Shapin and Schaffer's "causal argument," an approach which she criticizes as extremely ambiguous.[11] This expectation of a "causal argument," though made in passing, may expect too much from *Leviathan and the Air-Pump*. Generally, Shapin and Schaffer do not make any explicit reference to the causes of belief. The closest they get, perhaps, is when they say that they are interested in "how and why" certain beliefs were taken as true.[12] Many philosophers will not be satisfied with such ambiguous wording, but I suggest that looking for an airtight causal argument is misdirected. I will explain my alternative reading below, but first it would help to better understand the worry in *Fate of Knowledge*.

Longino's phrasing ("causal argument") makes sense if we notice that she interprets *Leviathan and the Air-Pump* as a canonical text of Strong Programme Sociology of Scientific Knowledge (SSK), as illustrated by Barry Barnes's and David Bloor's "Relativism, Rationality, and the Sociology of Knowledge."[13] She summarizes their stance on causal explanation as: "for

---

[8] Helen Longino, *The Fate of Knowledge* (Princeton: Princeton University Press, 2002).

[9] Shapin and Schaffer, *Leviathan and the Air-Pump.*

[10] To paraphrase them using Jasanoff's terminology.

[11] Longino, *Fate of Knowledge*, 20.

[12] Shapin and Schaffer, *Leviathan and the Air-Pump*, 14.

[13] Barry Barnes and David Bloor, "Relativism, Rationalism and the Sociology of Knowledge," in *Rationality and Relativism*, eds. Martin Hollis and Steven Lukes (Oxford: Blackwell, 1982), 21–47.

any given belief, regardless of whether it is true of false, rational or irrational, its being taken to be true or reasonable in a context requires a causal explanation." That's a moderate reading of their argument. Longino also considers that Barnes and Bloor are proposing a stronger thesis: "for any given belief, regardless of whether it is true of false, rational or irrational, its being taken to be true or reasonable in a context requires a causal explanation that makes no reference to the truth of or reasons for the belief." Given this, Shapin and Schaffer may be read as committing an error somewhere along this dimension, making an illicit causal explanatory connection between Boyle's beliefs and something (merely) social.

Longino concludes that, while Shapin and Schaffer provide a nice story about the parallels between cognitive and political authority, they fail to draw any causal arrow, to show that Boyle's success in establishing a program of experimentalism is *explained by* a social interest in a "parliamentary form of life." Why not? Part of the problem, according to Longino, is that Shapin and Schaffer haven't established the appropriate counterfactual (as philosophers often expect of causal arguments). They should, but do not, adequately show how Hobbes's preferred political system could have led to a viable *non*-experimental epistemology. We don't have much to go on, of course, since Hobbes's methods where never widely adopted or institutionalized like those of Boyle. It is important to note, here, that our possible dissatisfaction with their causal argument should not be grounded in an unreflective foundationalism; it would be begging the question to rule out the viability of Hobbes's program simply because we sympathize more with anti-authoritarian experimentalism. Longino is not making this mistake.[14]

By noting the lack of a counterfactual, Longino makes a more fundamental criticism. She seems to reject the significance of the explanation that (in her words) "the political dimension of Boyle's experimental method provided an incentive to adopt it."[15] Even if we allow Shapin and Schaffer's example, it does not, she says, "lead to radical relativism or render cognitive explanations moot." Notice that her language of "incentive" treats political commitments as something that impinge on knowledge like a coercive force or a cynical strategy, interfering with or replacing rationality, all *how* and no *why*. This gloss of Shapin and Schaffer seems mistaken and ignores

---

[14] At least not in the passage described here. Her own program of "contextual empiricism" would rule out Hobbes's program, so the reader has to carefully sort out which of her claims depend on her preferred ordering of science.

[15] Longino, *Fate of Knowledge*, 37.

their deep engagement with the epistemological and political arguments deployed by Hobbes and Boyle.[16] Deciding who can credibly interpret experimental results can be a reasonable, even rational process, but the politics of inclusion and exclusion remain. The second chapter of *Leviathan and the Air-Pump,* for example, exemplifies this feature of knowledge practices by unpacking Boyle's experimentalism. It illustrates how he and his colleagues at the Royal Society justified a visual-attestive mode of knowledge production to others by publicly arguing that there are connections between the mechanical structure of nature, right belief, and disciplined sensory experiences of the world. At the same time, their parallel attempt to *institutionalize* this epistemology in Restoration England determined who was included or excluded from the community of knowers. Boyle's experimentalism thus presupposes an ideal form of political order in which non-experimentalists will be prevented from making authoritative claims about the world and excluded from participation in public reason, whether or not they are personally convinced by the rational force of Boyle's theory of knowledge. By considering only *causally* deterministic roles for political considerations in *Leviathan and the Air-Pump*, Longino passes over the significance of Shapin and Schaffer's argument for political theory and misreads them as radical social determinists.

As a point of comparison, Latour's review of *Leviathan and the Air-Pump* echoes Longino's worry but takes a slightly more charitable angle.[17] He agrees that the authors tend to "treat society as more transcendental than nature," (i.e., Longino's complaint) but *not* due to a prejudice in favor of social-causal explanation. Latour points out that the objects of Boyle's experiments, Nature's contributions, weren't at issue between Hobbes and Boyle; the controversy was over "the management of experiment," a nominally socio-political issue. The role of the natural world, actants, and their agency is left unresolved.[18] While Latour would presumably have preferred a full actor-network account of the historical episode, he still praises the book for its theoretical lesson, namely, that science studies can reveal the artificially bounded arenas of politics and knowledge as "two sides of the

---

[16] In their retrospective essay in the 2011 re-print of *Leviathan and the Air-Pump*, Shapin and Schaffer lament that they are labeled "anti-science relativists" who ignore the epistemic for the socio-political. They urge readers to return to the book itself, and to read it on its own terms rather than those of reviewers (see Shapin and Schaffer, *Leviathan and the Air-Pump*, xxxvi).

[17] Bruno Latour, "Postmodern? No, Simply Amodern! Steps towards an Anthropology of Science," *Studies in History and Philosophy of Science Part A* 21, no. 1 (1990): 145–71.

[18] It is no coincidence that this issue happens to be at the center of most of Latour's work.

same coin," as a "dual" and simultaneous "invention" at the dawn of modern scientific society.[19] As in Jasanoff's formulation of co-production, we can understand this without giving priority to things-in-themselves and Nature, on the one side, or social order and politics on the other. More crucially, I want to stress that the conclusion Latour draws from the historical case is not a causal one. The issue at hand is not what causally explains what. A co-productionist reading of *Leviathan and the Air-Pump* reveals that the conceptual separation between natural order and social order is an achievement made by actors and, in this case, by Boyle the "scientist."

It remains *entirely possible* to accept this conclusion and treat individual scientists as reasoning, rational beings with some degree of agency (as opposed to points being pushed around by social vectors or forces). There is no need to deny the explanatory force of cognitive accounts that appeal to what is in actors' heads. This is well-illustrated by much genealogical and interpretive work within STS; it is common and indeed customary to juxtapose the evidence and reasons for belief available to scientists with a critical analysis of the normative politics that shaped their contemporary society. What is deemed impermissible, in the co-productionist mode, is to treat questions of social order apart from questions of knowledge. It is somewhat surprising that Longino did not focus on this overarching lesson of *Leviathan and the Air-Pump* – "solutions to the problem of knowledge are solutions to the problem of social order"[20] – since it arguably has great significance for her prescription for science, "contextual empiricism," and echoes her own "non-dichotomizers way" in *Fate of Knowledge*. Accordingly, the question moving forward and in the remainder of this paper is whether Longino has settled on a co-productionist solution despite her rejection of Shapin and Schaffer's illustration of co-production. Does she consider "the social" as a normative question rather than an anormative force of nature? Does she ground her epistemological recommendations in a specific political vision for society? In the next section, I suggest that her arguments are indeed co-productionist in character, but need some targeted re-interpretation in order to be read in that way.

[19] Ibid., 11.
[20] Shapin and Schaffer, *Leviathan and the Air-Pump*, 331.

3. Longino's Liberal Epistemology

In a straightforward sense, the political aspirations of "critical contextual empiricism" are unavoidable. In Longino's "Multiplying Subjects and the Diffusion of Power," she asserts: "knowledge *is* power," and argues for a social epistemology in which power is not imbued in any one knower or type of knower.[21] The democratic struggle inherent in this program is not hidden but openly proclaimed at essay's end: "The creation of cognitive democracy, of democratic science, is as much a matter of conflict and hope as is the creation of political democracy." This sounds compatible with the core lesson of co-production but does not, however, actually follow the logic to its endpoint. If knowledge and social order are produced simultaneously in human institutions, "cognitive democracy" is not meaningfully separable from "political democracy." Nevertheless, the program put forward in *Science as Social Knowledge* and adapted in *Fate of Knowledge* is justified primarily on its epistemological merits. The reader is thus left wondering what vision of democratic life underpins Longino's proposal and whether it is indeed a desirable form of human flourishing. As I further examine this feature of Longino's main arguments, it is important to remember that the tendency to downplay ethics and politics is common in North American philosophy of science at least since Kuhn, and as such is not a unique limitation of "critical contextual empiricism."[22] Philosophy, like science and any other practice, shapes its practitioners with preexisting structures and entrenched cognitive assumptions.

---

[21] Helen Longino, "Multiplying Subjects and the Diffusion of Power," *The Journal of Philosophy* 88, no. 11 (1991): 666–74.

[22] See for example: George A. Reisch, *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic* (Cambridge: Cambridge University Press, 2005); Don Howard, "Better Red than Dead–Putting an End to the Social Irrelevance of Postwar Philosophy of Science," S*cience & Education* 18, no. 2 (2009): 199–220; Phyllis Rooney, "The Marginalization of Feminist Epistemology and What That Reveals about Epistemology 'Proper,'" in *Feminist Epistemology and Philosophy of Science*, ed. Heidi E. Grasswick (Dordrecht: Springer, 2011); Matthew Sample, "Silent Performances: Are 'Repertoires' Really Post-Kuhnian?," *Studies in History and Philosophy of Science Part A* 61 (2017): 51–56.

3.1 Science as Social Knowledge: Bringing Philosophy of Science into Feminism[23]

In Longino's first monograph, *Science as Social Knowledge*, she starts with some bold philosophical goals, primarily motivated by epistemological puzzles from philosophy of science. She proposes an account of scientific reasoning that takes the middle way between positivism and holism. With it, she hopes to avoid both underdetermination and unbounded relativism. Logical positivism, she worries, cannot provide a satisfying picture of confirmation. She notes that most scientific theories are not mere generalizations of empirical statements; theories often contain non-observational terms that cannot be straightforwardly connected to simple empirical statements. This logical gap leads to instances of underdetermination. To use her example: perceptions of red bumps on someone's body might support a hypothesis of measles just as well as it does a hypothesis of health, based solely on the testimony of one's senses. Historical cases of underdetermination illustrate the same point, as when the same set of data can be taken to support both Ptolemaic and Copernican theories of motion. Longino suggests, on the basis of this inferential inertia of sense data, that the positivist vision of science cannot be the whole story; science cannot consist solely of the logical construction of theories from observation statements.

Holism, on the other hand, has the resources to explain these cases of underdetermination. Evidence is connected to potential hypotheses by the totality of our other beliefs. It is laden by our other theories and beliefs about measles and the meaning of red bumps in biological contexts, or by our Aristotelian cosmology, and so on. As Kuhn might assert, we can only see the world through our theories. This thesis of theory ladenness is useful, Longino observes, because it allows holists to explain why one state of affairs or one set of evidence can support two radically conflicting theories. But simultaneously, holism implies that we can never specify evidence or its meaning independently from the hypothesis that it is meant to test. Because

---

[23] This subtitle was inspired by Steve Fuller's critical observation that Longino's *Science and Social Knowledge* spends at least as much time engaging "traditional" problems in philosophy of science as it does bringing politically-oriented feminist thought into philosophy of science. Although Fuller spends little time trying to understand that balance, I argue below that this choice was likely shaped by the culture of philosophy of science. Steve Fuller, Review of *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry*, by Helen Longino. *Philosophy of Science* 60, no. 2 (1993): 360–62.

of this vicious circularity, scientists can only jump irrationally from one theory to another; comparisons of empirical support are just not possible.

In order to avoid these two extremes, Longino asserts that we must maintain a bit of both. She spells out this middle way, following Hesse in *Revolutions and Reconstructions in the Philosophy of Science*,[24] by pointing out a more limited form of theory ladenness. It is logically possible, she observes, that the evidence brought to bear on a particular hypothesis is theory laden *but not by the hypothesis in question*. In the measles example, I connect the perception of red bumps to a diagnosis of measles via a set of background assumptions. In order to test that I have measles, I must rely on the assumptions about the definition and appearance of measles, assumptions that my perceptions are not mere hallucinations, and so on. These background beliefs, Longino asserts, are "enabling conditions" for scientific inference, beliefs "in light of which one takes some *x* to be evidence for some *h*."[25] But I need not rely on the hypothesis that I am testing, i.e., that I do indeed have measles.

Based on this possibility, Longino proposes that evidential reasoning is a three-term interaction between evidence, hypothesis, and background assumptions. Background assumptions function to explain why it is that evidence often can support conflicting hypotheses, but without asserting that our beliefs form one giant conjunction. Thus, Longino's account of reasoning maintains both the positivist intuition that we can specify evidence independently from the hypothesis being tested *and* the holist insight that theory ladenness (in some form) is inevitable. It is value-sensitive because it recognizes that many our background assumptions are a function of our cultural values, social position, or worse, of our idiosyncratic "biases."[26]

Longino's account of evidential reasoning is primarily descriptive, but it leaves room for a complementary normative framework for scientific knowledge. Longino attempts to fulfill this potential by providing a social account of objectivity. She tries to explain how it is that science can correct for subjective or cultural idiosyncrasies of its participants. She does so in terms of background assumptions:

---

[24] Mary Hesse, *Revolutions and Reconstructions in the Philosophy of Science* (Sussex: Harvester, 1980).

[25] Longino, *Science as Social Knowledge*, 44.

[26] In general, I try to avoid the word "bias," because it implies (at least metaphorically) that there is some central, unbiased perspective that we are trying to locate. For Longino, the "unbiased" perspective is the intersubjective perspective, but that preference of course requires its own arguments and ethico-political commitments.

> As long as background beliefs can be articulated and subjected to criticism from the scientific community, they can be defended, modified, or abandoned. As long as this kind of response is possible, the incorporation of hypotheses into the canon of scientific knowledge can be independent of any individual's subjective preferences.[27]

This passage is telling; it illustrates that Longino thinks of objectivity as i) a species of intersubjectivity and ii) an absence of individual, idiosyncratic assumptions in reasoning. The goal? A maximally intersubjective canon of scientific knowledge.

Moreover, since objectivity is tied to the norms that are active in a community, it comes in degrees. Depending on the extent to which criticism is integrated into a practice, the community is more or less objective. Longino spells out four norms that must be active in order for criticism to serve its objectivizing role:

> 1) there must be recognized avenues for criticism of evidence, of methods, and of assumptions and reasoning; 2) there must exist shared standards that critics can invoke; 3) the community as a whole must be responsive to such criticism; 4) intellectual authority must be shared equally among qualified practitioners.[28]

Only when these four conditions are met can we say that a community includes the "transformative criticism" that is necessary for progressive scientific theory change. Longino's vision of a well-ordered scientific enterprise, thus, starts with her account of reasoning, some epistemological puzzles, and moves to prescriptions about how to maximize objectivity. Yet, absent in these arguments is a recognition that we have equally strong, indeed unavoidable, ethical and political obligations to foster equality of intellectual authority in knowledge practices. In popular media, for example, the exclusion of qualified practitioners from science is often condemned as sexist, racist, unfair, or unjust, at least as often as it is discussed as a threat to scientific rigor. Longino herself acknowledges how exclusion violates liberal political ideals, but only as a reason to critique reductive biological theorizing.[29] With such cases in mind, it seems even stranger that basic commitments of liberal democracy, such as liberty and distributed decision-making, are never invoked as supporting critical contextual empiricism.

[27] Ibid., 74.
[28] Ibid., 76.
[29] Ibid., 171.

3.2 *"Epistemic acceptability" with a Capital E*

Years after *Science as Social Knowledge*, Longino gives more attention to ethico-political aspects of knowledge in *Fate of Knowledge,* citing J. S. Mill, Karl Popper, and C. S. Pierce as "predecessors" who also consider the "sociality of knowledge."[30] Nominally, this would be a chance for her to highlight an explicit commitment to the political vision that corresponds to her epistemology, so it deserves a closer look. Interestingly, Longino doesn't rely on the political arguments of those predecessors and restricts herself to an epistemological framing of their similarities, in which "the social" is not itself normative, at least not in the sense of political philosophy. For example, when she compares her view and with that of Mill, she asserts that they coincide with respect to "the necessity of critical interaction for the integrity of knowledge."[31] But wouldn't it be equally fair to say that the two theorists agree because they are committed to the idea that every human is entitled (morally and politically) to argue for their views and be heard by diverse others? Isn't Mill remembered primarily as a political and moral theorist?

Analogous questions can be posed regarding her arguments for structuring science around critique, equality, and inclusion. Unlike *Science as Social Knowledge*, her focus here is on "epistemic acceptability" instead of "objectivity." Yet, the general structure of the argument is quite similar. As in the previous book, the need for a social account of scientific reasoning is motivated by the explanatory failures of individualist philosophy of science, exhibited primarily by the problem of underdetermination. The resulting prescriptions for science, likewise, are also similar: i) Venues: there must be places in which critical interaction can take place, ii) Uptake: criticisms must be taken seriously, iii) Public standards: there must be shared criteria for reasoning, and iv) Tempered Equality: members of the epistemic community should be treated as intellectual equals. The new framing here reflects Longino's revised project of describing the social norms that allow "effective" critical discursive interactions, the "features of an idealized epistemic community."[32] This approach takes a middle way between describing knowledge-productive practices and prescribing how knowledge-productive practices should work. It is a compromise that represents what Longino calls, the "non-dichotomizer's way," a rejection of the rational-social dichotomy.

---

[30] Longino, *Fate of Knowledge*, 3.
[31] Ibid., 4.
[32] Ibid., 134.

I am sympathetic to this solution, but Longino's language is troubling in several places. Notice that the passive verb form of "idealized," in "idealized epistemic community." Idealized by whom? By everyone, by scholars motivated by liberal feminist values, or just Longino? The reader is left to guess who takes responsibility for this vision and why. Similarly, the word "effective" presumes some standard of practical success, but the only standard suggested is found in Longino's choice to define "knowledge-productive practice" as "critical discursive interaction." Without additional specifications, there is an eerily tautological character to this equivalence between community form and epistemic goals. Mill, Popper, Peirce, not to mention theorists of democracy like Habermas, would probably not complain about these elisions, given their foundational commitments to ideal discourse and liberal social order. But to readers who do not necessarily share that implicit vision of liberal democracy, it becomes increasingly apparent that "epistemic acceptability" is just as problematic as "Truth" with a capital T; it functions as a thinly-veiled honorific term for Longino's preferred forms of sociality and political order. The only response? To continue asking the fundamental co-productionist questions: acceptable knowledge *for whom*, and *with what interests*? We suddenly find ourselves back in Boyle's lab, wondering where politics ends and epistemology begins. Did we not already negotiate the scope of these two domains during the Enlightenment? Or, in Bruno Latour's words, were we never really "modern"?[33]

3.3 Challenges for Political Philosophers of Science

It should be noticed that the nominally apolitical arguments employed in *The Fate of Knowledge* and in *Science as Social Knowledge* contrast starkly with Longino's stance in some other works. In "Multiplying Subjects and the Diffusion of Knowledge," she explains how traditional epistemology, Cartesian or otherwise, valorizes the individual but gives few resources to women and other persons pushed to the margins of society. As a result, existing inequalities are amplified as those with power ignore and silence those without, often in the name of Truth. Longino asserts that her own epistemological prescriptions are an attempt to apply this feminist insight and to remedy inequality. Also in an apparently co-productionist mode, Longino asks "Does *The Structure of Scientific Revolutions* Permit a Feminist

[33] Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press, 1991).

Revolution in Science?"[34] Her main concern there is whether Kuhn's emphasis on theory ladenness and paradigm-dependence in scientific knowledge production unintentionally prevents us from being able to critique sexist science. Here again, it is clear that Longino is sensitive to the interdependence of our ethico-political commitments and our analyses of knowledge.

At this point, more politically-attuned philosophers and STS scholars will wonder why Longino felt it preferable or necessary to set aside these motivations in at least two of her book-length works. Why do political values appear only tangentially? As Philip Kitcher flatly asserts regarding *Fate of Knowledge*, Longino's account of a democratic community is "quite short and very sketchy."[35] Anna Leuschner argues even further that critical contextual empiricism risks circularity unless it straightforwardly embraces "political intrusion" into science, that is, some democratically accountable process that will balance epistemic and non-epistemic factors in structuring the community of inquiry.[36] What, then, is the reader to make of Longino's choice of epistemology over democratic theory, as well as the total absence of dedicated discussions of "liberalism," "egalitarianism," and their potential weaknesses?

A short consideration of the institutional and cultural discipline of philosophy makes Longino's choice of arguments more understandable. While many influential epistemologists have tackled the problem of knowledge/power and taken political theory seriously, the task is somewhat different from the position of a feminist philosopher, who often faces an unfair set of demands from the philosophical community. As explained by Phyllis Rooney, feminist epistemologists have been and continue to be marginalized in favor of epistemology "proper," which is taken to be more neutral, reasoned, and apolitical.[37] She highlights the intellectual incoherence of this preference by reminding us not only that these characterizations are inaccurate but also that there is no such unified body of work that one could point to as "proper." The philosophical literature is not sufficiently homogenous to justify these distinctions. There may also be historical, Cold War

---

[34] Helen Longino, "Does *The Structure of Scientific Revolutions* Permit a Feminist Revolution in Science?," in *Thomas Kuhn*, ed. Thomas Nickles (Cambridge: University of Cambridge Press, 2003).

[35] Philip Kitcher, "The Third Way: Reflections on Helen Longino's *The Fate of Knowledge*," *Philosophy of Science* 69, no. 4 (2002): 549–59.

[36] Anna Leuschner, "Pluralism and Objectivity: Exposing and Breaking a Circle," *Studies in History and Philosophy of Science Part A* 43, no. 1 (2012): 191–98.

[37] Rooney, "Marginalization of Feminist Epistemology."

dimensions of this prejudice against politically-grounded epistemology and philosophy of science,[38] but the harmful criticisms persist. Kristie Dotson contends that the situation is not unique to epistemology; she suggests that professional philosophers (especially in North America) are collectively possessed by a need to legitimate every intellectual project as within the scope of their field.[39] This norm, she explains, functions to exclude individuals who are not from the dominant group and who bring creative approaches. There is at least one substantive reason, then, that Longino would not emphasize her political commitments in her first two books. Writing in 1990 and in 2002, to an audience that is still today not uniformly sympathetic to feminist projects, her language had to strike a balance between her intellectual project and the likelihood of unfair misreadings by philosophers of science.

For this reason, I propose a sort of mis- or re-reading of Longino's monographs as part of a broader feminist liberal-egalitarian vision for society. Though such an explicitly political vision may not gain much traction among many philosophers of science, I trust that it is in keeping with Longino's overall scholarly project. And despite my own interpretive hand-wringing here in this paper, many scholars have gone ahead and done exactly this. Kitcher, for instance, observes that Longino is dealing with a "Millian" concern.[40] Justin Biddle reads Longino's epistemology as "logically embedded within the framework of Mill's political philosophy."[41] I'm not certain about which is embedded in which, but asserting the general connection seems right. Kristen Intemann does the same, suggesting that we take Longino's account as a "Millian" framework.[42] She worries, however, that Longino does not fully consider the downsides of how values are represented in liberalism. One of the main problems, according to Intemann, is that Millian democracies "endorse a kind of neutrality about values that gives rise to conceptions of diversity and dissent that put racist, sexist, and creationist values on par with feminist values, as all are equally instrumentally valuable within sci-

[38] Reisch, *How the Cold War Transformed Philosophy of Science.*
[39] Kristie Dotson, "How Is This Paper Philosophy?," *Comparative Philosophy* 3, no. 1 (2012): 3–29.
[40] Kitcher, "Third Way."
[41] Justin B. Biddle, "Advocates or Unencumbered Selves? On the Role of Mill's Political Liberalism in Longino's Contextual Empiricism," *Philosophy of Science* 76, no. 5 (2009): 612–23.
[42] Kristen Intemann, "Diversity and Dissent in Science: Does Democracy Always Serve Feminist Aims?," in *Feminist Epistemology and Philosophy of Science*, ed. Heidi E. Grasswick (Dordrecht: Springer, 2011).

entific communities."[43] For Intemann and like-minded critics, this is a core weakness of liberal political frameworks; there is no principled reason to keep out objectionable value-orientations. Longino's epistemology, because it eschews directly political arguments, may run into substantive these objections of a political sort; not everyone agrees with Millian liberalism. It originates from particular places, cultures, and times.

4. From Whence Philosophical Authority? Or, Selling Mill in the Marketplace of Ideas

As Intemann's worries show, we must not leave the liberal component of "critical contextual empiricism" as implicit or unquestioned, focusing only on epistemic issues. Why, then, is pursuing narrowly epistemological research not more controversial? For the unsuspicious or charitable mind, the program spelled out in *Science as Social Knowledge* seems eminently reasonable. Who could possibly object to the removal of bias from our knowledge practices? Of course, philosopher commentators have pointed out the need for elaboration regarding Longino's four prescribed norms,[44] but for many readers in Western democracies (and perhaps elsewhere) critical contextual empiricism appeals to a deep desire for equality among citizens and for substantive processes of collective deliberation and critique. We are at our best, it seems, when we genuinely listen to one another and let argument settle our beliefs rather than appeals to authority or to personal dogma. Science, of all practices, should embody these lofty ideals. The fact that Longino's solution solves the old philosophical puzzle of underdetermination only adds to this attractive vision for the ordering of science and society. I caution that this proposal, worthy of our assent or not, should be seen for what it is: both epistemic and ethico-political.

Philosophers of science must remember that the norms of critical contextual empiricism have a long history in political theorizing, especially of the liberal variety. Most directly relevant is Mill's call for a "marketplace of ideas." Mill himself does not use the metaphor – it appeared in political discourse sometime after his key writings – but he gives the idea its fullest treatment in *On Liberty*,[45] on which Longino draws. There, it is immediately

---

[43] Ibid., 125.
[44] See for example: Daniel Hicks, "Is Longino's Conception of Objectivity Feminist?," *Hypatia* 26, no. 2 (2011): 333–51.
[45] John Stuart Mill, *On Liberty* (London: John W. Parker & Son, 1859).

clear that Mill is possessed by a single fear, the illegitimate control of persons by concentrations of authority, whether in the government or in the majority. Coercion of the individual, he worries, is increasingly common, acting on the body and the mind: "There is also in the world at large an increasing inclination to stretch unduly the powers of society over the individual, both by force of opinion and even by that of legislation."[46] He stresses that it is not enough that many theorists are already committed to the idea of liberty; he challenges us with a philosophical problem of practical import: "how to make the fitting adjustment between individual independence and social control." And this "adjustment" requires us to tackle more than the obvious cases of physical control or threats of violence. What would it mean for a person to have freedom of opinion and thought, "on all subjects, practical, or speculative, scientific, moral, or theological"?

In the beginning of the first section, "Of the Liberty of Thought and Discussion," he poses a hypothetical situation. What if society was unified in opinion in opposition to a single person? Would they be justified in silencing or coercing that individual? He warns that to do so hurts society as much as the individual:

> If the opinion is right, they are deprived of the opportunity of exchanging error for truth: if wrong, they lose, what is almost as great a benefit, the clearer perception and livelier impression of truth produced by its collision with error. [...] We can never be sure that the opinion we are endeavouring to stifle is a false opinion.[47]

In the face of limited human certainty, Mill is prescribing a social epistemology that pits ideas against one another. As in Longino's ideal of science, minority opinions and their proponents give us a chance to test our beliefs, to subject them to critique from diverse perspectives. At his most extreme, Mill stresses that truth and certainty can only be accessed in this way. If we face opponents, we must listen to them, and if there are none to face, we must imagine them.

After hearing these arguments, it may be tempting for the reader to ignore Mill's overarching commitment to liberty and focus myopically on truth, but Mill's aversion to doctrinal authority or enforced opinion is definitive for his epistemology. There is no god's eye view from which Mill or anyone can define what arrangement of knowledge practices is most

---

[46] Ibid., 29.
[47] Ibid., 33–34.

truth conducive. Accordingly, Mill has to ground his idea of truth in his own primary political ideal: liberty, which is itself valuable, sometimes in utilitarian terms. He says, for instance, that we must not assume the mantle of "the judges of certainty" and that we must allow the "fair play" of ideas. The prescription is as much about politics as it is about "truth." Accordingly, it would be misleading for a Millian epistemologist to attack the authoritarian-dogmatist by merely asserting that their hierarchical way of life is not truth-conducive; instead, the Millian should say that an authoritarian definition of truth does not allow desirable forms of life, namely a society that is flexible in the face of change and allows individuals their own cognitive agency. The foundation here is not an orientation towards truth but a desire for a society that realizes every human's ability to observe the world and reflect on it, exercising their individual capabilities.[48]

The form of life we find implicit in *On Liberty* has had lasting popularity, partially due to lasting fears of illegitimate authority, and has structured (at least nominally) many of the central institutions of Western democracies. In the mid-20th century, liberal ideals of free human action and thought were tied directly to science itself. Shiv Visvanathan argues that as enthusiasm for the free market began to wane, science and its orientation towards knowledge became the new exemplar of liberal progress:

> In the discourses of university dons, science was the model of *communitas*. The Republic of Science was deemed an open society, sustaining a creative tension between individual initiative and collective truth. In this more liberal world, the scientific method was substituted for the invisible hand and Popper and Polanyi became the Adam Smiths of this new regime.[49]

In this way, the invisible hand moved from economic problems of distribution to the realm of proper belief. In the aftermath of global war and the Great Depression, we also see Robert Merton first proposing his analysis of the normative structure of science, originally titled "A Note on Science and Democracy."[50] There, he stresses how science allies itself with the central values of liberalism, including equality of intellectual authority and open

---

[48] There is an extremely important concern looming here about the extent to which this vision excludes some people who may lack some intellectual abilities but instead flourish in other ways.
[49] Shiv Visvanathan, *A Carnival for Science: Essays on Science, Technology, and Development* (Oxford: Oxford University Press, 1997), 146.
[50] Robert K. Merton, "A Note on Science and Democracy," *Journal of Legal and Political Sociology* 1 (1942): 115–26.

trade of ideas. These connections should be expected, if we are convinced by the argument in Ezrahi's *Descent of Icarus.*[51] He suggests that it was Boyle's style of experimentalism that provided democratic governments with the tools and methods they needed to legitimize their action in the eyes of the public.

I take this brief moment to situate liberal science in its historical context for a specific purpose. I want the reader to notice that the preference for liberal norms responds to our desires and fears for society, and not solely epistemological puzzles like underdetermination. In the mid-20th century, the threat of totalitarianism, of Nazi science, and global crisis provide substantive reasons to argue for an ordering of science that mirrors and supports liberal-democratic governance.[52] The point here *is not* that Popper's *The Open Society and Its Enemies,*[53] for example, is an outdated product of its time. Neither do I intend to suggest that "the social" somehow coerced him and other thinkers to propose anti-totalitarian or non-communitarian models of knowledge production. Such a reading would undermine liberal theorists as agents or as persons that respond to the same hopes, fears, and reasons that fill our own everyday experience, including philosophical writing. Regardless, the primary sources show no such thing.

Popper, for one, seems quite aware of the connections between politics and ways of knowing when he criticizes the totalitarian *Republic,* and suggests we read Plato as a sincere advocate of justice held back by his restrictive epistemology. The theory of Forms led Plato to "build up a political science" and "opens a way, in the social realm, towards some kind of social engineering; and it makes possible the forging of instruments for arresting social change."[54] Popper seems horrified by that outcome and invites us to pursue a different pairing. Rather than seeking the Forms, we should ground our beliefs in critical testing among free and equal individuals. And rather than assembling an immutable totalitarian edifice, we should modify society in a "piecemeal" fashion, allowing individuals to experiment with different

---

[51] Yaron Ezrahi, *The Descent of Icarus: Science and the Transformation of Contemporary Democracy* (Cambridge, MA: Harvard University Press, 1990).
[52] It is important to note that the relationship between liberal democracies and experimental science is historical and conceptual but not definitional; Ezrahi and others have noted that totalitarian regimes can also draw on scientific epistemologies to match their political commitments.
[53] Karl Popper, *The Open Society and Its Enemies* (Princeton: Princeton University Press, 1950).
[54] Ibid., 33.

forms of life. For him, the "open society" is the only way to avoid collective "submission to tribal magic" and its enforcers, "the Inquisition," "secret police," and "romanticized gangsterism."[55] Science must then be allied to this cause.

Suffice it to say, a careful reading of Popper, Mill, and many other intellectual antecedents of "critical contextual empiricism" highlight the co-productionist lesson that the liberal models of science are equally epistemic and ethico-political and should still be argued for as such. Philosophers who want to engage with this duality must take on a higher burden of proof than is typically expected of epistemological argument in philosophy and especially philosophy of science, which may only need to solve select intellectual challenges. A co-productionist lens on epistemology suggests that it is not enough to say, for example, that critical contextual empiricism should be adopted because it solves the problem of underdetermination, clarifies the value-ladenness of scientific reasoning, or because it leads more "effective," objective knowledge. These outcomes might appease readers in certain scholarly communities, including many philosophers of knowledge, but they will not then follow the consequences of critical contextual empiricism *into politics*, into the resulting distribution of power, and so on (as Shapin and Schaffer do with Boyle's experimentalism). As mentioned above in Section 3, we might choose to diagnose this habit as a harmful result of asymmetric gendered reasoning. Or, as Philip Mirowski has forcefully argued, perhaps philosophers of science have too long neglected the historical contexts of their own theorizing.[56] But regardless of the precise diagnosis, in everyday philosophical practice it amounts to an unnecessary separation of epistemologists and theorists of democracy, pursuing problems in parallel but not fully cognizant of how their objects of study are interdependent.

4.1 From Whence the Philosopher's Authority?

For any philosopher, defining the relationship between the epistemic and political is not a trivial task and is not something to solve once and set aside. But for the remainder of this paper, I will at least temporarily move beyond the core tension that I identify in Longino's writings and proceed with a methodological reflection. To this end, assume that we have learned the

---

[55] Ibid., 195.
[56] Philip Mirowski, "The Scientific Dimensions of Social Knowledge and Their Distant Echoes in 20th-Century American Philosophy of Science," *Studies in History and Philosophy of Science Part A* 35, no. 2 (2004): 283–326.

lesson of co-production and want to argue in earnest for a simultaneously epistemic and political vision for science in society: with what authority can a lone philosopher prescribe a vision for knowledge in society? What form should this argument take? This is a pressing question for every philosopher of science, but Longino's work continues to provide a useful case study for this inquiry. Critical contextual empiricism, interpreted in the broadly co-productionist sense, proposes a compelling ideal for science, equal parts political and epistemic; the implicit ideal for society seems to be one in which there are no unfair concentrations of power, where everyone has a voice, and where knowledge is never held fixed. It is a vision shared to some extent with the likes of Mill and Popper, who were writing in response to the concerns of their time. But since Longino cannot rely on appeals to a priori foundations of "truth," or "objectivity," or "justice" in her arguments, she needs to explain how her own proposal should be weighted against competing visions, like Plato's *Republic* or Polanyi's *Republic of Science*. Why should we, as fellow citizens, listen to Longino's proposals as opposed those of a different philosopher? Why listen to a philosopher at all?

For philosophers, an appeal to the argumentative skill in epistemology (e.g., premises, if accepted, lead compellingly to the conclusion) or a vague specialized expertise is often considered to be enough, as they are often content to wield their authority wherever they can. However, a thoroughly co-productionist scholar will not take the ability to prescribe for granted. Like liberalism itself, the privilege of an elite few to define the ideal society through select deductions, abductions, or inductions is tied up in historically-situated imaginaries of democracy and perhaps one of the more striking features of the present day. Social theorist and critic Cornelius Castoriadis makes this case by contrasting the role of the expert in recent democracies with the collective rule of the Athenians; he argues that political judgments in Ancient democracy were necessarily a matter of opinion (*doxa*) and within the purview of every citizen.[57] Democracy of the last century or so is imagined in a very different way. He laments in *Philosophy, Politics, Autonomy*:

> The prevalent [modern] idea that there exist "experts" in politics, that is, specialists of the universal and technicians of the totality, makes a mockery of the idea of democracy: the power of the politicians is justified by the "expertise"

---

[57] Cornelius Castoriadis, *A Society Adrift: Interviews and Debates 1974–1997*, eds. Myrto Gondicas Enrique Escobar and Pascal Vernay (New York: Fordham University Press, 2010), 125.

they would alone possess, and the, inexpert by definition, populace is called upon periodically to pass judgment on these "experts." It also – given the emptiness of the notion of a specialization in the universal – contains the seeds of the growing divorce between the capacity to attain power and the capacity to govern – which plagues Western societies more and more.[58]

Castoriadis does not hesitate to criticize the way "political expertise" and its claimants effectively disenfranchise the public through specialization. Fortunately, here, I need not pick between these ancient and contemporary imaginaries of democracy, but the mere presence of competing imaginaries suggests that philosophers have an obligation to consider which vision they perform, which cultural anxieties they implicitly draw on, when they describe well-ordered science in their publications, lectures, and public events.

Philosophers of knowledge thus face a choice about what to hold firm, to leave naturalized, and what to question and deconstruct. Accordingly, it is worth considering how Longino negotiates this question of her own expertise. We can find part of an answer in *Science as Social Knowledge*, in Longino's discussion of feminist science. There, she asserts that feminist science could be read as the "neutral" option, removing bias to make science gender-free. Her own view is different. She understands her role as feminist scientist to include "the detection of limiting interpretive frameworks and the finding or construction of more appropriate frameworks."[59] Moreover, she admits that in her more direct critiques of behavioral endocrinology, she is driven by a personal preference to expand human potentiality, to increase our sense of agency, rather than allow narrow-minded science to close it down. In making these personal values explicit, Longino stresses that she takes herself to be accountable to a community outside of herself and beyond the confines of scientific institutions. As she counteracts the entrenched values in science, she is representing values somewhere outside science. Despite my own hopes for further clarification, she leaves her community somewhat ambiguous, an anonymous crowd. Unpacking that idea in more detail would begin to clarify the nature of her philosophical authority to promote a particular vision for society.

Longino's role as philosopher (rather than scientist) is somewhat clearer in the final chapter of *The Fate of Knowledge*, where she positions her own contributions in a very modest way. There, she states that philoso-

[58] Cornelius Castoriadis, *Philosophy, Politics, Autonomy*, ed. David Ames Curtis (Oxford: Oxford University Press, 1991), 109.
[59] Longino, *Science as Social Knowledge*, 191.

phers should not see their job as "deploying zero-sum epistemologies," but instead "be sensitive to the shifting relations of multiple research traditions and the complexity of the factors that succeed in producing provisionally stable representations of nature."[60] That statement, it seems to me, implies a healthy co-productionist curiosity, but asserts no claims of expertise per se. Her own social epistemology, she mentions in passing, bears similarity with the American pragmatist tradition: "Knowledge is sought, not imprinted, and it is sought in order to achieve particular goals and is evaluated in relation to those goals. Knowledge produces the conditions of its own transformation. The growth of knowledge is not linear, but irregular, layered, and patchy."[61] She even suggests that we think of her epistemology as "sociopragmatism," as a tentative description of how cognitive activities link up to other purposive human action. If we take this affinity seriously, then it would suggest that we read her four conditions of knowledge-productive practices as contingent, tied to our contemporary cultural context, and open to revision as our needs change.[62]

These passages taken together hint at grounding for philosophical authority that doesn't rely solely on proclamations of expertise or skill in specialist argumentation and conceptual analysis. Rather than unilaterally defining ideals for science in society, we could say that Longino is trying to *represent* the politics (in the sense of *doxa*) and broader human purposes that already exist in society but have been marginalized or replaced by powerful exclusionary institutions like science. Her stated advocacy for humans as agents, albeit an unenumerated and usually nameless constituency, creates a link to the world beyond epistemological research and lends unspoken support for the liberalism in her ostensibly epistemological interventions. Perhaps more importantly, I suggest that it is this largely implicit relationship of accountability – and not Longino's laudable resolution of esoteric intellectual puzzles like underdetermination – that provides her account of science with broader legitimacy outside of the pages of philosophy journals.

---

[60] Longino, *Fate of Knowledge*, 212.

[61] Ibid., 208.

[62] I suspect, though I do not argue for it here, that few real-world knowledge practices would fulfill Longino's four-part definition of knowledge productive practices. For example, racism and sexism are still ubiquitous in science, seemingly failing the condition of shared intellectual authority. This stark mismatch between more mundane pragmatic situations and Longino's ideal conditions for objectivity may limit the applicability of her account in clarifying the norms of actual (rather than ideal) scientific practices, which may be more harmful than philosophers want to acknowledge.

If my interpretation is correct here, then the example of critical contextual empiricism highlights a general need for more comprehensive reflection on the nature of philosophical work on science, whether in a scholarly monograph or in the public sphere. Who are philosophers and prescriptive theorists of knowledge representing and by what mechanisms are scholars accountable to them?

5. Conclusion

In the 1990s and still today, critical contextual empiricism advances a bold vision for science in society and is likely to continue to inspire innovative projects in philosophy of science. But in this paper, I have argued that its full normative potential has not been yet explored, diminished in the face of apolitical trends in post-WWII philosophy of science and the field's hostility to feminist scholarship. If Longino's commentators and I are correct in reading her work as implementing a vision of liberal democracy, the implications go beyond solving esoteric epistemological puzzles like underdetermination and theory ladenness. At stake is not only our theoretical definition of rigorous scientific knowledge but also the future of collective life in technoscientific societies. Deciding the ideal structure of contemporary knowledge practices determines not only who is entitled to participate in science but also the character of knowledge that will be used to guide policy and create legitimacy for government actions.

I have highlighted these features of Longino's work to argue that, in keeping with the idiom of co-production, thoughtful philosophy of science can no longer methodologically separate questions of epistemology from ethics and politics. Philosophers of knowledge, more generally, should also use this case to reflect on the political dimensions of their own prescriptive accounts. This means setting aside entrenched and often uncharitable counterarguments against social constructivism, as well as deep anxieties about "the social" as a contaminating influence on knowledge practices. Let us focus instead on who would be made credible and who would be disempowered if our epistemologies were taken up beyond academia and were used to structure epistemic norms in society. This analysis can be conducted entirely in the realm of reasons and does not require the reduction of knowledge to a socio-political epiphenomenon (though some may still choose to do so). Indeed, even conducting political theory in tandem with epistemology, avoiding unidirectional reductions, would respond to the challenge that I am posing.

The essential ingredient here is methodological, not metaphysical; we must foster a sensitivity to the action of power in our conceptual work and in our performances in the public sphere. Although it would be beyond the scope of this paper, my re-reading of Longino's work suggests the need for profound institutional and procedural changes across the discipline. Scholars in charge of journals, graduate training, and professional events must unlearn the divisions of labor and remedy the many ways in which a political and cultural sensibility is discouraged in the epistemology of science. Many theoretical resources and case studies for such work can be found in feminist philosophy, critical race theory, and in co-productionist STS. Finally, disciplinary philosophy must refine its understanding of expertise and authority in society. The significance of knowledge/power in society is too great to leave only in the hands of philosophers, science policy experts, or other would-be technocrats. If we indeed are committed to democratic forms of life, then we must identify the publics implicated even by our narrow epistemological work and bring them into discussion, into our broader communities, and put academic epistemic-political visions to the test of inclusive deliberation.

Bibliography:

Barnes, Barry, and David Bloor. "Relativism, Rationalism and the Sociology of Knowledge." In *Rationality and Relativism*, edited by Martin Hollis and Steven Lukes. Oxford: Blackwell, 1982.

Biddle, Justin B. "Advocates or Unencumbered Selves? On the Role of Mill's Political Liberalism in Longino's Contextual Empiricism." *Philosophy of Science* 76, no. 5 (2009): 612–23. https://doi.org/10.1086/605791.

Castoriadis, Cornelius. *Philosophy, Politics, Autonomy*, edited by David Ames Curtis. Oxford: Oxford University Press, 1991.

Castoriadis, Cornelius. *A Society Adrift: Interviews and Debates 1974–1997*, edited by Myrto Gondicas Enrique Escobar and Pascal Vernay. New York: Fordham University Press, 2010. https://doi.org/10.33112/nm.7.1.8.

Dotson, Kristie. "How Is This Paper Philosophy?" *Comparative Philosophy* 3, no. 1 (2012): 3–29. https://doi.org/10.31979/2151-6014(2012).030105.

Eigi, Jaana. "'Knowing Things in Common': Sheila Jasanoff and Helen Longino on the Social Nature of Knowledge." *Acta Baltica Historiae et Philosophiae Scientiarum* 1, no. 2 (2013): 26–37. https://doi.org/10.11590/abhps.2013.2.03.

Epstein, Steven. *Impure Science: AIDS, Activism, and the Politics of Knowledge.* Berkeley: University of California Press, 1996.

Ezrahi, Yaron. *The Descent of Icarus: Science and the Transformation of Contemporary Democracy.* Cambridge, MA: Harvard University Press, 1990.

Fuller, Steve. Review of *Science as Social Knowledge: Values and Objectivity in Scientific Inquiry*, by Helen Longino. *Philosophy of Science* 60, no. 2 (1993): 360–62. https://doi.org/10.1086/289740.

Harding, Sandra. *Objectivity and Diversity: Another Logic of Scientific Research.* Chicago: University of Chicago Press, 2015. https://doi.org/10.7208/chicago/9780226241531.001.0001.

Hesse, Mary. *Revolutions and Reconstructions in the Philosophy of Science.* Sussex: Harvester, 1980.

Hicks, Daniel. "Is Longino's Conception of Objectivity Feminist?" *Hypatia* 26, no. 2 (2011): 333–51. https://doi.org/10.1111/j.1527-2001.2010.01160.x.

Howard, Don. "Better Red than Dead–Putting an End to the Social Irrelevance of Postwar Philosophy of Science." *Science & Education* 18, no. 2 (2009): 199–220. https://doi.org/10.1007/s11191-007-9117-3.

Intemann, Kristen. "Diversity and Dissent in Science: Does Democracy Always Serve Feminist Aims?" In *Feminist Epistemology and Philosophy of Science*, edited by Heidi E. Grasswick. Dordrecht: Springer, 2011. https://doi.org/10.1007/978-1-4020-6835-5_6.

Jasanoff, Sheila. "The Idiom of Co-Production." In *States of Knowledge: The Co-production of Science and the Social Order*, edited by Sheila Jasanoff, 1–13. New York: Routledge, 2004. https://doi.org/10.4324/9780203413845.

Kitcher, Philip. "The Third Way: Reflections on Helen Longino's *The Fate of Knowledge*." *Philosophy of Science* 69, no. 4 (2002): 549–59. https://doi.org/10.1086/344617.

Latour, Bruno. "Postmodern? No, Simply Amodern! Steps towards an Anthropology of Science." *Studies in History and Philosophy of Science Part A* 21, no. 1 (1990): 145–71. https://doi.org/10.1016/0039-3681(90)90018-4.

Latour, Bruno. *We Have Never Been Modern.* Cambridge, MA: Harvard University Press, 1991.

Leuschner, Anna. "Pluralism and Objectivity: Exposing and Breaking a Circle." *Studies in History and Philosophy of Science Part A* 43, no. 1 (2012): 191–98. https://doi.org/10.1016/j.shpsa.2011.12.030.

Longino, Helen. *Science as Social Knowledge.* Princeton: Princeton University Press, 1990. https://doi.org/10.1515/9780691209753.

Longino, Helen. "Multiplying Subjects and the Diffusion of Power." *The Journal of Philosophy* 88, no. 11 (1991): 666–74. https://doi.org/10.5840/jphil1991881114.

Longino, Helen. *The Fate of Knowledge.* Princeton: Princeton University Press, 2002. https://doi.org/10.1515/9780691187013.

Longino, Helen. "Does *The Structure of Scientific Revolutions* Permit a Feminist Revolution in Science?" In *Thomas Kuhn*, edited by Thomas Nickles. Cambridge: University of Cambridge Press, 2003. https://doi.org/10.1017/cbo9780511613975.012.

Merton, Robert K. "A Note on Science and Democracy." *Journal of Legal and Political Sociology* 1 (1942): 115–26.

Mill, John Stuart. *On Liberty.* London: John W. Parker & Son, 1859.

Mirowski, Philip. "The Scientific Dimensions of Social Knowledge and Their Distant Echoes in 20th-Century American Philosophy of Science." *Studies in History and Philosophy of Science Part A* 35, no. 2 (2004): 283–326. https://doi.org/10.1016/j.shpsa.2003.11.002.

Popper, Karl. *The Open Society and Its Enemies.* Princeton: Princeton University Press, 1950. https://doi.org/10.4324/9780203820377.

Reisch, George A. *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic.* Cambridge: Cambridge University Press, 2005. https://doi.org/10.1017/CBO9780511610318.

Rooney, Phyllis. "The Marginalization of Feminist Epistemology and What That Reveals about Epistemology 'Proper.'" In *Feminist Epistemology and Philosophy of Science*, edited by Heidi E. Grasswick. Dordrecht: Springer, 2011. https://doi.org/10.1007/978-1-4020-6835-5_1.

Sample, Matthew. "Silent Performances: Are 'Repertoires' Really Post-Kuhnian?" *Studies in History and Philosophy of Science Part A* 61 (2017): 51–56. https://doi.org/10.1016/j.shpsa.2017.01.003.

Shapin, Steven, and Simon Schaffer. *Leviathan and the Air-Pump*. Princeton: Princeton University Press, 2011. First published 1985. https://doi.org/10.1515/9781400838493.

Vacura, Miroslav. "Lacey's Concept of Value-Free Science." *Teorie vědy / Theory of Science* 40, no. 2 (2018): 211–29. https://doi.org/10.46938/tv.2018.413.

Visvanathan, Shiv. *A Carnival for Science: Essays on Science, Technology, and Development*. Oxford: Oxford University Press, 1997.