Who Needs Value-Free Science? Defending Objectivity in Not-So-Value-Free Science

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Value-free science[1] is both overrated and underrated. It is overrated by those who believe it can provide a complete view of the world on its own, replacing the values from which it has developed. It is underrated by those who do not regard it as capable of providing a more objective picture of the world. This controversy has polarized philosophers of science into two distinct camps: at one end of the spectrum are the idealists, and at the other, the relativists. The former characterize science as the progression toward more "real" and "objective" knowledge, which requires the constant filtering-out of cultural values that allegedly tincture the "pureness" of the subject. The latter completely eliminate assertions of objectivity, arguing instead that the history of science reveals it as inherently value-laden, and that notions of objectivity are fantasy. Much ink has been spilt over this controversy, and although I sympathize with both sides, I accept neither.

This essay is both a defense and a critique of value-free science. It is a defense in that I shall endeavor to demonstrate how science is often influenced by values that distort, misrepresent, or even completely falsify scientific data. I argue that there are many circumstances where values do not play a legitimate role in scientific inquiry, and thus are rightly barred. However, I shall also critique the notion of value-free science by demonstrating that values can (and do) play a legitimate and indeed vital role in the functioning of science. The worry, it seems, is that if science is not value-free, then it cannot be objective. Contrary to this assertion, I will argue that the conflation of value-freedom with objectivity is mistaken. First, I will begin by examining the arguments both for and against value-free science. Second, I will disentangle the notion of value-freedom from objectivity in order to reveal that the two are by no means the same. This will help to set up my defense of objectivity, where I shall reconcile value-motivated science with the possibility of objective

1. The term "science" is taken to denote some kind of systematic empirical inquiry.

knowledge. My thesis is that values are a necessary component of scientific inquiry, and that the lack of value-freedom in science does not compromise the pursuit of objectivity.

The traditional view of science conjures up imagery of the disinterested researcher who is free from prejudice and concerned solely with the discovery of objective, verifiable truths. Under this view, the scientific inquirer resembles those characteristics epitomic of Cartesian inquiry: the solitary, pure, individual pursuit of knowledge for knowledge's sake. Such a person is free from religious, political, economic, and personal values, interests, and powers. Indeed, under this view there is no proper role for moral and social values in judgments regarding scientific theory, nor is there a purpose for dogma, ideology, and pre-existing commitments. The distinct feature of science is that it deals with facts, not values — science is allegedly objective, while values are personal. Objectivity, as the regulative ideal in science, seems to imply that values do not have a legitimate function.

We are all familiar with the situations in which values have compromised scientific objectivity; for instance, there is the case of the researcher who will twist the results in order to satisfy his or her own agenda, or there is research informed by corporations that aim to deepen their pockets by producing favorable outcomes. It is for these and similar reasons that isolation from social and moral values in science is alluring. Philosophers of science advocate objectivity and value-neutrality due to the fear of slipping into subjectivism, fallibilism, and relativism. The benchmarks of value-freedom, objectivity, and neutrality offer much comfort to scientists and laypersons alike, who view science as operating within the privileged domain of stable knowledge. Recently, however, this image has been subjected to a great deal of scrutiny. The notion of value-free science is becoming old-fashioned in the face of critiques emerging from studies in the sociology of knowledge. I shall now turn to an examination of some of these critiques.

Critics who target claims of alleged value-freedom have set out to expose the various ways in which values are invariably connected to scientific inquiry. This position has been supported in many ways, however I maintain that the core premise of each of these critiques hinges on the notion that science, as a human endeavor, is not value-free because people are not value-free. Scientists do not spring, fully

formed, out of a social or cultural vacuum. Instead, they are inextricably linked to both cultural and individual standpoints, and this significantly threatens assertions of value-neutrality.

The scientific enterprise is itself embedded within particular cultures, and values will inevitably enter it through the conduct of its individual practitioners. Values, however, intersect with science in other complex ways. They often guide scientific research, for instance, as in the case of corporate interests shaping the sort of research that is conducted. Values can also emerge from science, which are then exported into mainstream culture. The discovery of harmful germs and bacteria, for example, has shaped the value we place on practicing good hygiene, which has further emphasized the value placed on researching sanitation. Equally, scientific breakthroughs often pose challenges to preexisting social values. Consider how the scientific discoveries of Galileo challenged dominant religious conceptions of the cosmos. Another intersection between values and science relates to how the values of a particular society can influence its scientific standards. On the one hand, the standards of scientific and epistemic justification seem to rise when the values it challenges are well entenched. On the other hand, the standards of scientific and epistemic justification seem to drop when a theory compliments values that are well-entrenched. For instance, late nineteenth-century Europeans developed theories of human evolution according to which European races were more advanced than Africans. These claims were easily "proven" given the prominent contemporary cultural values regarding race. Further, it is no coincidence that science once "proved" the intellectual inferiority of women at a time when patriarchy was more overt and oppressive than it is today. Such examples illustrate that the standards of knowledge are contextual, since "facts" often fit the prevailing value judgements of a particular time and place. For this reason, many argue that science should not refer to a process of inquiry that takes place in a value-free context, but rather a process informed by cultural values.

Setting aside these criticisms, many philosophers of science have also attempted to demonstrate that individual and cultural values can play a positive, and even necessary, role in scientific inquiry. For instance, the traditional argument that science is objective and value-free itself reflects the value for ascertaining unprejudiced truth.

Although the traditional view of science seems to purport a clear "fact/value" distinction, recent arguments against value-freedom in science have maintained that concern for the facts is itself a value, thus blurring this division. Furthermore, the principle that facts serve as a check on our conceptualizations is not itself implied by the facts.[2] Instead, our concern with establishing concrete evidence often reifies the value we place on truth for its own sake. Also, consider how research concerned with ameliorating or curing diseases is also guided by values, such as the importance of prolonging human life. Finally, the values that often emerge from scientific discoveries can be very positive, such as practicing good hygiene, eating healthy, and so on. Thus, one can dismiss the need for value-free science by pointing to the legitimate functions of values. Such values do not merely operate at the periphery of science, but rather at its core.

The argument that value-free science makes objectivity possible, and that a science tinctured by values would hinder objectivity, is alluring, albeit mistaken. One should be careful not to equate objectivity with value-neutrality, since the two concepts are surely distinct. This conclusion seems to flow quite naturally from the fact that objectivity is itself a value. Indeed, maxims such as "truth is superior to falsity," and "objectivity is preferred over subjectivity," are not empirical descriptions but normative judgments. Verily, if science were conceived as value-free, then the preference of truth over falsity, or objectivity over subjectivity becomes, at the very least, something to question. That moral and social values play various roles in science is, I think, consistent with the pursuit of objectivity. Even religion, which is often characterized as the antithesis of science, can be a value-laden resource that contributes positively to the growth of objective knowledge. For example, William Buckland's landmark work on fossil assemblages in caves — which received the Royal Society's prestigious Copley Medal — was influenced by assumptions about the Noachian flood.[3] Although science may be inescapably normative, this does not, in principle, debase the pursuit of more objective knowledge. Values have many

2. Don Bowen, "Objectivity as a Normative Standard," *Journal of Politics* 39, no. 1 (1997): 202.
3. "William Buckland." Oxford University Museum of Natural History. http://www.oum.ox.ac.uk/learning/pdfs/buckland.pdf.

legitimate roles to play in scientific research; for example, in motivating research interests, in determining the direction of applied research, and so on. To this end, one can dismiss arguments to the effect that personal values influence our approaches to the data, our categories of thought, and our choice of topics, not because they are incorrect, but rather because they are irrelevant to the pursuit of objectivity. Accordingly, the critique should not be that harbouring personal values thwarts objectivity, but rather that science is not objective when it fails to meet the requisite norms of objectivity (e.g., if objections are being suppressed, if conclusions exclude relevant data, and so on). Thus, objectivity does not require that science be value-free, but rather that science be value-free in the right ways.

That values play a necessary role in science has thus far been established. However, the amount of emphasis one places on a particular value can nevertheless result in controversy. For example, it is often conceded that "good" scientific research must also be ethical. But our ethical commitments may conflict with the aims of epistemological inquiry. This conflict has been beautifully captured in Robert Hood's article, *AIDS, Crisis, and Activist Science*. In this piece, Hood examines "crisis science" in order to illustrate that scientific standards are sometimes contingent on social circumstance. Recently, HIV/AIDS activists have criticized the existing norms of research as unresponsive to the demands of the HIV/AIDS crisis.[4] These activists contend that, in light of this calamity, "normal" scientific standards should be replaced with those of crisis science. However, this new approach has been criticized for its methodology, which seeks to achieve results quickly and allows patients to take greater risks than normally tolerated. Advocates of crisis science have responded by arguing that although prudence is ordinarily valued in science, it is not the only important value to consider. Thus, on the one hand, critics of crisis science maintain that the accepted level of scientific standards should be held universally, and that any failure to do so amounts to an ethical and epistemic

4. Robert Hood, "AIDS, Crisis, and Activist Science," in *Science and Other Cultures,* ed. Sandra Harding and Robert Figueroa, 15 (New York: Routledge Publishing, 2003).

violation. On the other hand, advocates maintain that the failure to shift scientific standards in the face of a global crisis is itself a significant ethical failing. Although both sides are concerned with establishing a scientific standard that is ethical, their differing sense of values has led them down opposing paths.

The current HIV/AIDS epidemic captures the notion that science is not ethically idle or value-neutral. In truth, the very claim that science ought to be ethical is to maintain that values have a legitimate role in science. The HIV/AIDS crisis is a clear example of how epistemological issues are complicated by ethical concerns. And although both sides of the debate desire epistemological objectivity, the worry is that we might sacrifice our ethical values in the process. Thus, the value placed on objectivity may be superseded by ethical values, and rightly so. In many instances our values must be negotiated. Hood thus demonstrates that the best science epistemologically may not be the best science morally. Crisis science serves as a constructive example of the legitimate role of values in shaping the workings of science.

Science is not a romanticized examination of nature by devoted servitors of truth; it is a human enterprise, and as such, values will inevitably come into play. I maintain that values can affect virtually every level of the scientific process. The unfortunate consequence has been that of "bad science," where values have wrongly influenced inquiry in ways that hinder objectivity. It would be absurd to deny that at various points of history the conclusions of science have been strongly prejudiced. It is for this and similar reasons that value-motivated science is often considered a contradiction in terms. But the popular conception of value-free science is both overstated and misleading. Values are not only necessary in order for science to function; they also play an important role in the advancement of objectivity. I take this to be the alternative role of values: they work positively to expose error and deepen objective understanding. Although values are often considered to be the stepping-stone into relativism, I maintain that values in science often operate to prevent relativism. Again, this conclusion follows naturally given that objectivity itself is pursued because it is valued.

There are many methods by which one can pursue the goal of objectivity in value-motivated science. For instance, values such as reliability, testability, accuracy, and precision, all work towards the

advancement of objectivity. Better knowledge can be had if one relies on controlled observation, interventive experiments, redundancy checks, error reduction, and so on. Furthermore, various processes within the scientific community aim to increase the reservoir of reliable knowledge, such as peer reviews, dialogue at scientific conferences, and efforts to replicate results. The purpose of each of these processes is to strengthen objective knowledge. Even the very contestation of value-free science is itself an attempt to move closer to a position we regard as epistemically objective.

To this end, Michael Welbourne has developed a useful idea in his text, *Knowledge*. Welbourne argues that constant individual and collective monitoring will help to keep knowledge as objective as we can have it — on this point, I agree entirely. An epistemically healthy and functional society will monitor knowledge claims in order to keep distortion and falsity under control. This also serves as a constant check on relativism. Even the incorporation of cultural values can actually lessen the potentially biasing effects of other values in the production of reliable knowledge. The "feminist perspective," for instance, may be no less motivated by values, but its existence has served a complimentary role by monitoring and critiquing many of the defects in men's studies. This is just one example of how critically monitoring knowledge claims can help to advance the goal of objectivity.

I am trying to illustrate that there is an important distinction between science and what I call "dogma." The distinction is this: science purports claims that allow the chance for objection, while dogma does not. Notice, however, that this distinction does not rest on the supposition that science must be value-free. My point is that scientific views must be justified by those same standards we employ to reach objectivity, as outlined above. Scientific knowledge must maintain propositions that are verifiable, falsifiable, and carry warranted assertability. If claims are not open to contestation, if viewpoints have been blocked, if relevant alternative hypotheses have been dismissed, then such claims hinder objectivity. It is here that the notion of an epistemic community becomes particularly relevant. In this sense, science (and the epistemological project in general) is indeed a collaborative effort.

It is no secret that science is underpinned by the goal of objectivity. Throughout this paper, I have maintained that objectivity

is a worthwhile aim in epistemological inquiry. In truth, I think that the loss of objectivity as a governing ideal in science would be devastating. Nevertheless, that science is not (and cannot be) value-free does not preclude the pursuit of objective knowledge, nor does it imply that we should do away with objectivity all together. Objectivity and values are not mutually exclusive; the former, in fact, is actually dependent on the latter. It is for this reason that I have maintained a commitment to being as objective as possible, while granting the recent critiques emerging from the sociology of knowledge.

On the one hand, to argue that science is completely value-free is archaic and untenable. However, this does not oblige us to abandon science or objectivity completely. On the other hand, to argue that science is not reliable or objective, and that present scientific theories are merely another paradigm, is to advocate an unsustainable relativism. Our only recourse is to rest somewhere between these two extremes. It has been my aim to argue that objectivity is a value worth defending, and that it ought to be sought and re-sought by methods that will expectantly lead to that end.