



Underdetermination, holism, and feminist philosophy of science

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Abstract

Appeals to some thesis of underdetermination, to the idea that scientific theories and hypotheses are not entailed by the evidence that supports them, are common in feminist philosophy of science. These appeals seek to understand and explain how androcentrism and other problematic approaches to gender have found their way into good science, as well as the reverse – how feminist approaches to gender and science that are also value-laden, can contribute to good science. Focusing on W.V. Quine’s positions on holism and underdetermination, I argue that although Quine’s general thesis of holism does not entail his thesis of global underdetermination, his account of and arguments for moderate holism entail a localized and generalizable underdetermination, which I call moderate underdetermination. This moderate underdetermination is not transient or true of only some theories and hypotheses. Rather, it is a permanent state of affairs that characterizes all reasonably inclusive theories and hypotheses, however much evidence for them accumulates. I contend that Quine’s moderate holism entails the most robust and defensible argument for localized underdetermination, and that feminists would do well to appeal to it in arguing that values inform good science.

Keywords Feminist philosophy of science · Underdetermination · Moderate holism · Moderate underdetermination

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1 Introduction

I have argued elsewhere that W.V. Quine's general thesis of holism can explain some key claims offered in feminist philosophy of science,^{1,2} when as current evidence dictates, holism is expanded to include values.³ The network of interconnected and interdependent theories Quine posits includes so-called common-sense theory, philosophy and mathematics, and the sciences.⁴ Thus, it can explain the relationships between views about gender current in the broader social context, including androcentric and feminist views, that feminists argue, can and often do inform science, as well as the borrowing or sharing of hypotheses about gender across sciences to which feminists draw attention (Nelson, 1990, 1993b). Here, I further explore the implications of Quine's holism for feminist philosophy of science. I argue that Quine's account of and arguments for what he called "moderate holism" yield a localized and non-transient underdetermination that applies to all reasonably inclusive theories.⁵ This is an underdetermination to which feminists can successfully appeal in the kinds of argument just summarized. I call this version of underdetermination "moderate underdetermination."⁶ Although I emphasize the implications of this thesis of underdetermination for feminist philosophy of science, I believe that its implications are relevant to philosophy of science more broadly.

Many readers will know of feminists' engagements with philosophy of science; but some may only know that such engagements have occurred. The engagements are extensive, dynamic, far from monolithic, and controversial in some quarters. Accordingly, I begin by laying out my general views of these engagements, and of how they prompt the analysis I undertake of the implications of Quine's writings on holism and underdetermination for feminist philosophy of science. I then briefly discuss why Quine's thesis of global underdetermination does not constitute a viable resource for feminist philosophy of science, and how a localized and non-transient underdetermination does. In the third section I undertake a sustained analysis of Quine's thesis of holism and of the nature and implications of what he called moderate holism for under-

¹ I am grateful to Jack Nelson and Gary Thrane for their feedback on several topics I discuss, and to anonymous reviewers for helpful suggestions.

² As I use the phrase, feminist philosophy of science includes epistemology, metaphysics, and value theory. Those engaging in the field include scientists and philosophers.

³ Quine rejected this expansion (personal correspondence). But there are compelling arguments offered by feminists and others that challenge the possibility, desirability, and/or reality of value-free science – e.g., (Anderson, 2004), (Douglass, 2000, 2021), (Intemann, 2005), (Kincaid et al., 2007), (Lacey, 1999), (Longino, 1996), and (Nelson, 1990).

⁴ Quine sometimes implies that common-sense theory is just physical object theory. I have maintained that it is not so circumscribed but includes, as he often says, everything we say in everyday discourse. And that, of course includes what we say about gender (Nelson, 1990).

⁵ The term 'reasonably inclusive theories' is Quine's as I later discuss. It is not a technical term or term of art requiring a specific definition. It is a clear and intuitive notion. All of biology constitutes such a theory, but so do chunks of it, including genetics, endocrinology, and evolutionary biology, as well as subfields within each branch.

⁶ The version of underdetermination for which I argue is distinguishable from transient underdetermination, which some might also call "moderate underdetermination."

determination. As noted, I argue that it entails that underdetermination is a permanent state of affairs that characterizes all reasonably inclusive theories and hypotheses.⁷

2 Feminist philosophy of science and underdetermination: a brief overview

For more than three decades feminist philosophers and scientists have undertaken detailed analyses of evidential relations: those between hypotheses and data, and those between hypotheses about gender shared by various sciences.⁸ These analyses seek to understand and explain the multifarious relationships between gender and science that the broader research tradition of feminist science studies has laid bare.⁹ Feminist scientists working in that tradition have identified, and advanced alternatives to, androcentric research priorities and questions, methods, hypotheses, and observations in various sciences –and have focused on other issues involving gender and science.¹⁰

In their analyses of evidential relationships, some feminists appeal to the underdetermination of theories. A common line of argument is that the gap between hypotheses or theories and data allows for unwarranted assumptions, concepts, and hypotheses involving gender to find their way into good science (e.g., Douglass, 2000, 2021; Intemann, 2005; Longino, 1990; Nelson, 1990; Potter, 1996).¹¹ And that the reverse is true: that underdetermination has allowed for the critiques and alternative approaches and hypotheses feminists have offered that are also informed by values.¹²

In an influential analysis, Helen E. Longino argues for a view she calls contextual empiricism, according to which the evidential relationship between a hypothesis and data is of necessity forged by background assumptions.¹³ These assumptions, Longino

⁷ In an influential analysis, Philip Kitcher distinguishes three kinds of underdetermination: transient, which is true of some theories and hypotheses; permanent, which may be true of others; and global. He supports the notion of transient underdetermination (Kitcher, 2001).

⁸ I focus on feminist analyses that are empiricist in their approaches.

⁹ I do not here attempt to outline the specifics of feminist engagements with individual sciences. Any such narrative would be, of necessity, partial. Representative collections and books include Bluhm et al. (2012), Crasnow and Intemann (2020), Creager et al. (2001), Longino (2002), Mayberry et al. (2001), Nelson (2017); Nelson and Nelson (1996), Schiebinger (1999).

¹⁰ These include arguments that gendered metaphors presented as literal rather than metaphorical descriptions of states of affairs (e.g., Martin, 1991) and evaluatively-thick concepts presented as purely empirical (Anderson, 2004) are present in various sciences. They also include the issue of gender equity in science.

¹¹ I take good science to be science in keeping with accepted research priorities, norms, methods, and theories, and the practices which seek to produce theories that meet the standard of empirical adequacy. I find arguments against the possibility and desirability of value-free science to be compelling and do not view the neutrality envisioned by the value-free ideal of science to be necessary to good science. The notion of bad science should be understood as involving deliberate ignoring of available evidence, deliberate manipulation of data, and the like, to support a favored hypothesis, theory, or research program. Feminists working from empiricist approaches rightly argue that for the most part, their critiques do not focus on bad science, but rather good but unsuccessful science.

¹² The values that inform good scientific or philosophical theorizing can be epistemic or non-epistemic or, as Longino has argued of some traditional theoretical virtues and the alternatives discernable in the practices of feminist scientists, both (Longino, 1996).

¹³ Longino offers the traditional argument that, as a rule, hypotheses do not include the same terms that figure in the data taken to support or used to test them. Carl Hempel also argued that, as a rule, what he

argues, can be warranted or not, and are often not subjected to scrutiny. Longino argues that unexamined and value-laden background assumptions about gender have served to support androcentric and other unwarranted hypotheses. Bringing non-androcentric assumptions to their practice, as feminist scientists do, yields alternative and conflicting hypotheses (Longino, 1990, 2002).

More recent influential feminist analyses focusing on the implications of underdetermination for the role of values in science include those offered by Heather Dougllass (Dougllass, 2000, 2021), and Kristen Intemann (Intemann, 2005). And some feminist philosophers have explicitly appealed to Quine's discussions of underdetermination¹⁴ in their explanations of how androcentric and feminist approaches to gender can take hold in good science (e.g., Nelson, 1990, 1993a, 1993b; Potter, 1996, 2006). The analyses just cited can be said to hint at a relationship between Quine's holism and underdetermination, a relationship I here make explicit by appealing to Quine's moderate holism.¹⁵

3 Quine and underdetermination

What is best known in terms of Quine's discussions of underdetermination is his thesis of global underdetermination: our overall theory of the world is underdetermined by all the true observational categoricals it does or will ever entail (e.g., Quine, 1975 and 1990). There are two reasons why this thesis is not relevant to the issues that feminists raise.

First, feminist appeals to underdetermination occur in the context of critiques and explanations of specific hypotheses, theories, and research programs (however broad), not to the underdetermination of an overall theory of nature.¹⁶ Secondly, Quine's thesis of global underdetermination relies on the strong likelihood of there being overall theories of the world that are empirically equivalent to but logically incompatible with our overall theory.

In "On Empirically Equivalent Systems of the World," Quine describes and argues for the thesis of global underdetermination this way:

If all observable events can be accounted for in one comprehensive scientific theory – one system of the world . . . - then we can expect they can be accounted for

Footnote 13 continued

called "auxiliary hypotheses" are needed for a hypothesis to entail a prediction (Hempel, 1966). As he noted, auxiliary hypotheses can be conscious or not, and true or not. The background assumptions Longino and others speak of can be viewed as auxiliary hypotheses in Hempel's sense of the term. However, he only focused on their role in the testing of hypotheses, not the role they can have in generating hypotheses and research questions. He argued for the traditionally held distinction between the contexts of discovery and justification (Hempel, 1966).

¹⁴ As will be clear, Quine discusses underdetermination in more than one context.

¹⁵ Not all feminist philosophers find these appeals to underdetermination warranted and/or successful. This is clear, for example, in the essays in (Nelson & Nelson, 2003).

¹⁶ In his discussions of global underdetermination and of holism Quine often speaks of an overall theory of the world we all share. Arguments for the disunity of science challenge this notion (e.g., (in Galison & Stump, 1996); and so, too, do the alternatives feminists propose to hypotheses and theories. Neither challenges the argument that we always "work from within" the theories we accept – a core tenet of Quine's holism as I later discuss.

equally in another, conflicting system of the world. We may expect this because of how scientists work. For they do not rest with inductive generalizations of their observations.... Scientists invent hypotheses that talk of things beyond the reach of observation. These hypotheses are related to observation only by ... a one-way implication: namely the events we observe are what a belief in the hypothesis would have led us to expect. These observable consequences of the hypothesis do not, conversely, imply the hypothesis. Surely there are alternative hypothetical structures that surface in the same observable way (Quine, 1975, p. 313).

This, Quine concludes, “is the doctrine that natural science is under-determined; under-determined not just by past observation but by all observable events” (p. 313).¹⁷ Nowhere does he argue that it is likely there are empirically equivalent but logically incompatible theories to some or all of the individual theories included in that overall theory.

But in feminist analyses, the theories and hypotheses criticized and the alternatives advanced are *not* argued to be empirically equivalent. Rather, feminists often argue that the hypotheses and theories they propose are more empirically warranted than those they criticize.¹⁸ Empirically equivalent hypotheses and theories are not at issue in these analyses.

But as I have anticipated and will argue, there is another significant form of under-determination yielded by Quine’s account of and arguments for moderate holism. This underdetermination applies to all individual hypotheses and theories that entail their own set of observational categoricals. This form of underdetermination can support feminist arguments that values, including those that are androcentric and those that are feminist, can and often do inform good science.

Let me be clear about what I will and will not argue. Quine’s general thesis of holism does not entail his thesis of global underdetermination.¹⁹ But his thesis of moderate holism does entail local and permanent underdetermination – an argument that Quine did not himself offer.

Because both the content and the implications of moderate holism are determined by Quine’s general thesis of holism, I begin with this thesis. I take Quine’s holism, including his moderate holism, to be more important and more interesting than is his thesis of global underdetermination. It certainly seems to carry more implication for scientific, philosophical, and everyday reasoning.

¹⁷ As others have noted, Quine is not always consistent about the sources of global underdetermination (e.g., Hylton, 2007, pp. 189–196). But empirically equivalent theories are often cited by Quine in his discussions of global underdetermination (e.g., Quine, 1960, 1975). Interestingly, in *Pursuit of Truth* Quine stated, “Effort and paper have been wasted, by me among others, over what to count as sameness of theory and what to count as mere equivalence.” He describes earlier efforts and disagreements as involving words: “we can stop speaking of theories and just speak of theory formulations” (Quine, 1990, p. 96).

¹⁸ See, e.g., works cited in n.9, and (Bleier, 1984), (Fedigan, 1992), (Hrdy, 1988), and (Longino & Doell, 1983).

¹⁹ Quine argues that the thesis of global underdetermination “is not to be confused with” the Duhem/Quine thesis, i.e., holism (Quine, 1975, p. 313). One can make the point this way: that hypotheses and theories cannot be conclusively falsified does not entail that none can be conclusively verified.

4 Quine's thesis of holism

The thesis of holism is aptly described as saying that individual sentences do not have empirical meaning or content in isolation from a broader body of theory.²⁰ But this statement does not capture all the implications of Quine's holism and how his views about it evolved.

Quine first introduces holism in "Two Dogmas of Empiricism" but does not there argue for it. I quote the statement in its entirety because many commentators focus on his arguments in this essay against the analytic/synthetic distinction. Many neither note nor discuss Quine's claim that the two "dogmas" on which he focuses – the analytic/synthetic distinction, and the verificationist theory of meaning *applied to individual sentences* to both of which holism is offered as an alternative – are in Quine's words, "at root identical" (Quine, 1953, p. 41).

4.1 A statement of holism

The totality of our so-called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric which impinges on experience only along the edges. A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth values have to be redistributed over some of our statements. Reevaluation of some statements entails reevaluation of others, because of their logical interconnections—the logical laws being in turn simply certain further statements of the system, certain further elements of the field... But the total field is so underdetermined by its boundary conditions, experience, that there is much latitude of choice as to what statements to reevaluate in the light of any single contrary experience. No particular experiences are linked with any particular statements in the interior of the field, except indirectly through considerations of equilibrium affecting the field as a whole (Quine, 1953, pp. 42–43).

There are several interrelated theses here: that our theories form a single fabric or field given their interconnections; that this field is of our own making; that it impinges on sensory experience only at its periphery; and that our theories of nature face experience as a collective body, not sentence by sentence, not even particular theory by particular theory.²¹ There is no one-to-one relationship between individual sentences of this body and specific experiences.²² Empirical content or meaning is spread across

²⁰ In (Quine, 1990), Quine muses whether some simple everyday sentences might have their own, specifiable empirical meaning. But this question is not relevant to the present discussion for such sentences are far simpler than those at issue here.

²¹ As we will discuss, Quine came to argue that particular theories do independently face experience, that reasonably inclusive theories and hypotheses imply their own set of observational conditionals. This is moderate holism.

²² In *Pursuit of Truth* (1990), Quine suggests that some sentences of common sense may have specific sensory stimuli associated with them but acknowledges such sentences are theoretic to a degree – a position he argued for in *Word and Object* in his account of first-language acquisition and, through it, that of a conceptual scheme (Quine, 1960, pp. 6–11).

the sentences that together can be tested against experience. Alternatively put, individual sentences do not imply a specifiable set of stimulus conditions that confirm or disconfirm them. A clash with experience calls for some adjustment in the overall theory but does not dictate where adjustments should be made. And, of course, the statement includes the claim that the entire field is underdetermined by evidence, but Quine offers no argument for that thesis in this essay.

4.2 An argument for the thesis

One of Quine's arguments for the general thesis of holism is offered in *Word and Object* (Quine, 1960). Here, Quine argues not just that the various sentences of theories contained in our overall theory are interconnected, but that they are *interdependent*. This is suggested in "Two Dogmas" and is explicitly argued for in *Word and Object*.²³

In the latter, Quine describes the sentences of our theories as related in a way analogous to the blocks that constitute an arch, with its top blocks immediately supported by other blocks that, in turn, are supported collectively by all the remaining blocks including those of its base. The supports between sentences are "sensory supports" (Quine, 1960, pp. 11–13).

What comes of the association of sentences with sentences is a vast verbal structure which, primarily as a whole, is multifariously linked to non-verbal stimulation (p. 13).

So, the sentences of the various sciences, those of common sense, and of logic and mathematics, are interdependent in this sense: the evidential supports that link them to sensory experience are shared. What are "sensory supports" and what is the argument that they are shared across sentences? Recall that the fabric or field of theory proposed in "Two Dogmas" has a structure. There are sentences in its interior, those of logic and mathematics, that are furthest from the constraints imposed by sensory experience. There are sentences closest to sensory experience – those of common sense. Between these two are the sentences of scientific theories that differ in their levels of generality and explanation – a notion sometimes captured in the metaphor that the sciences form a hierarchy. The further from the periphery of sensory experience a sentence is, the more it depends on sentences closer to the periphery for its empirical meaning, the sensory stimuli that confirm or disconfirm it.

²³ Note that here Quine is still focusing on individual sentences, not the systems of sentences – theories – on which he will come to focus.

4.3 Working from within

A consistent tenet in Quine's arguments for holism is that we all, always, work from within an evolving body of theory we inherit and contribute to. We always begin, that is, in the middle of things.

I philosophize from the vantage point only of our provincial conceptual scheme and scientific epoch, true; but I know no better (Quine, 1969, p. 5).

Quine often uses Otto Neurath's metaphor of sailors who must rebuild their ship, plank by plank, while staying afloat in it (e.g., Quine, 1960, p. 3). There are no extra-theoretic or Archimedean vantage points available. We learn conceptual schemes as we acquire language, and both are needed for coherent and recoverable sensory experience (Quine, 1960, pp. 1–11.).

Holism and the tenet that we work from within theories we accept are also reflected in Quine's discussions of ontological commitments – of what we are committed to by way of objects and events given the theories we accept. In “Things and Their Place in Theories,” Quine says of such commitments,

The scientific system, ontology and all, is a conceptual bridge [of our own making], linking sensory stimulation to sensory stimulation.

Indeed, Quine argues that even what he calls “the cardinal tenets of empiricism” – that all the evidence there is for science (again broadly construed) is sensory evidence and that all inculcations of meanings of sentences must rest ultimately on sensory evidence²⁴ – are not first principles that come before science. Rather, they are findings of science (Quine, 1966, p. 212).

5 Moderate holism and underdetermination

In “Five Milestones of Empiricism,” published twenty-one years after *Word and Object*, Quine described holism (the third of the milestones he cites) as “the shift in semantic focus from sentences to systems of sentences” (Quine, 1981a, 1981b, pp. 70–71). In this essay, he focuses on the systems of sentences that constitute specific scientific theories rather than an overall theory of the world and argues for what he calls “moderate holism.”

A reasonably inclusive body of scientific theory, taken as a whole, will indeed ... imply a lot of observational conditionals, as I call them, each of which says that if such observable conditions are met, a certain observable event will occur (p. 70).²⁵

He goes on to say,

²⁴ Here I paraphrase a passage in Quine's “Epistemology Naturalized” (Quine, 1969), which spoke of the inculcation of meanings of “words” to reflect his subsequent argument that it is generally systems of sentences that have empirical meaning or content as described above.

²⁵ In early writings, Quine speaks of “observational conditionals” as implied by theories. In later writings, he uses the term ‘observational categoricals’ as so implied.

It is an uninteresting legalism ... to think of our scientific system of the world as involved *en bloc* in every prediction. More modest chunks suffice, and so may be ascribed their independent empirical meaning, nearly enough, since some vagueness in meaning must be allowed for in any event (p. 71).

We have moved to “reasonably inclusive,” separable, bodies of theory as the bearers of empirical meaning. Each reasonably inclusive theory or hypothesis entails its own observational categoricals.²⁶ And the indeterminacies Quine attributes to holism remain. If an observational categorical proves false, then the theory or hypothesis that, as a whole, entails it is false, but “there is no saying which of the component sentences of the theory to blame” (p. 70).

It is a common view that theoretical virtues or values can and should guide the kinds of judgment Quine is discussing here as well as theory choice in the case of conflicting theories. But additional indeterminacies arise in the practical application of such virtues or values. Although philosophers’ lists of these virtues often overlap, how specific virtues are defined are sometimes imprecise or the definitions differ. Take, for example, the virtue of simplicity. As Quine notes, “Simplicity is not easy to define. But it may be expected, whatever it is, to be relative to the texture of a conceptual scheme” – perhaps, he notes, due to the workings of our sensory apparatus or some generally-accepted view that nature is simple – but not, as has been argued, because the simpler a hypothesis or theory, the easier it is to confirm (Quine, 1966, pp. 242–245). Thomas Kuhn argued that scientists’ commitment to the five virtues he cited make the choice between competing theories objective. But he also argued that scientists can disagree among themselves as to whether one or another theory exhibits one or more of these virtues and that there are cases in which a trade-off between virtues must be made (Kuhn, 1977). Further, Longino argues that the practices and writings of feminist scientists indicate that they are often guided by theoretical virtues that, with the exception of empirical accuracy, differ from those traditionally cited – for example, feminists value complexity of relationship rather than simpler linear models of causal relationships, and ontological heterogeneity rather than generality of scope (Longino, 1995 and 1996).²⁷

In *Pursuit of Truth* Quine’s discussion of holism is characterized by moderate holism in its details and conclusion. There he cites “simplicity of [the theory that results from adjustments]” and “minimization of mutilation” as the norms that guide scientists’ decisions when faced with adverse observations that call for adjustments (Quine, 1990, p. 15). But, as he argues in “On Empirically Equivalent Systems of the World,” the choice between adequate modifications of a theory “is not uniquely determined” given holism (Quine, 1975, p. 71). In *Pursuit of Truth*, he also states, “Pierre Duhem made much of [holism] early in this century, but not too much” (Quine, 1990, p. 14).²⁸

²⁶ I clarify ‘reasonably inclusive theories’ in n. 5.

²⁷ Indeed, Longino provides reasons to rethink the dichotomy taken to obtain between cognitive and non-cognitive values (Longino, 1996).

²⁸ Pierre Duhem’s most general argument for holism occurs in a section of (Duhem, 1954) entitled “A Hypothesis in Physics Cannot be Falsified” (p. 185), in which he argues that a hypothesis’s test implications are not entailed by the hypothesis in isolation, but only in conjunction with a broad body of physical theory.

So, neither observations alone, nor observations together with appeal to theoretical virtues, determine whether a failed theory should be abandoned or revised, and if revised, what changes should be made.

Once we recognize individual theories and hypotheses as having independent empirical meaning, the underdetermination of these theories and hypotheses follows. The set of true observational categoricals that a theory or hypothesis entails does not entail that theory or hypothesis. Moderate underdetermination obtains: individual, reasonably inclusive theories and hypotheses are underdetermined by all the true observational categoricals they imply. I am unaware of Quine's offering an argument for this²⁹; but for many years, he was very much interested in global underdetermination, and in defining and defending the possibility of theories empirically equivalent to but logically incompatible with our overall theory of the world. I have no reason to believe Quine would reject moderate underdetermination and can see no reason why other empiricists would.

6 Conclusion

In the monograph, *On Quine*, introducing major themes in Quine's philosophy of science, Jack Nelson and I argue that the implications of Quine's general thesis of holism include the following.

Holism argues for the tentativeness of all of our theories and theorizing. As lay persons and scientists we enjoy far less certainty, and must make far more choices, than suggested by simpler theories of the relationship between science and sensory experience. A further implication of holism is that we have no "unmediated access" to the world around us. We work within a network of theories we inherit And this network itself is connected multifariously to experience (Nelson & Nelson, 2000, p. 39).

We also note that, if holism is correct, we are not in a position to relate most individual sentences to stimulus conditions that would verify or falsify them.

The only relationship we can reasonably explore is that between systems of sentences and sensory experiences, a relationship that underwrites the notion of empirically warranted theories more appropriately than it does the notion of truth (p. 39).³⁰

As noted, we were discussing Quine's general thesis of holism. But I maintain that the thesis or theory I have argued for here – whether we call it moderate underdetermination or something else – carries the same implications that we attributed to

²⁹ As Gary Thrane points out, one might correctly view Quine's argument in "Epistemology Naturalized" that "the Humean predicament" involving the inability to prove empirical generalization on the basis of observations ""remains," as yielding a localized underdetermination (Quine, 1969, pp. 74–75). But recall Quine's later argument, cited above, that *scientists* do not "rest with" inferring empirical generalizations from observations, but "invent hypotheses that talk of things that go beyond the reach of observation" (Quine, 1975, p. 30).

³⁰ We argued for more implications than I cite here because those implications are not relevant to the present discussion.

holism. The permanent underdetermination the thesis maintains allows for the presence and role of epistemic and non-epistemic values, or values that have both social and cognitive salience,³¹ in good science. Thus, it is a thesis to which feminists can successfully appeal when offering the kinds of argument outlined at the beginning of this discussion.

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³¹ See n.27.

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