Respecting Public Investment: The Problems with Democratic Endorsement as a Criterion for Legitimate Value Influence in Science

Criticism of the value-free ideal has motivated attempts to formulate a criterion for the legitimacy of non-epistemic value influence in science. I argue that this search aims to protect two main components of legitimacy, scientific integrity and justice. While integrity is primary, justice remains important, especially in setting scientific goals. One of the main proposals for setting legitimate goals is to rely on democratic endorsement (Intemann 2015). I critically assess four interpretations of this criterion, finding that all are problematic. I then propose and evaluate three alternative models that seek to better balance respect for the public with scientific expertise.

**I. Introduction**

 The results of scientific research inform practices quotidian to political: from what we eat for breakfast to how governments set policies to adapt to climate change. While the results of science are used in a variety of value-laden settings, the practice has often portrayed itself as objective and value-free.

 Philosophers of science have heavily criticized the value-free ideal, arguing that non-epistemic value influence is unavoidable, sometimes even desirable, but also sometimes illegitimate (see Douglas 2016 for a review and references). The discussion has focused on determining a criterion for legitimate value influence.

 In this paper, I explain two major approaches to this issue, showing how each requires a criterion for determining the legitimacy of scientific goals. I then discuss the notion of legitimacy, showing how it contains two main concepts: scientific integrity and justice. While I argue that integrity is more important, the question of justice remains. Next, I evaluate a prominent suggestion to determine legitimate goals for science: democratic endorsement. I propose four interpretations of democratic endorsement, showing how each is problematic to a different degree. Finally, I evaluate three alternative criteria that balance public dignity, public well-being, and scientific expertise.

**II. Values in Science**

 In response to criticism of the value-free ideal, two approaches have been proposed to determine the legitimacy of non-epistemic value influence in science. The roles approach, developed most prominently by Heather Douglas, protects an epistemic core from influence by non-epistemic values. Non-epistemic value influence may be legitimate only if it does not corrupt this core, sparingly defined as logical consistency and empirical adequacy. In this conception it is the ways in which values influence science, rather than the type of values, that determine legitimacy.

 Douglas’s framework makes two key distinctions (2016, 10). Value influence may be direct or indirect; the areas in which such influence occurs may be external or internal. External decisions occur outside of scientific study itself but may be about what to study or how to study it. Internal value influence can affect decisions about the methods of study such as which models to use or variables to measure.

 Direct value influence is only acceptable when external, for example, when deciding which subjects to study. In contrast, indirect value influence is acceptable and sometimes desirable internally as well as externally. Indirect, internal, legitimate influence includes cases including inductive risk reasoning, which holds that evidential standards should respond to the consequences of being wrong. For example, it is rational to have high standards for the safety and efficacy of medicine, but it is also rational to have lower evidential standards for contamination in drinking water.

 In contrast to the roles approach, the aims approach argues that value influence is legitimate if and only if it successfully serves legitimate goals. It is the kind of goals that determines the legitimacy of non-epistemic value influence, rather than the ways that such values may impact science. Kevin Elliott defines legitimate goals as ones that are transparent, representative, and inclusive of input of stakeholders (2017, 10). Kristen Intemann defines legitimate goals as ones that are “democratically endorsed” (2015, 217). I will address the problem of how to clarify the concept of ‘democratically endorsed’ or ‘representative’ in section IV.

 Both approaches balance the roles of epistemic integrity and legitimate goals for science in different ways. In the aims approach, the primary consideration is the legitimacy of goals, with the assumption that for value influence to successfully serve those goals it must protect epistemic integrity (Intemann 2015, 227). There are two ways this might occur: the protection of epistemic integrity may be a democratically endorsed goal, or epistemic integrity may be needed to achieve democratically endorsed goals. Either way, such protection is contingent on conditions that may not always be present. The ways approach, in contrast, explicitly protects epistemic integrity from non-epistemic value influence. However, external or indirect value influence is acceptable because it does not affect the epistemic core.
 In the next section, I will argue first, that protecting epistemic integrity should take priority and second, that both schools still need to determine which kinds of values or goals are acceptable for the sciences.

**III. Legitimacy as Justice and Integrity**

One can understand the difference between the two approaches as a difference in their conception of “legitimacy.”

Douglas describes legitimate value influence in science as that which retains the trustworthy nature of science—a practice whose findings retain the epistemic integrity normally expected of science. The definition is intuitively appealing because it attempts to protect the integrity of science as a practice. Without epistemic integrity, science fails to further the project of gathering reliable knowledge about the world.

 The aims approach takes a different perspective on the notion of legitimacy, seeing it primarily as a question of justice. If legitimate value influence is that which successfully pursues legitimate goals, it is the goals of research that determine the legitimacy of such value influence. The goal of research cannot be simply to preserve epistemic integrity; it needs to serve some kind of justice.[[1]](#footnote-2) This definition is appealing because it recognizes the societal power of science and the need to respect public investment in science. In addition, justice is an intrinsic good, arguably a characteristic to which all societal endeavors should aspire.

 Integrity and justice, while both important, can come into conflict. I contend that integrity should take priority. Consider the four possibilities for non-epistemic value influence in science created by the two criteria: science that retains integrity and pursues just goals (J Λ I), science that does not retain integrity but does pursue just goals (J Λ ~I), science that retains integrity but pursues unjust goals (~J Λ I), and science that neither retains integrity nor pursues just goals (~J Λ ~I).[[2]](#footnote-3)

 1. J Λ I. Science that pursues just goals and retains epistemic integrity is obviously desirable. For example, biologists might conduct careful study of the effects of hatchery salmon in order to ensure that local tribes are able to continue their traditional lifestyle.

 2. J Λ ~I. Science that pursues just goals but does not retain epistemic integrity is problematic. One could imagine an aquatic toxicologist who wanted to shut down a factory well-known for exploiting its under-age workers. She could choose methods of research and areas of observation that make the pollution of the factory seem worse than it is–for example, testing water directly next to the wastewater pipes from the factory and finding the concentration of lead higher than that allowed for river water. In this case, just goals are pursued—the factory is shut down—without the retention of scientific integrity. Her work does not provide fertile ground for future study or reveal anything about the world. It also risks undermining public trust in the scientific enterprise. Justice as a goal only makes sense when coupled with the pursuit of reliable knowledge.

 3. ~J Λ I. This form of science does not serve just goals, but does retain scientific integrity. For example, a scientist might be determined to show racial differences in intelligence. While her goals are deeply problematic, she does not allow bias to affect the epistemic integrity of her enterprise. This is also problematic: even if she continually fails to confirm her hypothesis, she uses resources on an endeavor that does not serve society’s goals. At best, her failure lends support to the opposite view. At worst, the endeavor brings publicity to harmful viewpoints. Still, the scientist is producing useable (if not useful) data. Both are valuable, but useful data serves important goals; usable data does not do so presently but is still valuable.

 4. ~J Λ ~I. The final category is science that serves unjust goals and does not retain epistemic integrity. For example, the racist scientist from the example above could manipulate her sample size until it “proves” her hypothesis. This is deeply problematic because, at worst, it promotes injustice and undermines public trust in science, and, at best, it is a complete waste of resources and fails to produce any kind of usable data.

 We thus have four categories: J Λ I (ideal), J Λ ~I (well-meaning but problematic), ~J Λ I (wasteful but producing useable data), and ~J Λ ~I (highly problematic). It results from this analysis that integrity is more important. We should attempt to maximize both justice and integrity, but when in conflict, integrity should take priority. Consider ~J Λ I and J Λ ~I. Both use resources such as time, money, and public attention. ~J Λ I uses these in pursuit of unjust goals, but produces usable data. J Λ ~I, in contrast, may serve just goals, but in doing so produces non-useable data. Focusing solely on justice risks wasting resources *and* creating unusable data. Moreover, such science risks damaging the public trust that gives it privileged position in society.

 Science is, basically, the building of a large self-correcting tower. J Λ ~I introduces faulty bricks. Some bricks may be obviously faulty and easily discarded. But others may blend in with the rest, surreptitiously providing an inadequate foundation for other J Λ I science. Integrity of construction comes first.

 The aims approach fails to give sufficient priority to epistemic integrity because it focuses only on the goals of research and there are cases in which non-epistemic value influence can help science serve those goals successfully without retaining epistemic integrity. As discussed above, I and J are not coextensive; the assumption that successful science is science that retains its integrity is not well-founded.

 Once the I/~I distinction can be made, however, the J/~J distinction remains extremely important. ~J Λ I is still very undesirable because there are limited resources. J Λ I is far preferable to ~J Λ I. Even if integrity takes priority, we need a criterion for just goals in science. Both approaches to non-epistemic value influence in science, not only the aims approach, ought to articulate one. Let us turn to a critical evaluation of the main proposal in the literature.

**III. Democratic Endorsement**

Elliott (2017) and Intemann (2016) propose the following: science should serve democratically endorsed (or democratically representative) goals. We will first examine why this criterion is appealing before critically assessing four interpretations of the concept.

The criterion of democratic endorsement is attractive because the public has a large stake in the selection of scientific goals. The American public invests in scientific funding. The 2017 federal budget includes $155.8 billion for overall scientific research and development (Reardon & Ross 2017). Excluding Department of the Defense research, science spending comprises about 2.67% of federal discretionary spending. If science is publically funded, it is reasonable to ask that science be publically accountable—they are the ones paying for it, after all. (Other major sources of scientific funding include research universities—many of which are publicly funded—and grants from private foundations.)

Additionally, the public shares in both the spoils and failures of science. Every day, people are saved by newly developed medical treatments; every day, people die from diseases without any available treatments. Science will be important as we enter an age of climate change that will be characterized by novel climatic and ecological conditions. The public bears the consequences of what science decides to study and not to study. In this way, the public also pays the price for the selection of scientific goals, even if such study is privately funded.

An argument for why democratic endorsement is attractive:

1. The public is invested in the outcomes of science.
2. When the public is invested in outcomes of an enterprise, their good should be considered in decision-making of that enterprise.
3. Therefore, the good of the public should be considered in scientific decision making.
4. The best way to accomplish 3 is to ensure the goals of science are democratically endorsed.

Premises 1-3 are relatively uncontroversial. Premise 4 is the primary assertion of Intemann and Elliott. It asserts that the good of the public is best served by democracy. (Premise 2 is a statement of justice: in this situation, just science acknowledges public investment in society by considering their good, defined as well-being and dignity.)

Democratic endorsement has an additional benefit of lending authority to science. The Declaration of Independence describes government as “deriving their just powers solely from the *consent of the governed*.” Democratic endorsement might be rephrased as “consent of the affected,” thus giving justification for goal selection.

 Democratic endorsement as a criterion acknowledges public investment in science and lends science authority. However, it is unclear how democratic endorsement should be interpreted in practice. Below, I propose four possible interpretations of the criterion. Though some of these models are preferable to others, all are problematic.

 The first interpretation is the simplest view of the term: “democratically endorsed” values are held by the majority of the polis. For example, a poll might show that 68% of the public values clean waterways, but only 45% value space exploration. On this interpretation, studying ways to restore riparian ecosystems would be legitimate, but space exploration would not be.

 This simple view is both unacceptably permissive and unacceptably exclusive. First, the majority of the population might hold values that are problematic. Historically, the majority of the American population might have believed that black people were less deserving of rights than whites. This is the kind of value judgment that led to deeply problematic scientific practice like the Tuskegee syphilis study.

 Second, the majority of the population might not hold a value that should influence science. For example, most scientists value environmental sustainability. However, public opinion might not reflect this value, whether today or historically. Research on the effects of climate change is essential, and environmental sustainability seems to be an obviously legitimate value to drive that research. The exclusion of values such as environmental sustainability under this interpretation is problematic.

 Additionally, the majority of the population would might not necessarily support the epistemic values that are essential to science. In a “post-truth” political environment that is normalizing “alternative facts,” even truth may not reach the level of democratic representation necessary for legitimacy. While Intemann’s and Elliott’s work is focused on non-epistemic values, it is problematic that this conception could, when applied to epistemic values, exclude values such as empirical adequacy, a basic characteristic of scientific theories.

 This interpretation illustrates a larger problem with democratic endorsement or representation: they give the public a responsibility to make decisions, even when it is not equipped to do so. Scientists possess expertise that shapes their values.[[3]](#footnote-4) While one might worry about “undemocratically privileging” the values of scientists (Intemann 2015, 218), expertise should still be taken into account.

 Let us turn to narrower interpretation of this model that sees democratically endorsed goals as ones that are commonly held: the consensus model. This model is less over-permissive than the simple-majority conception. Even if the majority of the populace holds prejudiced values, if at least some of the populace does not, then these values cannot legitimately influence scientific practice.

 However, the advantage of the consensus model is also a disadvantage: it is unclear that there exists sufficient common ground to provide an adequate pool of legitimate values. Even if the requirement is only that the vast majority agrees, very few non-epistemic values will meet such a standard. Several important non-epistemic values would most likely be disqualified, including environmental sustainability.

 This model illustrates another general problem with democratic endorsement: the values of the populace are not temporally static. Recent paradigm shifts on opinions about LGBTQ issues illustrate the dangers of basing scientific practice on values that shift in popularity. Under this model, values might come in and out of consensus. The time scale of scientific research makes this problematic: early climate change research was not reflective of public consensus, but trends suggest that it already is or will be in the near future. If scientists waited for consensus to obtain, a wealth of scientific data on the climate would be missed. The consensus model improves over the simple majority model, but shares the problem of excessive exclusivity.

 Values exist on different levels of specificity. A different version of the consensus model that focuses on underlying values could be more successful.

 As an illustration, consider two groups. One values the continued existence of mountain ecosystems in West Virginia, because, for example, they care about their children’s ability to have certain recreational experiences. Another group might value the continued existence of coal mining jobs, for example, so as to preserve their economic benefits. Under the simple model, whichever group is the largest would have the legitimate value. Under the consensus model, neither value would likely be legitimate.

 Now consider the underlying values. Those who value mountains probably do so because of a more fundamental value of environmental sustainability. Likewise, those that value coal jobs probably do so because of a more fundamental value of economic sustainability. Looking one step deeper, we find that environmental sustainability and economic sustainability both focus on sustainability tout court: the ability to continue our existence. Sustainability might flow from values like prudence or a hope to provide for future generations. Interests that conflict at the surface level may share common underlying values.

 The foundational-consensus model improves over the simple or consensus model by looking at the shared values that inform more specific ones, thus expanding common ground. The consensus model would exclude both environmental and economic sustainability, but the foundational-consensus model would allow the underlying value of prudence.

 This model addresses the first general problem because it provides scientists with foundational values to interpret with expertise. It allows some public influence as well as room for scientific discernment.

 While foundational values are likely more stable, change is still possible. The emphasis on certain values may shift. For example, in the 1950’s, progress and growth probably qualified as foundational values. The same might not be true in 2040.

Additionally, by looking beyond the specific, the model might have become too vague. If very different specific values can be supported by the same foundational ones, it follows that these foundational values provide little guidance to set specific goals. For example, scientists may decide to interpret the foundational value of prudence as environmental sustainability and work on climate change. That decision might contradict the specific values of a population who views prudence differently. It becomes unclear whether the scientists’ goal is democratically representative. If considering foundational values can lead to drastically different goals, the model seems unhelpful.

 The foundational-consensus model might be improved if we look at fundamental values through a different lens, possibly in a way similar to John Rawls’s veil of ignorance (1971/1999, 118). In the thought experiment, Rawls asks us to imagine ourselves as rational individuals planning a society from a standpoint where we do not know anything about our position in society. Rawls argues a society thus planned would be based on his well-known principles of justice. The veil of ignorance is meant to make us think outside of privilege, making justice a part of rational self-interest.

 Could we set appropriate, democratically endorsed, goals for science from behind the veil of ignorance? On the one hand, some appropriate epistemic goals would likely be endorsed: rational individuals in the original position would likely want science to be successful and see its spoils justly distributed. On the other hand, problems arise when we try to interpret the idea that scientists ought to “check values” at the door. The entire motivation behind the pursuit of our criterion is the recognition that we cannot separate ourselves from our values; a thought experiment that relies upon that ability is unlikely to help.

The intuitive appeal of Rawls’s veil of ignorance points to the idea that science ought to serve just goals. No one person’s values should be privileged without sufficiently compelling reason.

 Are there compelling reasons to privilege the values of scientists? In some situations, yes. Scientists have epistemic privilege from their expertise that informs their values. While democratic endorsement is initially attractive, it is problematic because not enough room is left for the importance of scientific expertise.

**IV. Other Possible Criteria**

 We can now move onto our next project of investigating whether there is a better criterion to determine the legitimacy of non-epistemic value influence on scientific goals.

 In order to do so, we need to ask what we want in such a criterion. If we return to the syllogism presented in Section III, premises 1-3 stand. It is premise 4—that democratic endorsement is the best way to respond to public investment in science—that is problematic. Our task is to better fulfill premise 3–that public interest be considered.

 Democratic endorsement does not successfully fulfill premise 3 because it fails to take scientific expertise seriously. Expertise informs values and goals; scientists have epistemic privilege not available to the public that should be considered.

 Thus, a desideratum is that scientific expertise is taken seriously. Another is that the public investment be respected. Such respect can manifest in two ways: through the respect of public dignity and the respect of public well-being, depending on whether one focuses on deontology or utility.

 So, three elements ought to be considered: public well-being, public dignity, and scientific expertise. I propose three models to be assessed: paternalism, professionalism, and the trustee model. The models differ on the issues of the presence and justification of authority.

 Before we evaluate these models, it is important to discuss how the three elements above relate to one another. It is inaccurate and unhelpful to see them as ends of one-dimensional spectra with high respect for public on one end opposed to high respect for scientific expertise on the other. I propose to see them as different axes on a three dimensional space. One axis represents degrees of respect for the public, the second represents degrees of respect for scientific expertise, and the last represents degrees of respect for the public well-being. Thus, it is a priori possible to maximize all elements.

 With this in mind, let us turn to our assessment of our three potential models. The first is paternalism, where the values and decisions of those with epistemic privilege are favored and imposed on those viewed as less capable or incapable of making those decisions, without consent (Dworkin 2013). Paternalism is justified (if ever) only if it is motivated by the well-being of its target. The classic example of paternalism is of a parent and child; it is not just for a parent to treat her toddler’s wishes about the best way to cross the street equally to her own. A paternalistic model allows scientists to set goals for science on the basis of their expertise and with the public’s well-being in view.

 Paternalism exhibits high respect for scientific expertise, but low respect for public dignity. This model could promote well-being if we agree to the premise that the epistemic privilege of scientists gives them an advantage of knowing what is best for the public (an admittedly controversial claim). Paternalism is justified only in specific conditions where it is acceptable that the public is deemed incapable of making appropriately informed decisions. That such conditions be ever satisfied is disputable.

 In view of our assessment of paternalism, let us look for a model grounded in public consent: the professional model (Freidson 2001, 180). In a market economy, the proper role of businesses is not to tell customers what they should want. It is not the place of the car dealer to tell a customer who comes to buy a two-door sports car as her family’s main vehicle that a minivan would serve her four children better. This contrasts with the role of professionals. Educators are accountable to society as a greater whole and tell the students what they should want, even if that prescription is a long term paper. Professionals serve a higher good than the immediate preferences of the person they are serving.

 This model diverges from paternalism in that one is free to take or leave the advice offered by professionals. Doctors provide professional advice, but their patients are not forced to follow suit. The professional model, applied to scientific goal-setting, construes scientists as providing advice that the public may or may not follow. Thus there is high respect for public dignity, but lower emphasis on scientific expertise. There is a potential that the public will choose against the informed opinion of scientists, and so potentially negatively affect their own well-being. Professionalism overly privileges public dignity at the expense of the other desiderata.

Is there a middle option? Political philosophy provides a distinction between the trustee and representative models (McCrone & Kuklinski 1979). In the trustee model, the expert has increased access to relevant knowledge and is entrusted with decision-making powers by a group. The trustee serves the group’s best interest, even if her decision does not reflect those of the group. A classic example is an investment banker who acts in the fiduciary benefit of her clients. The investors do not pay the banker to make the decisions they themselves might make; rather, they pay her to use her privileged knowledge to make decisions that best serve their interest. In contrast, the representative model sees the decision maker as a proxy for the will of the people. Her job is primarily to represent the decisions that they might have made, sometimes despite their best interest. Scientists seem to fit better in the trustee model than they do in the representative model. Like investment bankers who know the market better than their clients, scientists know the scientific landscape better than the public.

 This trustee model respects scientific expertise. It also respects public well-being, under the premise that scientific expertise is a good guide to determine it. Finally, it respects public dignity, as it is grounded on consent and trust. The trustee model thus fulfills our desiderata. That said, two difficulties arise. First, while the best interest of the investment bankers’ clients is clear, the public interest in science is less so. Second, while many people choose to sign contracts with bankers, it is not clear that the current public would willingly entrust scientists with decision-making power over the goals of science

 The trustee model best maximizes our three desiderata, but it is unclear whether the conditions under which it is justified currently exist. In its absence, the choice of which model is preferable between paternalism and professionalism is unclear. Paternalism sacrifices public dignity for well-being; professionalism lowers the ability of scientists to promote well-being of the public, but gives the public greater autonomy. We are left with a classic moral dilemma: do we value public well-being or respect for public dignity? Kant says we should promote autonomy above all; he would prefer the professional model. Mill, in valuing well-being, would likely be more sympathetic to the paternalism model. Among the three models, we are left with an, appropriately value-laden, choice. Of course, an obviously desirable fourth option is a different model than those proposed in this paper that better maximizes our three desiderata.

**V. Conclusion**

 If we accept that non-epistemic value influence in science is inevitable, we need a way to determine when such value influence is legitimate. Legitimacy has two components: retention of epistemic integrity and promotion of justice. Even if democratic endorsement is asked to do only the work of promoting justice, it fails to do so because it fails to take scientific expertise seriously. We need a new model in which public dignity, public well-being, and scientific expertise are respected. We assessed three candidates: paternalism, professionalism, and the trustee model. While the trustee model seems ideal, its conditions of realization may not be satisfied in our society. If so, we are bound to choose between professionalism, a more deontological approach, and paternalism, a more utilitarian approach, for goal-setting in the sciences.

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1. A thorough discussion of what counts as justice falls beyond the scope of this paper. We will consider two main components of ‘justice’: promoting public well-being and respecting public autonomy. [↑](#footnote-ref-2)
2. Here, just goals are either just or neutral, such as basic research, in contrast to unjust goals. The purpose of J is to exclude unjust goals. [↑](#footnote-ref-3)
3. The confines of this paper preclude a full discussion of expertise. More can be found in Collins and Evans (2007). [↑](#footnote-ref-4)