Uses of Value Judgments in Science: A General Argument, with Lessons from a Case Study of Feminist Research on Divorce

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The underdetermination argument establishes that scientists may use political values to guide inquiry, without providing criteria for distinguishing legitimate from illegitimate guidance. This paper supplies such criteria. Analysis of the confused arguments against value-laden science reveals the fundamental criterion of illegitimate guidance: when value judgments operate to drive inquiry to a predetermined conclusion. A case study of feminist research on divorce reveals numerous legitimate ways that values can guide science without violating this standard.

I. Rethinking the Underdetermination Argument for Value-Laden Science

Feminist science is science guided by feminist values. To its critics, the very idea of feminist science—or any science guided by moral or political values—is paradoxical and dangerous (Susan Haack 1993; Clifford Geertz 1990; Paul Gross and Norman Levitt 1994; Janet Richards 1995). Advocates of feminist science have offered able defenses of value-laden science (Helen Longino 1990; Lynn Hankinson Nelson 1990). Their core argument begins with the observation that the link between evidence and hypothesis is mediated by background assumptions. Scientists must therefore select their background assumptions before they can determine which hypotheses are supported by the evidence. According to Quine's underdetermination thesis, theories are, in principle, underdetermined even by all the empirical evidence that could ever be gathered.

Hypatia vol. 19, no. 1 (Winter 2004)

So there is always room for choice in the selection of background assumptions. Since various background assumptions could be legitimately selected for any reason, no logical or methodological principles prevent scientists from choosing some on account of their congruence with their moral or political values. A *fortiori*, feminists are permitted to choose their background assumptions on account of their congruence with feminist values.

The underdetermination argument has served feminist scientists well. But the time has come to rethink the way it models the relations between values and hypotheses. As the argument stands, it does not help us evaluate the different ways that values might be deployed in inquiry. Yet surely some uses of values to select background assumptions are illegitimate. Feminists object to the deployment of sexist values to select background assumptions that insulate the theoretical underpinnings of patriarchy from refutation. Critics of feminist science similarly worry that feminists will use their values in ways that insulate feminist theories from refutation. We need criteria to distinguish legitimate from illegitimate ways of deploying values in science.

The underdetermination argument also assumes that all moral and political values are on a par with respect to their epistemic value. It's just a lucky break if some values are more congruent than others with what turn out to be the most epistemically fruitful background assumptions. To the extent that feminists are simply interested in making room for the legitimacy of feminist science, we should not demand more than this. No one should be persuaded by an argument that *immediately* infers, from the claimed normative superiority of particular moral and political values, their superiority as tools for generating scientific knowledge. Yet we might wonder whether some values are systematically more epistemically fruitful than others.

Finally, as stated, the underdetermination argument represents values as an exogenous influence on theory choice. Yet it would seem reasonable that if values can legitimately influence empirical theories, then empirical theories can legitimately influence our value judgments. Some feminist philosophers, notably Lynn Hankinson Nelson (1990, 248–54, 300–317), have stressed this possibility. On her model, factual and evaluative judgments are integrated into a unified web of belief. However, her commitment to Quinean holism, in which our factual and evaluative theories confront, as a body, the totality of the evidence, prevents her from modeling the specific ways that particular empirical observations can be used to support or undermine particular value judgments. This lack of specificity lends an air of hand waving to the underdetermination argument.

These deficiencies of the underdetemination argument can be traced to a common cause. Feminist philosophers of science have focused on analyzing science, while mostly taking value judgments for granted.[1] This undertheorization of value judgments has made it hard to identify precisely the concerns

of advocates of value-free science. It has impeded the development of criteria to distinguish legitimate from illegitimate uses of values in science. It has also made it difficult to model the knowledge-enhancing roles of value judgments in science. To make progress on these problems, we need to integrate moral philosophy and the philosophy of science.

I shall address these problems by focusing attention on value judgments and their epistemic character: on what facts count as evidence *for* value judgments, and what facts value judgments help us see. In the next section of this paper, I review the orthodox case for the claim that good science is value-free or neutral among moral and political values. I show that the orthodox case depends on the claim that value judgments are science-free—that is, that no empirical observations can count as evidence for a claim that something is good. In section three, I show that the real worry advocates of neutrality have about value judgments in science is what they take to be the *dogmatic* character of value judgments, which is derived from the supposition that value judgments are science-free. The worry is that if we allow value judgments to guide scientific practice, they will infect it with dogmatism, thereby rendering it blind to the evidence. I address this worry by arguing that we have evidence about the value of different states of affairs. One important source of evidence consists in the representations that ground our emotional responses to these states. If we condition our acceptance of value judgments on evidence, we will not hold our values dogmatically, and they can be integrated into scientific theorizing without making it dogmatic. In part four, I explore the bidirectional influences of factual and value judgments, identifying specific paths of legitimate and productive interaction, in an exemplary case of feminist research. Part five draws conclusions from this case study for the questions with which we began.

II. The Orthodox Case for Value-Neutral Science

Let us distinguish two senses to the claim that science is value-free (Hugh Lacey 1999, 2–6):

1. *Neutrality*: Scientific theories do not a) presuppose or b) support any noncognitive (moral and political) intrinsic value judgments.

2. *Impartiality*: The only grounds for accepting a theory are its relations to the evidence and its manifestation of cognitive values. These grounds are impartial among rival noncognitive values.

According to impartiality, theories are to be assessed on the basis of their realization of cognitive values, such as empirical adequacy, consistency, scope, simplicity, and consonance with established theories (Kuhn 1977). How well a theory realizes these cognitive values can be assessed independently of one's moral and political values. It is a delicate matter to arrive at a sound formulation of the claim of impartiality. I shall assume for the purposes of this paper

paper the existence of a sound formulation of this claim, suitably qualified (Hugh Lacey 1999, 224–31).

Impartiality is logically independent of neutrality. It poses no logical barriers to the possibility that a scientific theory, impartially supported by the evidence and manifesting cognitive values to a high degree, provides greater support for some noncognitive intrinsic value judgments (value judgments, for short) than for others. If this were true, then some value judgments would be impartially justified, or at least better justified than rival value judgments. And this would be a fact that adherents of rival value judgments would have to admit. Similarly, a scientific theory might presuppose certain noncognitive value judgments—for instance, in classifying data according to a preferred normative theory. Such a theory might manifest cognitive values to a higher degree than rival theories that refuse to classify the data in the same value-laden way. If this were true, then some value judgments would be epistemically fruitful, as judged by impartial standards, and their deployment in science would be epistemically justified on impartial grounds.[2]

In this paper, I focus on the arguments for neutrality—the idea that sound empirical theories neither a) presuppose nor b) support any noncognitive value judgments. Call these claims presupposition neutrality and implication neutrality, respectively. The two claims of neutrality entail one another. If a hypothesis is confirmed by independent evidence, it may legitimately be used as a tool for uncovering and interpreting observations bearing on some other hypothesis. For example, if the evidence supports the theory of carbon dating, then one may legitimately presuppose the validity of carbon dating in choosing among rival archaeological theories about the origin of agriculture. By parallel reasoning, if scientific evidence existed that supported a particular value judgment, then it could legitimately be used to interpret data relevant to some *other* scientific theory. And if a sound scientific theory were entitled to presuppose certain value judgments, it could provide support for further value judgments. For example, if a scientific theory were entitled to presuppose that x is valuable, and it discovered that y causes x, then it would support the judgment that y is instrumentally valuable.

Let us turn to the standard case for neutrality. It rests on two arguments, one psychological, the other ostensibly logical but really dependent on a claim about practical reason. The psychological argument addresses presupposition neutrality. It claims that scientists who bring to inquiry value judgments concerning the subject of investigation—for instance, the judgment that the subordination of women is unjust—will be unable to impartially assess empirical theories concerning that subject—in this case, phenomena of women's subordination. "Whenever the person of science introduces his personal value judgment, a full understanding of the facts *ceases*" (Max Weber 1946, 146). Good scientists

should bracket their value judgments and adopt a neutral, "objective" attitude toward their subject matter.

What is the psychological mechanism by which value presuppositions interfere with impartiality? Several candidates have been suggested. Geertz worries that investigators doing science as feminists will be compromised by wishful thinking (1990, 19). Gross and Levitt believe that such investigators will dishonestly reject an impartially justified scientific theory "if and when it inconveniences [their] political program" (1994, 162). Haack argues that they will be close-minded, rejecting any reasoning or evidence that did not reach a foregone conclusion supported by their political preferences (1993, 37–38).

The logical argument is addressed to implication neutrality. Supporters cite "Hume's law," that there is no deductively valid inference from "is" to "ought," from factual to value judgments (Haack 1993, 35). This facile claim does not get to the heart of the matter. Even if we grant that no substantive value judgment *logically* follows from any conjunction of factual statements, this merely puts value judgments on a logical par with scientific hypotheses. For it is equally true that there is no deductively valid inference from statements of evidence alone to theoretical statements. Theories always logically go beyond the evidence adduced in support of them. The question of neutrality is not whether factual judgments logically entail value judgments, but whether they can stand in evidentiary relations to them.

Behind the logical argument lie two lines of thought, one existentialist, the other instrumentalist. Max Weber (1946) articulated the existentialist route in the *locus classicus* of the doctrine of scientific neutrality, "Science as a Vocation." He argued that rationalization, the fundamental feature of modernity, results in the "disenchantment of the world": a representation of the world as value-free, neither governed by teleological laws nor containing objectively normative properties. It also leaves us without prophets or gods—those who could speak authoritatively for one ultimate value over others. Modern times therefore force us to confront the necessity of choosing our ultimate values—our "gods"—for ourselves, without authoritative guidance from the world or others. "Life . . . interpreted in its own terms . . . [is] an unceasing struggle of these gods with one another . . . The ultimately possible attitudes toward life are irreconcilable, and hence their struggle can never be brought to a final conclusion. Thus it is necessary to make a decisive choice" (Weber 1946, 152).

Weber holds that there is no way to adjudicate between conflicting world-views, because each rejects the value of what the other presupposes. For example, science shows that there is no basis in fact for beliefs in God or miracles. But this does not pose an unanswerable challenge to the religious believer. To be sure, the religious person *must* acknowledge that if science can explain supposedly supernatural phenomena in naturalistic terms, then the scientific

explanation is epistemically superior. But "the believer can do this without being disloyal to his faith" (Weber 1946, 147). For the genuinely religious can, indeed must, make the "intellectual sacrifice" of rejecting reason (Weber 1946, 155). Science cannot refute this choice, since it can only presuppose and not prove the value of guiding belief in light of evidence and reasoning.

Weber's heroic existentialism does not prove the neutrality of science, but rather the opposite. By his own account, science supplies evidence against the truth of religious world-views. And religion itself presupposes that the authority of its values depends on the truth of its factual claims—divine creation, revelation, and so forth. So, science supplies evidence against the authority of religious values. Christian fundamentalists are under no illusions about this, which is why they vigorously assault the epistemic credentials of evolutionary theory. They want to have their religion *and* reason, too. Weber's argument gives them only a Hobson's choice.

Weber represents the choice of values as a matter of arbitrarily joining forces in the titanic clash of competing gods, where the intellectually honest courageously recognize both that the battle must be joined and that there are no grounds for choosing one side or the other. The need to reconcile two competing thoughts—that the choice must be regarded as of momentous importance, even though nothing objectively matters—leaves one wondering whether the feeling of profundity generated from viewing life from Weber's elevated perspective is merely a symptom of hypoxia. Strip out Weber's hyperbolic rhetoric, and what remains is the instrumentalist theory of practical reason. According to instrumentalism, reason can only inform us about means to our ends. It cannot guide the choice of final ends. For our ends are given to us by our motives, which are beyond rational criticism. Thus, there can be no considerations favoring the choice of one final end over another. A *fortiori*, there can be no empirical evidence in favor of one end over another. If we take a final end to be what the agent judges to be intrinsically valuable, it follows that no evidence can exist for intrinsic value judgments. So values are science-free.

Let us defer until the next section an evaluation of these arguments. Assuming that science is neutral and impartial, what are its proper relations to noncognitive values? Even the most orthodox advocates of value-free science accept the following:

1. In the "context of discovery," noncognitive values may play a role in selecting the phenomena to be investigated and suggesting hypotheses to be tested. (They must be excluded, however, from the "context of justification" in which hypotheses are evaluated in light of how well they manifest the cognitive values.)

2. In the context of scientific investigation (designing a study, collecting data) noncognitive values may justify the imposition of practical or informational constraints on scientific procedures—for example, requiring that experimental

subjects be treated humanely, and that human subjects give informed consent. But these constraints are in the service of noncognitive values only. Any positive impact they may have on cognition is accidental.

3. In the context of application, noncognitive values may play a role in determining what level of certainty in a scientific theory is demanded before it is accepted as a guide for action.

4. Science may guide action by informing people of the means to their ends and the possibility of attaining their ends.

5. Science may make "assessments"—informing people how far certain values are realized (Ernest Nagel 1979, 492–93). For example, if one counts as a standard of justice that no woman shall be subject to domestic violence, science can assess how just the world is by this criterion. But it cannot tell us whether this standard is normatively authoritative.

The question of neutrality is the question of whether scientific and value judgments may be more intimately related than in these ways. In particular, we want to know whether, when investigators allow their noncognitive evaluative presuppositions to structure the context of investigation, this can have *systematically* favorable effects on the cognitive values manifested in the results of the investigation, precisely in virtue of the normative validity of those presuppositions (contrary to 2 and presupposition neutrality). We also want to know whether scientific findings can provide evidential support for the normative authority of some value judgments over others (contrary to 5 and implication neutrality).

III. The Orthodox Case Evaluated: Can There Be Evidence for Value Judgments?

I have argued that science is value-free if and only if values are science-free. The thesis of scientific neutrality therefore depends more on the character of ethical thought than is usually supposed. I shall argue in this section that the arguments for neutrality depend on contradictory and crude models of how value judgments work.

Observe that the psychological argument for presupposition neutrality contradicts the "logical" argument for implication neutrality. The psychological argument postulates that value judgments give people motives to believe or assert certain factual claims, even when the evidence does not support those claims. *Which* claims do they have an interest in believing? Let us not be deceived by the suggestion that non-neutral investigators will be tempted to illegitimately infer "P is true" from "P ought to be true," where P is whatever state they judge to be good (Haack 1993, 42, n. 19). This is a red herring. Feminists believe that women ought to be free from rape, forced reproduction, and material deprivation. This does not give us the slightest interest in believing

that we *already* live in a feminist utopia, where women enjoy these freedoms! To the contrary, it heightens our awareness of when these feminist values are *not* realized.

The judgments non-neutral inquirers are thought to have an interest in believing, regardless of the evidence, are rather *the factual claims that provide evidential support for their noncognitive value judgments.* When feminist scientists are suspected of "wishful thinking," they are suspected of thinking, for example, that the paucity of women among political leaders is not due to any innate inferiority of women in leadership ability, and wishing away evidence to the contrary. This accusation would make no sense unless one thought that feminists staked the normative claim for expanding women's political leadership on a factual claim that women's natures do not disable them from performing in leadership roles. The same point applies to Gross and Levitt's charge that feminist inquirers will be tempted to dismiss any facts "inconvenient" to their political program (1994, 162). There could be no such "inconvenient" facts, if facts could not provide evidence for or against value judgments. Gross and Levitt here merely echo Weber's view that science teaches us to recognize "facts that are inconvenient" for people's "party opinions" (1946, 147).

People who are disposed to believe a judgment regardless of the evidence are called dogmatists. Value judgments are not inherently dogmatic. "Disillusionment" is another name for learning from experience that one's deepest value judgments were mistaken. Millions of people in Eastern Europe, once dedicated Communists, were disillusioned of it when they found out what living under Communism was like. "Growing up" is another name for learning from experience that one's childish and adolescent values weren't what one had chalked them up to be, an experience that most people undergo. Thus, the psychological argument against scientists who bring value judgments to their investigations is another red herring. The argument is properly framed against dogmatism, not value judgments.

Now consider the instrumentalist model of value judgments that underlies the "logical" argument for implication neutrality. On this model, we cannot reason about whether our ultimate values are right or wrong; we can only reason about what means would realize what we value. This supposes that nothing could ever count as *evidence* that some things are good or bad. This is why value judgments are thought to be held dogmatically. If no considerations can support value judgments, then none can defeat them. So we can go on holding our value judgments regardless of the state of the world.

It is possible to construct world-views in which certain value judgments are held dogmatically, insulated from the give-and-take of the rest of the web of belief. More typically, as in religious worldviews, ultimate value judgments are taken to rest on factual claims about God or the divine that are themselves held dogmatically. But value judgments *needn't* be held in these ways. I would

suggest that for most people—those who are not fanatically in the grip of some ideology—they *can't* be held in these ways. The mark of a nonfanatical valuer is that she treats her intrinsic value judgments as open to revision in light of experience. These are the people who are capable of learning, growth, even wisdom.

Among the experiences that provide evidence for value judgments are emotional experiences. By "emotional experiences" I refer to affectively colored experiences of persons, things, events, or states of the world. Examples include joy in seeing someone, satisfaction and pride in the fulfillment of one's objectives, misery over some process, and relief at its end. Emotional experiences have the following features. First they have objects: they are *about* persons, things, events, or states. Second, they have a positive or negative aspect: they present their objects in a favorable or unfavorable light. Emotional experiences are *appearances* of objects as *important*. Third, they reflect the perspective or point of view of subjects who care about themselves or others. Emotions appear to signal the importance of things *for* what their subject cares about—the self, loved ones, or others with whom the subject identifies. Standing attitudes of concern (that is, dispositions to feel emotions, which may be negative, as in hatred) serve the epistemic function of making salient to subjects the features of the world that appear to have import for what they care about. They seem to reveal the world insofar as it is related, positively or negatively, to the subject's concerns. But emotions can also lead subjects to question their attitudes of concern. (Zina may love John. But daily contact with his petty scheming could arouse her contempt, in the light of which he appears unworthy of her love.)

Do emotional experiences *really* provide evidence for value judgments? This is to ask whether we should take seriously the appearances they present to us as bearing on our value judgments and hence on the choice of our final ends and objects of concern. In fact, we do take such experiences seriously. We tend to judge what arouses our favorable emotions as good, and what arouses our unfavorable emotions as bad. If we experience a hobby as boring, we seem to take this as evidence that it isn't worthwhile, at least for those of us who find it boring. If we view the giant California redwoods with awe, we seem to take this as evidence that they are splendid. To vindicate these thoughts, we must show, first, that emotional experiences have a form and relation to value judgments that makes them *capable* of standing in an evidentiary relation to them; and second, that they can be *reliable* or *trustworthy* sources of evidence.

Consider first the question of capability. 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. Emotional experiences satisfy all three conditions: a) It is now widely acknowledged that emotions have cognitive content, that they represent the world as having certain features.[3] b) They can

exist independently of the value judgments for which they purport to provide evidence, and of the desires or final ends supported by those value judgments. In other words, they are not merely reflections of judgments and desires the agent had prior to the experience. Diane might take up a career in politics, eager to attain elected office, anticipating with relish its challenges and prospects for achievement and power. Despite these desires and value judgments, she might find her life as a politician intolerable—she is dispirited by the backbiting; she feels compromised by what she needs to do to raise campaign funds; legislative victories feel hollow. These experiences come as an unwelcome surprise to Diane, undermining both her conviction that politics is a worthwhile career for her and her desire to pursue it. They are the basis of her disillusionment with politics, a process that would be impossible if her emotional experiences were merely the creatures of her preexisting value judgments and desires.

Finally, c) we hold our emotional experiences accountable to the way the world is. If we find that the representational content of an emotional experience is defective—erroneous, blinkered, confused—we rationally discount its import. Imagine Sharon, a political ally of Diane's, trying to persuade Diane that her disappointment with what seems to be a merely symbolic victory reflects an unduly narrow perspective. Granted, it achieves little when considered in isolation. But in the long view it can be seen as fundamentally shifting the terms of debate. What seems like a hollow victory is a watershed event. This judgment could be tested over a longer stretch of experience. Sharon is trying to persuade Diane that if she viewed the significance of the victory in its wider context, she should feel triumphant, not disappointed. Such persuasion would make no sense unless our emotions were of a kind to be systematically responsive to the way the world is.[4]

It is clear, then, that emotional experiences are *capable* of functioning as evidence for value judgments. But are we wise to treat them as evidence? Should we trust our emotions? Once they have passed the tests of representational adequacy applied to their cognitive contents, it is hard to see, apart from special cases (for example, when our emotional reactions are dulled by drugs or depression), why we shouldn't. Indeed, we would be *crazy* not to.[5] This would be to tell Diane that she should stick to her original judgments about the value of her pursuing a career in politics, and the ambitions it underwrites, even though the pursuit makes her miserable and she is just going through the motions while gritting her teeth. It would be to counsel Diane to hold her value judgments *dogmatically*.

Let us retrace our steps. The psychological argument for presupposition neutrality assumes that there can be empirical evidence for value judgments, since it worries that people will dogmatically insist on the factual claims that support their values. The "logical" (instrumentalist) argument for implication neutrality denies that evidence can exist for value judgments (that is, rational

grounds for our final ends), and so implies that they can only be held dogmatically. I have argued that there is a body of evidence to which value judgments can and ought to be held accountable. Values are therefore not "science-free." From an epistemological point of view, value judgments function like empirical hypotheses.[6]

IV. The Bidirectional Influence of Facts and Values: A Case Study of Feminist Science

The argument so far clears the way for feminist science by relocating the objections to value-laden science. Deep down, what the objectors find worrisome about allowing value judgments to guide scientific inquiry is not that they have evaluative content, but that these judgments might be held dogmatically, so as to preclude the recognition of evidence that might undermine them. We need to ensure that value judgments do not operate to drive inquiry to a predetermined conclusion. This is our fundamental criterion for distinguishing legitimate from illegitimate uses of values in science.

This criterion may leave us wondering whether any value-laden research could satisfy it, while still giving values some epistemic function. Consider that much empirical research in the social sciences is devoted to answering evaluative questions, especially about the relations of various phenomena to well-being. We need a model of the bidirectional influence of facts and values in which the evaluative presuppositions brought to inquiry do not determine the answer to the evaluative question in advance, but leave this open to determination by the evidence. At the same time, these presuppositions must help us uncover the evidence that bears on our question.

To construct such a model, we need to focus on a case study. Abigail Stewart, Anne Copeland, Nia Lane Chester, Janet Malley and Nicole Barenbaum's *Separating Together: How Divorce Transforms Families* (1997) offers an exemplary case study of feminist research on divorce. Such research is controversial, because the evidence it uncovers bears on the value of divorce, which is contested. Yet discovery of such evidence, with the purpose of informing value judgments, and consequently, practical recommendations concerning divorce, is the primary reason for such research. Let us consider the interaction of evaluative presuppositions, evidence, and evaluative conclusions at each stage of the Stewart team's research. To clarify these interactions, I offer the following stylized division of the stages of research: a) Researchers begin with an orientation to the background interests animating the field, b) frame a question informed by those interests, c) articulate a conception of the object of inquiry, d) decide what types of data to collect, e) establish and carry out data sampling or generation procedures, f) analyze their data in accordance with chosen techniques, g) decide when to stop analyzing their data, and h) draw conclusions from their analyses.

a) *Orientation to background interests.* All sides in the empirical controversies surrounding divorce are interested in understanding phenomena concerning divorce in relation to the well-being of the affected parties. This shared interest enables us to see researchers on different sides as addressing one another, even when they are answering different questions. Feminist research in this area most perspicuously challenges those oriented toward what we may call "traditional family values." Proponents of traditional family values idealize a model of the family in which the husband and wife are married for life, live in same household, and raise their biological children. The key feature of this model is the inseparability of the role duties of spouses and parents. The wife's role is to be mother to her husband's children; the father's role is to be the husband of his children's mother. According to its proponents, this arrangement is in the best interest of the children, and probably also the parents. Alternative family arrangements are judged progressively worse the further they depart from this ideal. Divorce, because it separates parental from spousal roles, is conceived as "breaking up" the family, thereby harming the children. Traditionalists blame the divorcing adults for failing to identify sufficiently with their role duties, for selfishly seeking personal fulfillment (Barbara Whitehead 1983). They also blame feminists for drawing women away from the homemaker role that unified the duties of wife and mother (George Gilder 1986; James Wilson 2002).

Feminists approach divorce with greater ambivalence. Although feminists are critical of the patriarchal family, Stewart's team was initially unsure how to assess divorce from the standpoint of opposition to sexism (author's interview with Stewart, March 14, 2002). Does divorce reinforce women's disadvantages, enabling men to leave their wives while undermining wives' interests? Or is it a way for women to liberate themselves from oppressive marriages? While keeping an open mind on this point, the Stewart team's feminist values did lead them to question whether post-divorce family forms should be evaluated in terms of how well they approximated the relationships of "traditional" families.

b) *Framing the research questions.* The different value orientations of traditionalists and feminists suggest different research questions. Traditionalists, viewing married parents as the ideal, are apt to ask: does divorce have negative effects on children and their parents? A natural way to answer this question would be to compare the members of families with and without divorce on measures of well-being, especially negative outcomes (for example, sickness, poverty, behavior problems). Stewart's team was skeptical of this approach, on both methodological and normative grounds. Methodologically, it is virtually impossible to distinguish the effects of divorce from the effects of the problems in the marriage that led to divorce (Stewart et al. 1997, 26–28). Trying to measure the value of divorce by comparing the well-being of members of families with and without divorce is like trying to measure the value of hospitalization by comparing the health of people in and out of the hospital. In both cases,

we need to control for pre-existing sickness—in the marriage or the body. But whereas objective controls can be devised for hospitalization studies, the same is not true for divorce studies. Even when families with divorce are compared with families without divorce, but experiencing similar problems (for example, high spousal conflict), the two types of families always differ in other respects (Stewart et al. 1997, 26)—perhaps most importantly with respect to whether the spouses judge that their problems are so bad that divorce is warranted.

Aside from these methodological problems, Stewart also had normative objections to the traditional research question. Focusing on negative outcomes reduces the possibility of finding positive outcomes from divorce. Focusing on aggregate differences between the married and the divorced implicitly supposes that each group is internally homogeneous, that the evaluations supported by the group comparisons apply to each member of the group. Distinguishing groups simply by the presence of a particular life event is to assume that the importance of this event does not change over time. These choices of focus make normative sense from a traditional point of view, which assumes that the key to human flourishing is everyone's performance of traditional role duties. One system for living fits all. Disruptions of traditional roles have a fixed, enduring meaning. But feminists reject these assumptions, holding instead that different people may find different life plans fulfilling. Moreover, they regard people as agents, actively interpreting and shaping the meanings of events in their lives, rather than as simply defined by their status ("married" or "divorced"). An event such as divorce, initially experienced as disruptive, may recede in significance as individuals cope with it and engage the new experiences that it makes possible (Stewart et al. 1997, 30). Given this value orientation, Stewart's team thought it made more sense to ask how individuals vary among themselves and over time in the meanings they ascribe to divorce, its effects, and their coping strategies.

c) *Conceiving of the object of inquiry.* Longino (1990, 98–102) argues that value presuppositions play an important role in determining how some research conceives of the object of inquiry. This depends on the point of view one takes on the object of inquiry, which may be a function of one's professional and moral relations to it. Research on divorce confirms her argument. Judith Wallerstein, a clinical psychologist who studies divorce, argues that it scars the affected children for life (Judith Wallerstein and Joan Kelly 1980; Judith Wallerstein, Julia Lewis, and Sandra Blakeslee 2000). She constructed her conception of divorce from her involvement with individuals in a clinical setting. The conception of divorce drawn from a clinical perspective focuses on the *individual's* problems with an event in the *past*, stressing its *negative* aspects. Divorce is conceived in terms of "trauma" and "loss"; it is seen as a "life stress" that puts children "at risk" for problems later in life.

The phrases in quotations use what is known as "thick evaluative concepts"—concepts that simultaneously express factual and value judgments. For

example, the thick concept "trauma" applies only to sudden injurious events. The factual components of thick concepts are selected to track their underlying evaluative point. Extending their application to new factual contexts—for example, extending the concept "trauma" from cases of physical to psychological injury (Ian Hacking 1995, 183–89)—involves normative and not just factual reasoning (Bernard Williams 1985, 141–42). Conceiving of the object of inquiry in thick evaluative terms is thus not a value-neutral activity, not the neutral matter of "assessment" as understood by Ernest Nagel (1979).

Yet, the evaluative content of thickly described conceptions of the object of inquiry does not prevent such conceptions from fruitfully and legitimately guiding empirical research. A conception of divorce as trauma and loss leads researchers to *look* for certain kinds of evidence, guiding their selection of research tools—for example, measures of psychological disturbance. Since such evidence would be relevant to answering research questions about the value of divorce, such a conception is potentially fruitful. Since the conception does not guarantee that such evidence will be *found*, it is legitimate.

Stewart's team, likewise, adopted a thickly described conception of divorce. But their conception included both negative and positive dimensions. Stewart's team, like our hypothetical Sharon in the section above, also questioned the *temporal* frame through which the trauma-loss-stress school views divorce. The conception of divorce as a "trauma" represents it as a sudden *event* "occurring in an otherwise benign stream of events" (Stewart et al. 1997, 9). On this view, divorce brings about or constitutes the failure of a marriage. Yet, from the point of view of at least one spouse, the marriage has typically been failing for years before divorce. To them, divorce is not an event, but a long *process* of coming to grips with that failure. The conception of divorce as a "loss" represents the post-divorce condition as lacking some good that was present prior to the divorce. It fixes attention on the significance of divorce in relation to the past. This conception may make sense in clinical settings, for patients who can't get over their past. But it is at odds with the perspective of those seeking divorce, who are through that very act trying to put some of their problems in the past so as to construct a better future. Stewart's team therefore decided to conceive of divorce not only as loss but also as an "opportunity for personal growth" (Stewart et al. 1997, 19) and as an extended process of adjustment to a new set of life circumstances that could go better or worse over time (1997, 23–24). This longer temporal perspective of evaluation guided research by dictating a longitudinal study design. It permitted Stewart's team to test whether divorce receded in significance as the affected individuals learned to cope with its consequences. This is legitimate: to look for evidence of change over time is not to ensure that one will find it.

Stewart's team also questioned the individualistic orientation of traditional research that focuses on factors involving the individual, considered in isolation.

This orientation meshes with the traditional conception of divorce as "breaking up" the family, as if it threatens to reduce its members to free-floating atoms. As feminists, the members of Stewart's team were open to seeing alternative family forms as *families*. They therefore conceived of divorce not as breaking up the family, but as transforming it by separating parental from spousal roles (Stewart et al. 1997, 20–21). The members of the divorcing couple remain related to one another as co-parents living in separate households. They saw this alternative family system as having needs of its own, which could not necessarily be determined by taking the traditional family as a model. Their systems perspective on individuals as participants in social relationships, as well as their pluralistic conception of families, enabled them to explore whether post-divorce families that more closely approximate the traditional family model—for example, in the regularity of the noncustodial parent's contact with children, and authority relations between the custodial parent and children—are better for children.

d) *Deciding what types of data to collect.* Divorce researchers agree that the central focus of study is the well-being of the persons and relationships involved in divorce. Value judgments are inherent in this line of research. This does not leave the content of research up to the whims of the investigator. There is little dispute over the evaluative implications of many standard measures of well- (or ill-) being—for example, physical illness, stress symptoms such as sleep disturbance, financial security, and children's behavior problems. However, measures of such objective phenomena don't capture all aspects of well-being. I argued above that individuals' emotional responses to and emotionally colored interpretations of their situations constitute vital evidence of value. Congruent with this argument, Stewart's team gathered data on subjects' post-divorce feelings and interpretations of changes they underwent, in addition to reports of more objective phenomena. This provided crucial data confirming the conception of divorce as an opportunity for personal growth. Women especially found this to be so, with 70 percent judging that their personalities had improved since divorce (Stewart et al. 1997, 66).

The decision to gather qualitative data on subjects' feelings and self-interpretations reflects a background value presupposition of according normative authority to the subjects of study, to judge values for themselves. The results of taking subjects' self-assessments seriously put objective data on divorce in a revealing light. For example, other researchers have found that divorce leaves women in worse objective financial condition than when they were married (Lenore Weitzman 1985). However, Stewart's team found that many divorced women, although acknowledging their lower incomes, were pleased by the change divorce brought to their financial condition because it let them enjoy greater financial autonomy over the income they had (Stewart et al. 1997, 102).

e) *Data sampling.* Conceptions of the object of inquiry function as tools of inquiry, shaping study questions and design. Conceptions of divorce as loss or

as opportunity for personal growth, as family breakup or as family transformation, facilitate the exposure of different aspects of the object of inquiry. How do we prevent such value-laden conceptions from simply confirming their own presuppositions? Consider sampling procedures. It is a standard methodological rule that causal inquiries should not select cases on the dependent variable. Doing so introduces biases that cannot be corrected through the introduction of controls.[7] In the case of divorce studies, this means that a clinically obtained sample is *not* a sound basis for comparing conceptions of divorce as loss against conceptions of divorce as an opportunity for growth. A sample drawn from psychological clinics will be biased toward those experiencing great difficulties coping with divorce, or misattributing their difficulties to divorce, and against those who find divorce liberating. Wallerstein's work on divorce has been criticized on this ground (Wallerstein and Kelly 1980; Wallerstein, Lewis, and Blakeslee 2000). Her error lies not in adopting a value-laden conception of divorce, but in failing to draw a random sample of cases. Stewart's team, by contrast, drew a less biased sample of cases from the divorce dockets. It still contained some biases. For example, more mothers were willing to participate than fathers (Stewart et al. 1997, 34). But precautions were taken to prevent the gender bias in the sample from affecting the conclusions, by analyzing mothers and fathers separately.

f) *Data analysis.* Quantitative studies typically contain numerous variables. Not every logically possible combination of and relationship among these variables is significant, either statistically, clinically, or normatively. Researchers must therefore choose which ones to analyze. With respect to any outcome variable, they also must decide whether to focus on *main effects* of independent variables on the outcome or to look for *interaction effects.* Suppose, for example, we are interested in measuring children's psychological adjustment after divorce. We could regress adjustment on measures of the children's maturity—for example, how skilled they are at grasping other people's perspectives. A significant, positive coefficient on mature perspective taking would indicate that children who are more mature in this respect have better post-divorce adjustment. Stewart's team found no main effect of mature perspective taking on post-divorce psychological adjustment (Stewart et al. 1997, 255, table 6.5). It does not follow that mature perspective taking is irrelevant to children's adjustment, however. Perspective taking may affect children's adjustment through its interaction with other variables. Indeed, Stewart's team found that it was associated with better adjustment among children whose parents were high in conflict (Stewart et al. 1997, 127). But it was associated with *worse* adjustment among children whose parents were low in conflict. On reflection, this makes sense. Mature perspective taking enables children to come to terms with their parents' fighting. But when they don't see their parents fighting, it leads to confusion, as the perceptive children try to make sense of their parents' divorce with inadequate information (Stewart et al. 1997, 128).

The decision to focus on main effects, or to look for interaction effects, reflects background values. A main effects analysis accepts the average outcome as representative of the group, discounting individual variation. This makes sense if one believes that a single way of life is best for everyone. But for researchers who doubt this, attention to within-group heterogeneity is imperative (Longino 1994, 477). Ways of life should be tailored to individual differences. Knowing that perceptive children of low-conflict divorces have greater difficulties in adjustment, what should parents of such children do? Maybe they should avoid situations that stimulate perceptive children's needs to make sense of them. Concretely, this suggests that custodial mothers should obtain employment out of the home, so their perceptive children aren't constantly confronted with their mothers' own psychological issues. Indeed, contrary to the traditionalists' view that children are better off with the mother at home, Stewart's team found that perceptive children were better adjusted when their mothers went to work (Stewart et al. 1997, 130–33).

g) *Deciding when to end an analysis.* Given that scientists cannot explore every possibility contained in their data, how should they decide when to stop their analysis and publish their conclusions? The great temptation is to stop an analysis as soon as it reaches findings pleasing to the researchers, but to continue analyzing displeasing findings in the hope of explaining them away. To be sure, it is almost impossible to accept unwelcome findings at face value. Stewart's team found that some children appeared to suffer from regular visitation by their noncustodial fathers. Unhappy with this result, the team engaged in further analysis and discovered that high levels of post-divorce parental conflict interacted with regular father visitation to produce their finding. For parents still fighting after the divorce, regular visits were the occasion for regular arguments, which the children presumably anticipated with anxiety (Stewart et al. 1997, 238). This account enabled Stewart's team to offer happier recommendations to fathers in high-conflict divorces: not to stay away, but to visit on a more spontaneous basis—a pattern they observed to work better for children whose divorced parents were still fighting.

Perhaps any divorce researchers would have insisted on further analyzing the disturbing result. Stewart's team considered this point in critically reflecting on its own practice. Team members argued that if they insisted on digging deeper into unwelcome findings, they should apply the same rigorous analysis to the controversial findings that they welcomed (author's interview with Stewart, 14 March 2002). This led them to reopen their analysis of their finding, congenial to feminists, that divorced mothers were better adjusted if they worked full-time. Might this main effect mask a negative interaction between work and some other variable? Further analysis found that it did. Mothers who were working prior to the divorce did much better if they continued working after the divorce. But mothers who had previously stayed at home did worse if they went to work after the divorce (Stewart et al. 1997, 100–101).

g) *Drawing conclusions.* The main point of divorce research, as of much other research in the social sciences, is to answer evaluative questions on the basis of empirical evidence. Are children better off if parents who want a divorce stay together? What coping strategies make divorce go better or worse for the affected parties? The enterprise of answering these questions on the basis of evidence would make no sense if science were value-neutral in implication—that is, if ethics were science-free. It is not. We can learn from experience what modes of life are better and worse, and correct our prior value judgments in light of experience. Stewart's team was bolder than most social scientists in drawing normative conclusions in explicitly moral vocabulary. They even ventured to describe some of their subjects as "wise" in their willingness to learn from their experiences, even when the conclusions they drew bucked conventional wisdom (Stewart et al. 1997, 232). For example, some mothers rejected the traditional assumption that families do best when parents maintain firmly authoritative relations with their children. They found that after divorce, they needed to consult their children about family decisions more than they used to. As evidence of the wisdom of this, Stewart's team found that children did no worse, and custodial mothers did better with more flexible parent-child role boundaries (1997, 239). Freed "from a constraining family ideology," such families were more creative in solving their problems (1997, 219).

V. How to Use Value Judgments to Guide Science in Legitimate and Fruitful Ways

This paper has raised several questions for value-laden research: 1) Can we distinguish legitimate from illegitimate uses of noncognitive value judgments in research? 2) Can we distinguish more from less epistemically fruitful noncognitive value judgments? 3) Is the epistemic value of a noncognitive value judgment ever due to its normative authority? 4) Can science ever reach beyond instrumental value judgments and "assessments," providing evidence that bears on noncognitive intrinsic value judgments? 5) How should we model the bidirectional influence of factual and value judgments? Let us sketch some answers to these questions, drawing on the evidence about value-laden research found in our case study.

Legitimacy. Value-laden research is often accused of being "biased." Whether this is illegitimate depends on what is meant by bias. Let us distinguish three kinds of bias: in relation to the object of inquiry, in relation to the hypotheses to be tested, and in relation to a question or controversy. A research design is biased in relation to the object of inquiry if it (truthfully) reveals only some of its aspects, leaving us ignorant of others. It is biased in relation to its hypotheses if it is rigged in advance (whether wittingly or not) to confirm them. It is biased in relation to a question or controversy if it is more likely to (truthfully)

uncover evidence that tends to support one side rather than the other sides of the controversy.

Bias in relation to the object of inquiry is inevitable. *All* research designs open up some lines of research into their objects, while closing off others. Scientific research programs necessarily adopt an abstract—that is, selective—conception of their objects of inquiry. For example, a conception of cancer as a genetic disease can guide research into genetic causes of cancer, but the tools it recommends (genetic tests, twin studies, family histories) won't tell us much about dietary causes of cancer. This is innocuous, as long as we do not confuse our abstract conception of the object of inquiry with the object itself.

Bias in relation to hypotheses is illegitimate. If a hypothesis is to be tested, the research design must leave open a fair possibility that evidence will disconfirm it. Failure to do this is the flaw I have labeled "dogmatism." Critics of feminist science claim it is inherent to value-laden research that it will only confirm the researchers' evaluative presuppositions. Our case study shows that this claim is false. Stewart's team discovered and reported results (on fathers' visitation, mothers' employment, and children's maturity) that they found unwelcome or surprising, as well as many null results. They left it open to determination by the evidence whether the coefficients of the variables in their regression models were significant or insignificant, positive or negative, large or small. They took precautions against sampling biases, and analyzed their data so as to circumvent known biases.

The larger lesson to be drawn from this study is that when bias in relation to hypotheses does exist, it has nothing intrinsically to do with the evaluative content of the presuppositions guiding inquiry. Wallerstein's research is biased toward confirming her conception of divorce as loss, not because this conception is described in thick evaluative terms, but because she failed to draw a fair sample of evidence. A fairly drawn sample would have left open to empirical determination whether divorce entails any losses, and how large they might be. Illegitimate biases that may exist in value-laden research can be corrected using the same sorts of methodological precautions that are available to value-neutral research. From an epistemological and methodological point of view, research guided by evaluative presuppositions functions just like research guided by any other presuppositions.

This does not mean that value-laden research cannot drive methodological innovation. Recall the temptation to stop analysis when one makes controversial findings one welcomes, but to continue analysis when one makes unwelcome findings. This demonstrates the value of symmetrical treatment of controversial results, whether they are welcome or unwelcome from the researchers' perspective. Stewart's team demonstrates that feminist researchers can live up to this standard. The dangers of asymmetrical treatment are more salient in value-laden research, making it easier for us to arrive at this rule in this context. But even

scientists engaged in value-neutral research would prefer that their research programs be vindicated, since they have an interest in career success. A symmetry rule is equally applicable to them.

Fruitfulness. Turn now to bias in relation to questions and controversies. All inquiry begins with a question, the answer to which is sometimes sought to settle a controversy. This means that the findings of any inquiry can be evaluated along two dimensions. They can be evaluated according to whether they are true or warranted, and they can be evaluated with respect to whether they are relevant to answering a particular question or controversy. Call a true or warranted finding *significant*, relative to a controversy, if it bears on the answer to that controversy. A research design is *biased* in relation to that controversy if it is more likely to discover evidence that supports one side than the others. One research design is more *fruitful* than another, with respect to a controversy, if it is more likely to uncover evidence supporting (or undermining) all, or a wider range of sides of the controversy.

Thus, a noncognitive value judgment is more epistemically fruitful than another, relative to a controversy, if it guides a research program toward discovering a wider range of evidence that could potentially support any (or more) sides of a controversy. For example, the conception of divorce as loss, presupposing a negative evaluation of divorce, will be able to guide research toward discovering the negative but not the positive features of divorce. By comparison, the Stewart team's value-laden conception of divorce as involving both loss and opportunities for growth is more epistemically fruitful, relative to controversies about the *overall* value of divorce, in that it allows us to uncover evidence bearing on both the pros and the cons of divorce.

Our case study shows that some moral and social values have *asymmetric* epistemic value—that is, unequal fruitfulness, or powers to uncover significant phenomena. A "one size fits all" value orientation favors a main effects analysis, which *precludes* discovering that certain variables that are good for some people in the group, or "on average," are bad for others. By contrast, the Stewart team's feminist value orientation, because it accepts individuality and difference, *is open* to such discoveries, *but does not rule out the possibility of discovering otherwise.* The latter possibility would be realized if the coefficients on the interaction variables in a regression were insignificant—a common finding in the Stewart team's regressions.

Different noncognitive value judgments can be more or less fruitful, relative to specific questions, without calling into question the legitimacy of research programs guided by them. Although a conception of divorce exclusively oriented around loss is less fruitful, relative to the divorce controversies, than one open to seeing positive features, it does not follow that such a conception is useless for uncovering important evidence. It may be legitimately used, provided we keep in mind its limitations for answering particular questions.

Normative authority. Suppose we analytically divide a thick evaluative judgment into its factual and normative components—that is, into the empirical features of the world it picks out, and its claim to normative authority. Then we may ask whether the epistemic fruitfulness of such a judgment can be attributed to its normative authority. According to presupposition neutrality, the answer is no. Whatever epistemic value it has is solely due to its factual elements. Our case study shows that this is false. The normative validity of the Stewart team's evaluative presuppositions directly explains their epistemic value in guiding research. It is precisely because individuals have a privileged (not infallible) normative authority to make judgments about their own well-being that research programs that draw on individuals' self-assessments are more fruitful than research programs that don't, relative to questions about the relations of phenomena to well-being. It is precisely because subjective emotional responses and emotion-laden interpretations are normatively relevant to judgments of well-being that the Stewart team's inclusion of such measures makes their research more fruitful than research programs that focus only on objective measures. Matters could hardly be otherwise, when the questions a research program is designed to answer—such as the relations of divorce to well-being—are essentially evaluative. One simply cannot answer an evaluative question adequately without letting normatively adequate evaluative presuppositions guide one's inquiry.

Noncognitive intrinsic value judgments. According to implication neutrality, science can question whether something is *instrumentally* valuable for a given end by showing that it does not cause the end. It can determine, *given* an empirical criterion of value, how far something meets that criterion. But it can never supply evidence that bears on a judgment of intrinsic value.

This dogma depends on a confusion of intrinsic value—value as an end—with unconditional value—the idea that something could have value in all possible worlds (regardless of any contingent states of our world).[8] When people accept something as a final end, that does not commit them to thinking that its status as an end would remain fixed regardless of their experiences. Once we grant the bearing of emotion-laden interpretations of experience on value judgments, it is hard to imagine any empirically defined ends having such a status.

Consider, in light of this, the traditional family values position that parents should maintain firmly authoritative relations to their children. This practical judgment does not simply reflect a judgment that firm role boundaries are instrumentally valuable for promoting well-being. It reflects an ideal of family order, based on a conception of proper parent-child relations assumed to have intrinsic value. So its claim to value cannot be undermined *simply* by a demonstration that life in such relations fails to cause this or that good—for example, the Stewart team's finding that it does not promote the well-being of divorced

mothers. Such a demonstration would show that attempts to realize this traditional family value come at some cost, but not that authoritative parent-child relations do not have some value as final ends.

Stewart's team did not stop their analysis with an external causal claim, however. It explored mothers' interpretations of their relations to their children. One of their "wise" subjects, reflecting on her own experiments in redefining parent-child role boundaries, explained why her former firmly authoritative stance *no longer made sense* after divorce. Family life requires an "interaction partner" with which to "meet the adventure [of life] together." No longer having a husband to fill that role, she found that it made more sense to draw her children more into it, while taking care "that you don't use your children in an adult capacity" (Stewart et al. 1997, 239). To find that a certain mode of life no longer makes sense in one's own experience, that it no longer presents a lived experience of family orderliness, is to grasp *evidence* that something once valued as a final end is not intrinsically valuable in the current context. So, Stewart's team did uncover evidence against the intrinsic value of a certain way of life for certain people.

Models. Let us conclude with some reflections on how to model the relations of factual to value judgments in science and ethics. We have seen that the argument for the value-neutrality of science depends on the assumption that values are science-free. This, in turn, depends on a model of the structure of beliefs as occupying sharply demarcated spheres, with factual judgments on one side, value judgments (and perhaps a set of dogmatically held factual judgments, as of supernatural phenomena) on the other, each isolated from logical or evidentiary connections with the other. This model identifies the epistemically problematic feature of value judgments with their supposed *dogmatism*, their stubbornness in the face of any conceivable evidence. But what is the status of that very supposition? Is it supposed to be a fact, or a value? It cannot be a fact, because we are confronted with daily evidence that people do take their experiences as evidence for and against value judgments. It must, then, be a value: thou shalt hold one's value judgments dogmatically. But this is absurd.

We often ask evaluative questions, such as, does divorce help or hurt people? What should parents do to help their children cope with divorce? The best way to answer such questions is not to defer to dogmatically held value judgments. It is to look at people's experiences with divorce and try to sort out the factors that make things go better or worse for them. This requires empirical inquiry. Done properly, this opens us up to the possibility of finding out that our value judgments were mistaken. The fact that we can do this shows that factual and value judgments do not occupy separate spheres. They are integrated in the same web of belief. Evaluative inquiry is empirical inquiry devoted to answering evaluative questions.

Thus, ethical inquiry and scientific inquiry are of a piece. This does not mean that factual and value judgments play the same roles in inquiry. Value judgments guide inquiry toward the concepts, tools, and procedures it needs to answer our value-laden questions. But facts—evidence—tell us which answers are more likely to be true. These two roles must be kept distinct, so that inquiry does not end up being rigged simply to reinforce our evaluative preconceptions. So long as they are distinct, the active direction of scientific inquiry by value judgments is not only legitimate, but indispensable.

Notes

I thank Abigail Stewart and the referees of *Hypatia* for helpful thoughts on this paper.

1. A notable exception is Richmond Campbell (1998).

2. An anonymous referee of this paper has questioned my distinction between impartiality and presupposition neutrality. If a noncognitive value judgment is presupposed by a theory, then must it not be part of the basis for accepting a theory? To be sure, those who already accept the value judgment may find the theory more acceptable for presupposing it. But the key question is whether we can identify grounds for *anyone* to accept the theory, whatever their noncognitive values. Such grounds would be impartial grounds. The thesis of impartiality is that such grounds exist, and consist in the theory's manifestation of *cognitive* values (empirical adequacy, scope, consistency, and so forth). Impartiality and presupposition neutrality are distinguishable, so long as we can identify cognitive values independently of noncognitive values.

3. John Deigh (1994) disputes this, on the ground that we share some emotions, such as fear, with animals who lack propositional attitudes. However, he acknowledges that some emotions have cognitive content, when they are modified by reflection. I therefore confine my claims about the evidentiary value of emotional experiences to those with cognitive content.

4. To be sure, emotions are not as responsive as beliefs to the way the world is. They are more akin to perceptions than beliefs. Like perceptual illusions, emotions can sometimes persist even when we know they are misleading.

5. For an allied argument that this would be crazy, in that it would threaten the unity of the self, see Elijah Millgram (1997).

6. This has similar implications as Peter Geach's (1965) argument that from a logical point of view, value judgments function like any factual claim. My argument does not presuppose any particular metaethical view about the meaning of value judgments. Any acceptable metaethical account of value judgments must take their epistemological functioning as a constraint, just as it takes their logical functioning as a constraint.

7. Douglas Dion (1998) offers a sophisticated discussion of this point, noting qualifications that should be made for small n case studies.

8. Christine Korsgaard (1983) discusses this distinction at length, although she reserves the term "intrinsic value" for unconditional values.

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