
Solomon's Empirical/
Non-Empirical
Distinction and the
Proper Place of Values
in Science¹

Sharyn Clough
Oregon State University

In assessing the appropriateness of a scientific community's research effort, Solomon considers a number of "decision vectors," divided into the empirical and non-empirical. Value judgments get sorted as non-empirical vectors. By way of contrast, I introduce Anderson's discussion of the evidential role of value judgments. Like Anderson, I argue that value judgments are empirical in the relevant sense. I argue further that Solomon's decision matrix needs to be reconceptualized: the distinction should not be between the empirical vs. non-empirical, but between the relevant vs. irrelevant. Whether particular value judgments are relevant or not is an empirical question, to be decided on a case-by-case basis.

1. Introduction

In her book *Social Empiricism*, Miriam Solomon constructs an epistemic method for assessing whether each of two, or more, competing scientific theories has received an appropriate amount of research effort (2001). Her method relies on the consideration of a number of variables or "decision vectors." In addition to decision vectors based on considerations of the empirical data, Solomon examines what she calls "non-empirical" vectors. Value judgments counting for or against a scientific theory are factors that get sorted as non-empirical. She argues that if competing scientific theories have a distribution of empirical decision vectors that is equitable relative to their respective empirical successes, and if the non-empirical vec-

1. Portions of the arguments in this essay have appeared in my response to a *Metascience* review symposium (Clough 2006b), online as part of the *MIT Symposium on Gender, Race and Philosophy* (Clough 2006a), and in "Racist Beliefs as Objectively False Value Judgments: A Philosophical and Social-Psychological Analysis" (Clough and Loges 2008).

tors affecting each theory are equal in number, then we can be confident that each of the theories have received their proper share of research effort.

Solomon's characterization of value judgments as non-empirical follows a long-standing tradition in philosophy.² However, while many philosophers have defined value judgments as non-empirical, many people evaluate the acceptability of their value judgments by objectively assessing the fit between their value judgments and the data of their experiences.³ And some value judgments, like those espoused by feminists, often have empirical content that has well-documented support. The sorts of empirical considerations relevant to feminist value judgments, in particular, are discussed in Sec.6, below.

I begin by presenting Solomon's characterization of value judgments as non-empirical and comparing her characterization with Anderson's discussion of the evidential role of value judgments in science. Anderson argues that, in some carefully circumscribed cases, value judgments, while non-empirical or "non-cognitive," can appropriately be brought to bear on factual statements of evidence. I take Anderson a step further: inspired by Davidson (2001, 2004), I argue that the reason that such value judgments can play an objective evidentiary role in science is because, in the relevant cases, these value judgments operate as well-supported empirical hypotheses. On Solomon's view, we might say then that these value judgments should be added to the empirical side of the decision matrix. More radically, I think the decision matrix itself needs to be reconceptualized because the distinction Solomon is after in her prescription for apportioning scientific research effort is not that between empirical vs. non-empirical decision vectors, but between relevant vs. irrelevant decision vectors. Whether particular value judgments are relevant or not is an empirical question, to be decided, as with empirical questions generally, on a case-by-case basis.

2. Solomon's work

Using case studies from the history of science, Solomon articulates a method she calls "social empiricism" to decide whether the research effort and/or funding a particular scientific theory receives is appropriate, relative to the empirical successes of the theory. Rather than examining the decisions of individual scientists, Solomon examines theory-choice at the level of scientific communities. The focus on research communities paral-

els feminist reminders that science is in some non-trivial sense a social project (e.g., Lynn Hankinson Nelson 1990, 1993; Helen Longino 1990).

In her assessment of the appropriateness of a scientific community's research effort, Solomon considers a number of variables or decision vectors, and divides these vectors into the empirical and non-empirical (Solomon 2001, 57–58). The non-empirical vectors include psychological factors affecting individual scientists, such as radicalness of personality (correlated with birth order), as well as ideological and social factors that reveal value judgments, such as sexism, and anti-Semitism. In this respect, her epistemic approach is thoroughly naturalistic, in line with the call to naturalism prescribed by a number of feminist analyses of science (e.g., Nelson 1990; Richmond Campbell 1994, 1998).

But of course, as an epistemological project, she goes beyond the naturalistic description of how scientists choose between theories, and adds in an epistemic prescription for theory-choice. She believes that what she has identified as the empirical facts of each case study are not themselves sufficient for evaluating whether any particular theory received the research effort it deserved—we need also to examine the non-empirical factors. Solomon's social empiricism makes the epistemic claim that if competing scientific theories have a distribution of empirical decision vectors that is *equitable* relative to their respective empirical successes, and if the non-empirical vectors affecting each theory are *equal* in number, then each of the theories has received its proper share of research effort and support.

One of Solomon's case-studies concerns the inappropriately high levels of research effort afforded the "central dogma" that DNA is the sole controller of cellular processes (Solomon 2001, 110–115). Solomon argues that during the 1950s, non-empirical decision vectors affected by sexism, among other factors, were distributed *unequally* between competing theories of biological inheritance (Solomon 2001, 112–113). This inequity means that Barbara McClintock's work on transposition and the work of many others who examined cytoplasmic rather than DNA-based inheritance, did not receive the research effort it deserved.

This is a chapter in the history of biology made by familiar by a number of feminist researchers such as Evelyn Fox Keller, especially Keller's discussions of the work of Barbara McClintock (Keller 1983). However, Solomon's approach is self-consciously different from the approaches of other feminists who have examined this particular historical period, in that she argues that the goals of feminists who study and/or criticize science are different than and separate from the goals of science itself, *vis-à-vis* empirical success (p. 147). Solomon's social empiricism is aimed at supporting the goals of science. While she acknowledges that the scientific goal of empirical success may sometimes coincide with feminist aims,

2. A tradition described, though not endorsed, by Hilary Putnam (2002).

3. See the sociological research on this point presented by Ball-Rokeach, Rokeach and Grube 1984; Rokeach 1973.

such a coincidence, on her view, would be something of a happy accident. Feminism, according to Solomon, is about political value judgments and science is or should be about something different, namely the empirical facts. More on this difference, below.

Solomon's method of social empiricism uses an "improper linear" analysis of the different variables that affect theory choice in science. In her discussion of the competing theories of biological inheritance that were at play before the discovery of DNA, Solomon identifies 15 factors that affected scientific decision-making (pp. 81–84). These factors range from nationalist interests, anti-Semitism, and the projection onto cellular processes of a number of sexist views about the importance of traditional hierarchies in families (all non-empirical vectors), to explanatory power and choice of model organism (empirical vectors).

She distributes the vectors supporting Mendelism, on the one hand and theories of non-nuclear inheritance, on the other (p. 85), noting that Mendelism had more support based on empirical factors (+3) than did the theories that involved non-nuclear inheritance (+2). However, she argues, Mendelism also had a disproportionate number of non-empirical factors in its favor (+5) as compared to those in favor of non-nuclear inheritance (+2). Solomon concludes from this analysis that Mendelism received more than its fair share of research effort, relative to the research effort afforded theories of non-nuclear inheritance (p. 86).

After the discovery of DNA and the advance of molecular genetics, Mendelism was refined to include the "central dogma" that DNA controls cellular processes. While the empirical success of the theory continued, a number of non-empirical factors also continued to favor the theory, inappropriately, relative to competing theories that highlighted cytoplasmic or other non-nuclear modes of inheritance. The non-empirical decision vectors affecting theory-choice after the discovery of DNA are discussed by Solomon in her chapter on the dangers of inappropriate consensus in science (esp. pp. 111–113).

She notes that the central dogma was favored because it reduced biological processes to chemical processes and encouraged a metaphysically attractive unity of science (a non-empirical factor favoring the central dogma). Also, empirical discoveries of feedback regulation of nuclear genes were ignored because such regulation didn't fit into the more uni-directional DNA model or was repackaged in terms of a uni-directional approach (a non-empirical factor working against alternatives to the central dogma). Empirical evidence of cytoplasmic inheritance in *Chlamydomonas* was ignored because of the sexist treatment of the main researcher, Ruth Sager, by her peers (a non-empirical factor against cytoplasmic theo-

ries of inheritance) and because her evidence was arrived at using genetic techniques that were seen as "outmoded" relative to the new molecular and biochemical technology (another non-empirical factor against cytoplasmic theories of inheritance) (p. 112). A similarly negative reception awaited McClintock's empirical evidence of transposition in maize where portions of chromosomes were shown to move and the movement was shown to affect gene expression. Solomon explains the negative reception of McClintock's work in terms of sexism and other non-empirical factors that worked against cytoplasmic theories of inheritance. According to Solomon, after the discovery of DNA there continued to be an unequal distribution of non-empirical decision vectors among the competing theories: [+5] negatively affecting theories of non-nuclear inheritance and [+1] positively affecting the central dogma.

3. Assessing the empirical/non-empirical distinction

Although Solomon admits that what falls into the empirical or non-empirical categories is itself a contingent matter (Solomon 2001, 59), I am concerned about the nature of the distinction itself. It appears that the distinction attempts to keep social and political value judgments, for example, separate from or external to the proper workings of science, insofar as value judgments are thought to be unrelated to empirical considerations. Only empirical considerations can be properly viewed as internal to the scientific theories being adjudicated. This re-introduction of the internal/external view of science and social values reinforces the traditional model that characterizes social and political value judgments, such as those judgments informed by sexism and anti-Semitism, and *also* feminism and critical race theory, as unavailable for empirical adjudication.

However, feminists have good empirical arguments in support of their feminist social and political values and good empirical arguments against other sorts of values, such as androcentrism and racism. Further, there is increasing evidence that where feminist values are relevant, their inclusion makes for a more empirically adequate science than does the inclusion of sexist or androcentric values (more on this in sec. 6, but see also Wylie and Nelson [2006]). Solomon's epistemology does not explain or make use of the relationship between value judgments and empirical data.

Solomon might admit that social and political value judgments have empirical support, but still relegate them to the non-empirical sphere if the empirical support is not directly relevant to the empirical success of the scientific theory in question. But of course there will be any number of empirically-supported factual judgments that are similarly irrelevant. That there were a particularly high number of rainy days recorded in Cor-

vallis, Oregon, USA in March of 2006 is an empirically-supported factual judgment, but it is unlikely to be relevant to most scientific hypotheses, especially those that address locales outside of Oregon and have nothing to do with the weather. Decisions about relevance are seldom so cut-and-dried of course, and it is here that careful empirical considerations must be brought to bear, whether those considerations concern the relevance of a particular value judgment or any other sort of judgment. But it seems clear at least, that the divide Solomon is after is not so much the empirical vs. non-empirical but the relevant vs. irrelevant.

There are other problems with the empirical/non-empirical distinction. Even if Solomon allows that some non-empirical decision vectors are based on at least some empirical data, her method provides no way to evaluate this data. Non-empirical vectors are given the same weight, irrespective of the amount or quality of empirical data on which they are based. As long as the number of empirically-based decision vectors relative to empirical successes is equitably split between competing theories, and the theories have an *equal* number of non-empirical decision vectors in their support, it makes no difference whether one of the theories is supported by a non-empirical decision vector based on a sexist value judgment, while another theory is supported by a vector based on a feminist value judgment. As long as social and political values, such as feminism and sexism, are characterized by Solomon as “non-empirical” decision vectors, the vectors will balance out and have no differential affect on determinations regarding the equitable distribution of research effort. Imagine, however, that the Nobel committee was found to have revisited McClintock’s work because the committee had been compelled by feminist science criticism of the sexism in molecular biology (that feminist science criticism had anything to do with the committee’s decision is unlikely, but for the sake of argument, imagine that it did). On Solomon’s account, decision vectors based on a commitment to feminist science criticism would count as non-empirical, and would simply balance out the decision vectors that had been based on sexism.

The notion of feminism and sexism as equivalent forces does not square with the growing literature showing the importance of feminist interventions in science. We need instead an account of feminist and sexist value judgments that shows how it is that a) the former are generally better supported by empirical data than are the latter and b) that a scientific theory supported by feminist decision vectors, where relevant, is going to be a theory that can be shown objectively to have more empirical successes than a theory informed by sexist decision vectors. The presence of feminist-based decision vectors should add to and strengthen the empirical equation.

4. Anderson on values in science

Elizabeth Anderson comes very close to providing such an account in her essay “Uses of Value Judgments in Science” (2004). Following Longino (1990), Anderson uses the term “cognitive values,” to refer to the empirical values most philosophers and scientists share regarding the accuracy, simplicity, scope, consistency, and fruitfulness of any given scientific hypotheses, theory, or research program. She uses the term “non-cognitive values” or simply “value judgments” when referring to almost any other value claim that might be brought to bear in a scientific setting, for good or ill. These include value claims that are traditionally seen to fall outside the cognitive or empirical realm, such as feminist social and political claims.

There are two main reasons why one might try to make a general and robust distinction between non-cognitive value judgments on the one hand, and cognitive or factual judgments on the other, and Anderson successfully counters both. The first reason, already discussed in relation to Solomon’s work, appeals to the traditional philosophical view of value judgments as free of empirical content. The second reason does not rely so much on the question of empirical content but on the dogmatic way in which value judgments are thought to be held. Here, even if value judgments are thought to be empirical, the worry is that our dogmatism about these sorts of judgments makes them a source of bias in science rather than a source of objective empirical strength. Anderson argues instead that, in some carefully circumscribed cases, value judgments from the non-cognitive realm can appropriately be brought to bear on “factual statements of evidence” from the cognitive realm, and vice versa.

Foreshadowing my own position, I argue that, for purposes of the science and values debate, there is *no general and significant difference in kind*, between the cognitive and non-cognitive realms, because just like “factual statements of evidence,” value judgments are arrived at and, in ideal cases, held conditional on, the evidence of our ongoing experiences in and of the world. Here, Davidson brings Quine’s holistic project to a more consistent conclusion, *viz.*, that we have no good reason to believe that beliefs about values get their meaning in a way that is significantly different from that of beliefs about “facts”—the meaning of both sorts of beliefs is produced more or less directly through our experience with the world around us (Davidson 2004, 43–47).

Returning to Anderson’s project, she begins by reminding us that feminists in science and science studies have long engaged in the identification of sexist political values in science, and that many feminists have argued further that the very identification of the sexism requires not a value-free approach, but the inclusion of a *different set* of values, namely, feminist

values. How then to articulate a legitimate, positive role for feminist and other relevant values in science and science studies?

Following Campbell (1994) and Hugh Lacey (2003), she next makes a compelling argument for the logical independence between a theory's impartiality and its neutrality (p. 4). That is, scientific theories that are not neutral between a set of value claims can, nevertheless, be arrived at via an impartial, objective examination of the evidence. Given the impossibility of a theory ever being neutral between all existing value judgments, we can and should strive for a different notion of objectivity that demands impartiality with respect to the relationship between evidence and theory.

One of the most important contributions Anderson makes to the science and values debate is an observation, that, once made, seems perfectly obvious: the spectre haunting instrumentalist discussions of practical reason—the problem of moving from “is” to “ought”—is no more than the problem encountered by any deductive argument whose conclusion is ampliative (pp. 5–6). So, it is not, therefore, a special problem of moving from premises from the descriptive realm to a conclusion from the evaluative realm. From here, she shows that the descriptive or cognitive and the evaluative or non-cognitive can be linked in fruitful ways, with the proper inductivist proviso that any conclusion for a particular instance of that linkage is contingent and amenable to correction in the face of new evidence.⁴

In the key third section of her paper, Anderson provides arguments that focus on the question whether, and how, experiences (now cashed out not as scientific findings but as something more informal and ubiquitous) can provide evidence for value judgments. Emotional experiences are introduced to show how value judgments can be informed by evidence.

While Anderson notes that emotional experiences are “among the experiences” that could provide evidence for values, it is not clear that we need to introduce these experiences as an intermediary when we could instead proceed immediately to a very basic argument about the empirical nature of values—an argument that has the further virtue of treating the science-laden nature of values and the value-laden nature of science as a single phenomenon in need of only a single holistic explanation.

With respect to her claim that emotional experiences can provide evidence for value judgments, Anderson presents three criteria that a mental state must satisfy in order to be used as evidence in this way. She writes

that “To count as presenting evidence, a mental state must a) have cognitive content, b) be independent of what it is supposed to be evidence for, and c) be defeasible—accountable and hence responsive to the way the world is” (Anderson 2004, 9). While she provides no argument for why these three criteria are necessary and/or sufficient, they seem reasonable enough for our present purposes. She then argues that emotional experiences satisfy the criteria and, therefore, that emotional experiences can be used as evidence for value judgments. I argue that value judgments *themselves* satisfy these criteria, obviating the need for emotional or other intermediaries.

5. Value judgments as empirical hypotheses

I begin by looking at how value judgments satisfy Anderson's first criterion that, “to count as presenting evidence, a mental state must have cognitive content.” Here, a return to the question of Davidson's holism is helpful. On Davidson's account, to have meaningful beliefs at all, whether they be value judgments or factual statements of evidence, is to be practically (for example, linguistically) enmeshed in a physico-social relationship with the world around us, including other knowers. Meaning, or to use Anderson's phrase, cognitive content, is produced through a triangulation between ourselves, the fellow creatures with whom we communicate and engage, and the shared bits of the world on which that communication or engagement is focused.⁵

Insofar as value judgments express anything then, that is, insofar as they are meaningful, they too are beliefs that have been acquired through the usual process of practical engagement with the world through communication with others. Learning to identify something as “good,” or as “sexist,” or as “liberal”—learning the meaning of these value terms— involves learning through experience of the world to successfully classify something as belonging to a particular category, to assign it a property. The same process is used for learning the meaning of the category terms “conducts electricity,” “reflects light,” “produces heat.” Insofar as value or any other kind of judgments are meaningful, they are beliefs that arise from our experience with the world, or are sufficiently semantically connected to beliefs that do so arise—that is, they have cognitive content that can be objectively evaluated (Davidson 2004, 48).

Anderson's second criterion is that “to count as presenting evidence, a mental state must be independent of what it is supposed to be evidence for.” Like the emotional experiences she discusses, value judgments can be shown to be amenable to reflective deliberation—they do not have to de-

5. This latter point is made especially well by Davidson (2001).

4. Neither I nor Anderson spend much time detailing what we mean by “consistent with experience” or “responsive to evidence” or “empirically accurate/adequate,” and so on. Solomon however, does provide an illuminating discussion of the complexity of these notions in ch. 2 of her book (Solomon 2001).

termine, inappropriately, any given interpretation of some other set of judgments. Now of course, they might. Anderson argues that “we need to ensure that value judgments do not operate to drive inquiry to a predetermined conclusion” (Anderson 2004, 11). I want to emphasize that this same need holds for *any* judgment. So, while assigning some phenomenon to the category “good” might inappropriately bias our interpretations of any new evidence about that phenomenon, so too might our categorizations of it as “hot” or “reflective.” Importantly, in neither case is the categorization or its affect on future interpretations immune from appropriate revision in the light of new experiences. As Anderson herself shows, any judgments can be held dogmatically, though, thankfully, no particular judgment need be held dogmatically. Certainly we must take some body of our beliefs to “hold fast” in any given situation, be they beliefs about facts or values, similarly, any particular belief can be questioned under the right circumstances. Any resistance we feel with respect to this sort of questioning is as likely to arise for factual judgments, say about the effects of gravity on our bodies, as it is about value judgments, say about the importance of equality among persons before the law. But again, speaking generally, in the case of any of our own value judgments, as with any of our factual judgments, it is certainly possible to learn through experience that we’ve got it wrong. Anderson, refreshingly, calls this process “growing up.”

That value judgments, as with any sort of judgment, arise from and can be tested against our experience with the world is simply another way to describe Anderson’s final criterion that “to count as presenting evidence a mental state must be defeasible—accountable and hence responsive to the way the world is.” We can be right or wrong in assigning various properties, be those properties from the realm of “facts” or “values.” Wanting it to be true that something conducts electricity, does not make it so. Similarly with wanting it to be true that something is good, or sexist, or liberal. The truth of any of our judgments is an objective but still for all that, a contingent matter.

The argument I have presented entails that value judgments are “experience-laden,” and hence, ideally, in the relevant cases, “science-laden.” It does so without the need for the intermediary of emotional experience. Additionally, if I am right, then, not only are value-judgments informed by evidence, but, where relevant, value judgments can be used as evidence in support of other sorts of judgments, such as judgments made in support of a particular scientific hypothesis and/or in helping to decide which evidentiary judgments should be given weight when choosing between hypotheses. A single, holistic argument about belief acquisition can be used

to explain both the science-laden nature of values and the value-laden nature of science.

The notion that we need intermediaries (such as emotional experiences) to explain the interaction of distinct realms—the cognitive realm of scientific judgments and the non-cognitive realm of value judgments—is, on this view, revealed as spurious. When Anderson writes that “from an epistemological point of view, value judgments function like empirical hypotheses” (Anderson 2004, 11) we can go further and say that value judgments, like any other, just *are* empirical hypotheses, broadly speaking. Factual and value judgments might be used for different rhetorical purposes in our explanations and research, but that is different from saying that one has cognitive or empirical content and the other does not.⁶

The main question that remains, concerns whether any given value judgment, now seen as an empirical hypothesis, is relevant to the scientific question at hand (not all or even any value judgment will always be relevant), and whether that value judgment is consistent with the available evidence. I argue that the only standard we can appeal to in bringing *any* judgment to bear in a scientific setting, whether that be a judgment of fact or value, is whether the judgment is relevant and consistent with the available evidence. Value judgments, just like any other, are capable of being relevant and consistent with the available evidence, or not, and if they are so consistent, and if it is relevant to consider them, then they should be given weight.

6. Feminist values

Anderson has observed that for all that feminists are defined by their social and political value commitments, values are under-theorized, generally, in feminist science studies. So, for example, it is unclear exactly what sorts of feminist values are at issue in debates about the objectivity of feminist interventions in science. Often value judgments are discussed in only very general terms. When queried on the topic, Solomon identifies as feminist the valuing of complex, holistic theories over reductionistic theories, or (following Longino) the valuing of diversity, or of democratic as against undemocratic decision-making in science (Solomon, private conversation). Again, for Solomon, these value-judgments are non-empirical factors af-

6. So for example, factual judgments can sometimes function more like rules or norms. See, for example, Michael Hymers’ illuminating discussion of Wittgenstein’s claim regarding the dual nature of putatively descriptive propositions, like “This is my hand.” This proposition can, in some contexts, function as an empirical truth, and sometimes, it can function logically as a rule around which other descriptive claims are organized and evaluated (Hymers 2003).

fecting theory-choice. Unlike Solomon, I think there *is* an empirical fact of the matter as to whether holistic accounts in science are to be valued over reductionistic accounts, or whether democratic decision-making processes are to be valued over undemocratic processes. Though I worry that, as they stand, these value-judgments are too broad to be tested in any general way, and would be better settled on a case by case basis.

Consider then, as a more specific example, how the traditional scientific valuing of fruitfulness, and the feminist valuing of diversity, might affect psychological theories of human development. I argue that there is no significant cognitive or epistemic difference in giving weight to a theory that is fruitful because it leads to the growth of a number of related theories that were previously unavailable, and giving weight to a theory that is inclusive because it is based on and explanatory of the relevant range of experiences of the subjects the theory purports to be about (i.e., a theory that gives full-weight to the experiences of both males and females, *as* males and females, *as* children and adults, *as* Asians and Africans, *as* heterosexuals and homosexuals). In each case, giving weight to considerations of fruitfulness and to considerations of inclusivity, is *premised on* a fairly well-established inductive claim that, over time, theories that are non-fruitful or exclusive tend not to be explanatory of, or consistent with, the evidence.

Some might argue here that, ironically, the problem is not with inclusivity, but with fruitfulness, in that fruitfulness is not always directly related to evidence, and of course this is true. However, it's clear that if *non-fruitful* theories *regularly* proved to be consistent with, and explanatory of, the available evidence, then we would have good inductive reason to question the cognitive or epistemic value of fruitfulness. As it stands, with respect to psychological theories of human development, we have good inductive reason, that is, good empirical data, to support both fruitfulness and inclusivity as cognitive or empirical values.

But, again, these claims are defeasible and concerning the value of inclusivity in particular, which features of human identity are taken to be relevantly included is, likewise, an empirical and on-going question. In the contemporary United States of America, for example, we have reliable data suggesting that variations in sex/gender, race/ethnicity and economic status are associated with variation in human psychological development. Any theory attempting to explain human psychological development ignores these variables at the expense of fidelity to well-supported cognitive, empirical values.

It seems to me, however, that the sorts of values most often at issue in debates about the objectivity of feminist interventions in science do not concern preferences for general properties and processes such as complex-

ity, democratic decision-making, or diversity. Rather, as Anderson explains in her discussion of feminist social scientific research on divorce (Anderson 2004), the sorts of values at issue involve more particular claims that, for example, women, just like men, cannot be adequately defined by exclusive attention to their relationships to their spouses and children.⁷ Both women and men have needs, desires and concerns that focus on aspects of their lives other than their families and homes. These sorts of claims themselves have empirical content that can be objectively evaluated, and they are relevant to the question of how to approach the scientific study of divorce. Anderson argues convincingly that the foregrounding of these feminist claims, however controversial to some, can objectively increase the empirical adequacy of research on divorce (Anderson 2004, 12–18). For example, by including this sort of claim, feminist researchers were encouraged to frame questions for their subjects that allowed for a wider range of responses and hence a more empirically accurate description of the phenomenon. Feminist researchers were able to see what traditional researchers did not, namely that divorce might not always be seen by subjects as a negative life event (Anderson 2004, 13).

7. Concluding remarks

I believe that Anderson's contributions to this debate are timely and important, just not always as consistently holistic as they could be. Even at the conclusion of her essay she continues to argue for the contingent legitimacy of "non-cognitive value judgments" in scientific research (p. 18). Diverging slightly from Anderson's conclusions here, I have argued that there are no such things as non-cognitive value judgments. There are only cognitive judgments that are more or less relevant and better or worse supported by the available empirical evidence, so more or less legitimate for use in any given scientific research program.

My position responds to a dilemma posed by Solomon's decision to divide the factors affecting theory-choice in science into empirical and non-empirical realms, and to count feminist and other social values as "non-empirical." I've argued that her model does not explain how it is that while feminist and other value judgments are traditionally defined as non-empirical, feminist values, in particular, find their persuasiveness precisely insofar as they have been tested against our experiences of the world.

Of course, the view that feminism is generally better supported by em-

7. Of course to those who hold feminist values, this might sound like a straightforwardly empirical claim, to someone who does not hold feminist values, however, this "straightforward" claim is value-laden through and through (though not, I argue, non-empirical).

pirical data than is sexism, for example, is itself an empirical claim, but so far it's held true (indeed the greater accuracy of a feminist worldview is the fuel that gives feminist political movement its normative force). When prescribing a choice among any given set of competing scientific theories, then, a fully naturalized approach needs to account for the normative force of feminist value judgments that may be affecting the theories. This normative force, where relevant and consistent with the empirical evidence, can and has produced objectively improved scientific research.

This last point, highlights my claim that the distinction Solomon is after in her prescription for apportioning scientific research effort is not that between empirical vs. non-empirical decision vectors, but between relevant vs. irrelevant decision vectors. Whether particular value judgments are relevant or not is an empirical question (though not anything like a straightforward question), to be decided, as with empirical questions generally, on a case-by-case basis.

References

- Anderson, Elizabeth. 2004. "Uses of Value Judgments in Science: A General Argument, with Lessons from a Case Study of Feminist Research on Divorce." *Hypatia* 19, 1: 1–24.
- Ball-Rokeach, S. J., M. Rokeach, and J. Grube. 1984. *The Great American Values Test: Influencing Behavior and Belief through Television*. NY: Free Press.
- Campbell, Richmond. 1994. "The Virtues of Feminist Empiricism." *Hypatia* 9, 1: 90–115.
- . 1998. *Illusions of Paradox*. New York: Rowman and Littlefield.
- Clough, Sharyn and Bill Loges. 2008. "Racist Beliefs as Objectively False Value Judgments: A Philosophical and Social-Psychological Analysis." *The Journal of Social Philosophy* 39(1): 77–95.
- Clough, Sharyn. 2003. *Beyond Epistemology: A Pragmatist Approach to Feminist Science Studies*. Landham, MD: Rowman and Littlefield.
- . 2006a. "Commentary on Elizabeth Anderson's 'Uses of Value Judgments in Science.'" *MIT Symposium on Gender, Race and Philosophy* 2, 1: 1–6. <http://www.mit.edu/sgrp>.
- . 2006b. "On the Very Idea of a Feminist Epistemology of Science: Response to Commentators on *Beyond Epistemology: A Pragmatist Approach to Feminist Science Studies*," *Metascience* 15: 27–37.
- Davidson, Donald. 2001 (1991). "Three Varieties of Knowledge." Reprinted in *Subjective, Intersubjective, Objective*. Oxford: Clarendon Press.
- . 2004 (1994). "The Objectivity of Values." Reprinted in *Problems of Rationality*, Oxford: Clarendon Press.
- Hymers, M. 2003. "The Dignity of a Rule: Wittgenstein, Mathematical Norms, and Truth." *Dialogue: Canadian Philosophical Review* 42, 3: 419–446.
- Keller, Evelyn Fox. 1983. *A Feeling for the Organism: The Life and Work of Barbara McClintock*. New York: Freeman.
- Lacey, Hugh. 2003. "Where Values Interact with Science." In *Siblings Under the Skin: Feminism, Social Justice and Analytic Philosophy*. Edited by Sharyn Clough. Davies Group Publishers.
- Longino, Helen. 1990. *Science as Social Knowledge*. Princeton: Princeton University Press.
- Nelson, Lynn Hankinson. 1990. *Who Knows: From Quine to a Feminist Empiricism*. Philadelphia: Temple University Press.
- . 1993. "A Question of Evidence." *Hypatia* 2, 8: 172–189.
- Putnam, Hilary. 2002. *The Collapse of the Fact/Value Dichotomy, and Other Essays*. Cambridge: Harvard University Press.
- Rokeach, M. 1973. *The Nature of Human Values*. NY: Free Press.
- Solomon, Miriam. 2001. *Social Empiricism*. Cambridge: MIT.
- Wylie, Alison and Lynn Hankinson Nelson. 2006. "Coming to Terms with the Values of Science: Insights from Feminist Science Scholarship." In *Value Free Science: Ideal or Illusion?* Edited by Harold Kincaid, John Dupré and Alison Wylie. Cambridge: Oxford University Press.