

Differentiating Scientific Inquiry and Politics

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Abstract

Protecting science from politicization is an ongoing concern in contemporary society. Yet some political influences on science (e.g., setting public funding amounts) are fully legitimate. We need to have a clear account of when a political influence is politicization (an illegitimate political influence) in order to properly detect and address the problem. I argue in this paper that understanding how the space of scientific inquiry is distinctive from democratic politics can be the basis for defining politicization. Similarities between inquiry and democratic politics have long been noted, but there are important differences as well. I describe four norms that are importantly distinct for inquiry when compared with democratic politics, even if they can be seen as roughly similar. Although there are parallels between democratic political norms and norms for scientific inquiry, there are crucial differences as well. Eliding these differences creates politicization of inquiry. Even as we understand scientific inquiry as pursued within society and responsible to society, we pursue it in a distinctive space, guided by distinctive norms and practices.

1. Introduction: Science and Politics

Concerns about the politicization of science, understood as an illegitimate political influence on science, have been endemic since science became a central source of authoritative information in politics (Douglas, 2009, ch. 2). Increasingly, there is concern that the ability of science to ‘speak truth to power’ has been eroded by political interference in science or political forces tampering with science. There is also concern that academic inquiry has become corrupted by the political, whether it is from the left (too much political correctness damaging free inquiry) or from the right (too much political intimidation damaging inquiry).

The difficulty of addressing politicization in science is made more complex by the fact that political influences on science can be fully

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legitimate (and thus not politicization as such). For example, politicians must exercise control over public funding for science (as that comes from the public purse) and political power can legitimately place some areas of inquiry (e.g., chemical weapons pursuit) or methods (e.g., deceptive practices for human subjects) outside the bounds of legality.

Yet, the exercise of political power can be a genuine threat to scientific inquiry. We have clear historical examples where democratic politics have hampered the ability of scientists to pursue research and communicate results to publics, from Nixon's disbanding of his Presidential Science Advisory Council (after attempting to abuse its epistemic authority), to politicians attempting to intimidate climate scientists into silence, to recent struggles over expertise in the midst of the pandemic (Douglas, 2021a, 2015). We don't need to turn to the classic examples of political power interfering with science from non-democratic settings (Galileo and the pope, Lysenko and Stalin) to worry about a pernicious intermixing of politics and science. But what defines an improper political influence? What constitutes a politicization of science?

To address this question, one can begin by noting the differences between science and politics. On the one hand, it might seem obvious that there must be clear normative differences. Scientific inquiry aims at empirical truth (or understanding or explanation or some mixture of epistemic goals), whereas politics aims at collective governance. Surely this difference in aims is significant. On the other hand, there has been a long-standing tendency to see important similarities between inquiry and *democratic* politics, or between science and democracy (Dewey, 1927; Merton, 1942; Bohman, 1999; Anderson, 2006; Ferris, 2011). The investigative character of democratic politics, of political discourse and debate as a mode of inquiry, erodes a clear distinction between inquiry and politics based solely on aims.

This paper argues that despite broad parallels between democratic politics and inquiry, there are crucial normative differences in the practices central to inquiry, distinct from politics. These differences help to define a distinctive space of inquiry, where democratic political norms are not the same as the norms of inquiry. Damaging politicization occurs when democratic political norms are taken to be appropriate within the space of inquiry, overriding how some norms within the space of inquiry should function.

The norms I propose, however, do not rest on an underlying purity of inquiry or science. I will not argue that science should be value-free, or fundamentally apolitical, or kept fully distinct from society,

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in a separate and purified space.¹ Scientific inquiry takes place within society and is not free from responsibilities to that broader society (Douglas, 2021b). Social and ethical values are central to the responsible practice of scientific inquiry. Yet, that does not mean there are no distinctive norms for the space of inquiry that must be protected if inquiry is to function properly, providing its epistemic goods to society. While my previous work has focused on individual reasoning practices as a locus for protecting scientific inquiry (Douglas, 2014), here I will focus on the community level. Community level norms for inquiry are crucially distinctive from democratic politics, even as inquiry is embedded in and responsible to the broader society.

I will begin with an examination of a classic statement of distinctive norms for the practice of science from Robert Merton that drew thick parallels between science and democracy. Merton argued that the ethos of science (institutional level norms structuring scientific practice) was more in sync with democratic political norms than with fascist political norms. I then turn to more recent work in the social epistemology of science, in particular to the work of Helen Longino, who has argued for particular norms for ensuring the effective functioning of epistemic communities. With these two starting points in place, I develop a set of norms for the space of inquiry (including scientific inquiry) that, while having rough similarities with norms in democratic politics, have vitally important fine-grained differences. I will elucidate these differences, while showing how the norms for inquiry interrelate. Although there are parallels between inquiry and democratic politics, as Merton noted, the two practices are not the same, and attending to the differences clarifies what is distinctive about the space of inquiry and defines when inquiry has become politicized.

2. Merton Setting the Stage

In the darkest days of World War II, Robert Merton wrote his famous essay on the ethos of science (Merton, 1942). He articulated four institutional norms for science – universalism, communism, disinterestedness, and organized skepticism – and argued that the fit of these norms with different political systems showed that science fits

¹ The ideal of value freedom has come under cogent criticism *as an ideal*, even as we have had long-standing doubts about the ideal's achievability (e.g., Douglas, 2009, 2016; Elliott, 2017; Elliott & Steel, 2017; Brown, 2020).

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better with democracies than with fascist states. This, Merton suggested, should give the Allies hope that the science needed to win the war would be better supported in the democratic states of the Allies, and thus, even though things looked bleak, science would help the Allies defeat the fascist Axis powers (as indeed happened).

Merton focused on community-level norms and their fit with democratic norms; his four norms were not something that each individual scientist aspired to, but rather were built into the standard practices of the scientific community of the time. He articulated the institutional ethos of science as consisting of four central components (Merton, 1942/1973, pp. 270–278):

- 1) **Universalism:** According to this norm, it does not matter who does the science, as it should be evaluated by ‘pre-established impersonal criteria’. There is no such thing as ‘Jewish science’ or proper assessment of work based on the nationality or ethnicity of who does the work. Further, anyone with the ability to do science should be allowed to do it (Merton, 1942/1973, p. 270).
- 2) **Communism (later relabelled Communalism):** There is no private ownership in science, and all scientific work is shared with the community and collectively belonged to the community. Secrecy, or keeping results from other scientists, is against the ethos.
- 3) **Disinterestedness:** Scientists and their results are publicly accountable to peers, enforced in practice by rigorous scrutiny from other scientists. Merton was quite clear that the ethos of disinterestedness did not mean that individual scientists are uninterested or dispassionate in their own work. It is only in collective scrutiny that disinterestedness emerged.
- 4) **Organized skepticism:** The culture of science is centred on ongoing scrutiny, with nothing held above scrutiny. Non-dogmatism is a central feature of scientific practice.

In his discussion of these four components, Merton emphasized the parallels between the public/political sphere and science. According to Merton, three of the norms clearly fit better with democratic states: universalism, disinterestedness, and organized skepticism. Fascist authoritarian states of the time, with their emphasis on racial hygiene, undermined universalism, throwing out scientific talent (which made a big difference in the outcome of the war). Fascist states also held some dogmas above critical scrutiny (such as the supposed superiority of the ‘Aryan race’), violating organized skepticism. And adhering to the party line interfered with the culture of disinterestedness needed for scientific debate. Thus, fascist states had clear difficulties with three of the four norms. For the fourth

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norm, communism/communalism, neither the Axis nor the Allies had a clear advantage; communism/communalism created tensions with any capitalist system. Overall, Merton concluded, the Allies held the scientific edge because of their democratic cultures.

In terms of the wartime advantages of science for the Allies, Merton was right – scientific advances like the proximity fuse, antibiotics, and DDT to fight typhus gave the Allies clear advantages even before nuclear weapons ended the War. Although the similarities between democratic systems and scientific cultures assisted the Allies in WWII, Merton's analysis did not go deeply enough into the ethos of science, into the space of inquiry, to detect the differences between democratic politics and science. While there might be broad parallels between science and political systems for some of the norms, there are also distinctive practices that need to be identified, discussed, and protected. More recent work by social epistemologists have elucidated some of the distinctive norms of scientific inquiry.

3. The Shift to Social Epistemology

Although philosophy of science focused on the processes of individual reasoning in science for most of the 20th century, by the last decade, philosophers opened up a different perspective on science, one that focused on the social practices of scientists central to knowledge production. Philosophers such as Helen Longino, Miriam Solomon, and John Hardwig noted that knowledge did not emerge, and could not be wholly validated, by individuals pursuing science alone. It was in social groups that knowledge was generated, debated, tested, and confirmed.

For example, Longino articulated an important set of norms to which epistemic communities needed to adhere in order to generate knowledge (Longino, 1990, 2002). As she argued in *The Fate of Knowledge*, the social processes of science, especially of critical interaction among scientists, generate that which is worth calling 'scientific knowledge' (Longino, 2002, p. 129). Without adherence to such norms to at least some extent (adherence is not a digital affair but rather one of gradation), the empirical claims made would not be worth the moniker 'knowledge'. Epistemic communities need to instantiate the following norms to some potent degree for effective knowledge production:

- 1) 'publicly recognized' venues for criticism (Longino, 2002, p. 129),
- 2) uptake of, or at least response to, criticism (Longino, 2002, p. 130),

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- 3) public standards for evaluation and discourse (Longino, 2002, pp. 130–131), and
- 4) tempered equality of intellectual authority (Longino, 2002, p. 131).

For Longino, and many others using her norms for understanding the social functioning of science, the proper functioning of such structures is essential for knowledge production, and the closer an epistemic community is to fully meeting these norms, the more objective the resulting knowledge will be.

Thus, Longino's norms are focused on the internal workings of an epistemic community. They do not tell us much about the boundaries around that epistemic community or how the epistemic community should function in relation to the broader community in which it is embedded. We need to pay attention to how the norms within the space of inquiry, in which epistemic communities function, differ from those norms that function within the broader democratic society, in order to clarify how democratic politics and inquiry differ.

For that, we need more detail on the norms within the space of inquiry. In the next section, I will build on the insights of Merton and Longino to develop a set of norms for the space of scientific inquiry that are roughly parallel to democratic politics but have crucial differences that make the space of inquiry distinct.

4. The Space of Inquiry

Although there are parallels between the space of inquiry and the broader space of politics in which inquiry is embedded (as Merton noted), there are crucial differences as well. In this section, I will describe four norms for inquiry that seem similar to, but are in fact distinct from, norms in democratic political discourse. The four norms are:

- 1) norm of clear and public restraints
- 2) norm of criticism and response
- 3) norm of fostering diversity
- 4) norm of open-ended debate

The first norm sets the boundaries for legitimate topics and methods for inquiry, thus bounding the space of legitimate inquiry. Such boundaries can be set for epistemic, moral, and/or political reasons. The remaining three norms shape the practices within the space of inquiry, each providing guidance distinct from the practices of democratic politics. Further, the norms work together, and place limits on the way in which the other norms are applicable. So entangled, the norms work together (as I will articulate below) to shape the

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distinctive practices of inquiry. While democratic societies may be more conducive to scientific inquiry (as Merton argued), that does not mean that the norms for scientific inquiry and democratic political debate are identical. With these differences in hand, we have a clear basis for defining, detecting, and evaluating concerns about politicization of inquiry.

1) Norm of clear and public restraints

The first norm sets the boundaries of what topics and methods for inquiry count as acceptable. No one has the complete freedom (much less freedom from responsibility) to pursue inquiry in whichever way one wants (Douglas, 2021b). There are restrictions on how inquiry can be conducted and on what kinds of projects are legitimate. Both societal and epistemic responsibilities generate reasons for excluding some topics and methods from legitimate inquiry. Staying within the bounds of legitimate inquiry is just one responsibility of scientific inquirers (as other responsibilities saturate the space of inquiry), but it is a crucial one to be respected.

Current examples of off-limits topics and methods abound. Research pursuing new bioweapons or new chemical weapons is illegal (by international convention). Legally, informed consent is required for medical research using human subjects. Inflicting excessive suffering on animals also is illegal. Working with certain viruses requires laboratory settings that meet particular biosafety requirements. Such restrictions can be legitimately imposed by the broader political context (as it was with human subject regulation) or embraced by the scientific community (as with germline editing in humans currently) or both (as with the demands of biosafety for work with particular viruses). Such restraints should: 1) be imposed publicly, so that they are widely known and that those pursuing scientific inquiry are well aware of the restraints; 2) delineate as sharply as possible what is acceptable to pursue and what is not; 3) come with good reasons for the restraints (whether epistemic, moral, political, or some combination); and 4) be as targeted as possible (leaving the space of inquiry as large as possible given the reasons for restraints).

These considerations are needed because such constraints should not be put in place lightly. To declare an area or method of inquiry off limits is to decide that the knowledge to be gained is not worth the harms (epistemic, moral, and/or political), without having the knowledge available to make that assessment (precisely because

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inquiry is not being pursued) (Johnson, 1999). This is a difficult judgment to make, and in the cases where we have made it, we have reasons and experience to support that judgment, usually following vigorous debate about the limits. When the rules for human subject medical research were put in place, we had cases of egregious abuses of human subjects with no valuable knowledge gained (e.g., the Tuskegee Syphilis experiments, experiments on vulnerable patients) and we had cases of informed consent working effectively for risky medical research (e.g., the yellow fever experiments). Such cases made the arguments for the restriction of allowable methods informed and persuasive. Public and persuasive reasons should be given for restraints on inquiry.

Reasons for restraints can arise from moral, political, and/or epistemic concerns. Epistemic concerns alone can cause a community of researchers to decide that further work in an area is no longer valuable and should be placed outside the space of legitimate inquiry. For example, in 1775, the Académie des Sciences in France declared that it would no longer consider reports of successful perpetual motion machines (Hahn, 1971, p. 145). This was done after decades of dealing with claims of such machines and the sense that the Académie was wasting its time with such claims. Frustration had grown to the point that the Académie was willing to declare publicly that perpetual motion machines were no longer considered legitimate inquiry. If a perpetual motion machine were in fact built, perfected for use, and made to work clearly, then the debate could be reopened. But clear and open success would be needed to gain the attention of the Académie, in contrast to the previous claims made for such machines (usually involving hidden workings). Many external critics of the Académie decried this declaration as an act of tyranny (see Hahn, 1971, pp. 140–158 for an account of such criticisms and debates), but the Académie remained unmoved. The history of errors and charlatanry in relation to perpetual motion machines made it reasonable to no longer countenance such claims without extraordinary evidence (Schaffer, 1995). Note that the theoretical reasons (the laws of thermodynamics) for rejecting perpetual motion machines would not be developed until many decades later.

Current debates over restraints often combine moral, political, and epistemic concerns. Consider the debate over the legitimacy of research on race-based or gender-based intelligence. The history of such work has been so consistently shoddy that doubts have been raised about whether this is an epistemically productive line of inquiry (Rose, 2009). Further, it has been so socially harmful that it may not be unreasonable to declare such work outside the space

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of legitimate inquiry at this point (Kourany, 2016). Merely pointing to generic scientific freedom or the need to pursue truth is inadequate in the face of these concerns (Ceci & Williams, 2009). Well-formed and reasoned restraints on the space of inquiry have a long history of legitimacy.

Ethical and political concerns alone have driven legitimate constraints on inquiry as well. It is such concerns that have curtailed research into biological and chemical weapons and placed restrictions on the use of human and animal subjects in research (even when some researchers have loudly complained about such restrictions, e.g., as noted in Jones *et al.*, 2016). As long as the space of legitimate inquiry is clearly and publicly demarcated, with sound reasons and targeted limitations, limiting the space of inquiry is acceptable.

Finally, as a practical matter, restraints must generally be clear and public because such restraints would be difficult to enforce if researchers did not know about them. If a topic is off limits to research, researchers need to know about the limits so that they do not inadvertently stumble into the area. To use a metaphor, 'no trespassing' signs for inquiry must be posted for all to see on a clear boundary.

Let us now consider how such restraints differ in the realm of politics. Politics also has plenty of restraints, and it might seem that such restraints are also clear, public, and requiring good reasons. However, plenty of restraints in politics are tacit, unclear, or generally unarticulated, and this is *good* for politics. Some topics are tacitly accepted as off limits; some approaches are generally known to be out of bounds even if not openly declared as such. For example, one of the most important restraints of democratic politics centres on the peaceful transfer of power. That the USA is now having open discussions about what this should mean is disturbing, and an upsetting signal that the norms of democracy are under threat. Having an open discussion about such central norms of restraint is alarming, a signal of fundamental discord. In other cases, tacit restraints, such as which policies are on or off the table for consideration, can be central to political alliances – particularly when reasons for shared positions are not themselves shared. Further, politics is a more variable space than inquiry, with pockets of allegiances generated by shared tacit presumptions. Part of political solidarity is having tacit understandings of the boundaries of acceptability, without having to spell it all out. Because of the nature of democratic politics, having a general demand for clear and public constraints would often be counterproductive.

In sum, the clarity and public nature of restraints is necessary for the legitimacy and effectiveness of restraints on inquiry. Restraints

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are the result of long debate and experience with the particular issue that is at stake. Restraints are not put in place lightly, whether imposed from without or generated from within. In contrast, political restraints are often fuzzy, tacit, hidden, or inexplicit. This is an important difference between inquiry and democratic politics.

2) *Norm of criticism and response*

Once within the delimited space of legitimate inquiry, other norms structure practices in distinctive ways. One of the most important is the norm of criticism and response. As Longino emphasized, there is a general obligation within the space of inquiry to raise and to respond to criticisms. Merton's organized skepticism and disinterestedness also highlight the importance of this aspect of scientific inquiry. In addition to Longino's recognized avenues of criticism and the demands of uptake/response, it is also important to have a culture that sees criticism as valuable (rather than as harmful).² Criticism within inquiry shows a serious engagement with another's work, and thus demonstrates some level of respect for that work (even if the critique is pointed).

Various social structures have been created and are supported in order to facilitate this central aspect of inquiry. Conferences have question and answer periods after talks; journals have both pre-publication peer review (and authors' responses to peer reviewers) and comments, letters, and responses published in their pages. Both formal and informal spaces for critical interaction generate the intellectually lively nature of communities engaged in inquiry. The ongoing conversation within the space of inquiry is one of its most important aspects, even if weeks, months, or years pass between salvos.

Because the norm of criticism and response is so important, it is also a marker of who is genuinely engaged in inquiry and who is not. A person who fails to engage with criticism can be seen by their epistemic community as not properly engaged in inquiry, and thus (potentially) no longer participating in the space of inquiry. Making such an assessment can be challenging because the norms

² Many discussions of scientific freedom or freedom of inquiry base part of the value of such freedom in the ability to raise and respond to criticism, and describe such freedom as essential for knowledge production (e.g., Mill, *On Liberty*, ch. 2). While I find such arguments unpersuasive against the idea of any restraints (see above), they do indicate the value of criticism and response within the space of inquiry.

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of response are complex. *First*, the person criticized should be aware of the criticism – it is made in front of them or in a prominent venue, for example. There is no expectation of responding to a critique of which one is not aware. *Second*, immediate responses are not required; a person can take time to respond to a criticism, as long as they acknowledge the existence of the criticism. For example, it is perfectly acceptable in a question-and-answer period to note that a criticism raises a good point and to say that one will think later about the criticism. *Third*, there are a range of legitimate responses to a criticism, from reasoned rejection of criticism as ill founded (e.g., pointing to a particular misunderstanding that underlies the criticism or pointing to previous work that has already addressed the criticism), to slight shifts in views, to wholesale changes in one's views. *Fourth*, it is not the case that each person must respond to every criticism of their work that is being raised. The obligation to respond is distributed across the community of inquirers as a whole. When work is critiqued, others can respond to the criticism rather than the original author(s) (Rolin, 2017, p. 211). Even as each person should attempt to consider carefully criticism of their work, and to revise or shape their future work in response to such criticism if they think the criticism is on target, each person does not need to specifically note and provide an answer to each and every criticism raised. Doing so would overwhelm individual researchers, particularly the most prominent ones (i.e., those most likely to be the target of criticism). Despite the distributed nature of the obligation to respond, criticism made within the space of inquiry should not be left unanswered indefinitely. If there is no response after a while, there will be legitimate worries that the target of criticism is held dogmatically, undermining the function of the space of inquiry.

Because of the pervasive nature of the norm to generate and respond to criticism, those not participating in this practice mark themselves as not genuine participants in the space of inquiry. Former participants might do this deliberately, choosing to no longer engage in the debates central to knowledge production (perhaps they have shifted focus or retired). Alternatively, interlocutors can appear to be engaging in inquiry, raising criticisms and making the motions of response, but merely are repeating how they previously responded to claims and holding steadfast to particular views regardless of critical debate. Such interlocutors should be thought of as *inquirer facades*, faking one of the central norms of inquiry without following through on its demands. When inquirer facades are discovered, they can be legitimately ignored by those within the space of inquiry. Inquirer facades that repeatedly raise

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the same objections (that have already been answered) can be directed to the earlier responses, and left to loop between their (fake) objection and the responses.³

How does this norm of criticism and response compare with the debate practices central to politics in democratic systems? Merton noted in his norms of organized skepticism and disinterestedness the importance of criticism and response for both science and democracy. Criticism and response seem central to democratic debate. While there are general parallels, the norms in practice are not the same. What differentiates criticism and response within inquiry from that within politics is 1) who the primary audience for criticism is, and 2) expectations for responses to criticism.

Within the space of inquiry, criticism and response is first and foremost for those engaged in the debate – those targeted by the criticism and those whose criticisms are subject to response. The debates are for the interlocutors first and foremost, and only secondarily for the watching audience, those trying to make sense of claims and counterclaims. Further, we expect those who hold particular views to respond to criticisms of those views (although as noted above, not every person needs to respond to every criticism – just that every criticism requires a response from someone).

Within the space of politics, criticisms are first and foremost for the audience following the debate. We do not demand or even expect responses to criticisms from those whose views are being criticized, nor do we expect every criticism to receive a response. We do not expect opponents in political debates to actually take criticism on board. Political figures being criticized often raise other concerns rather than directly address criticism; much criticism remains ignored by

³ Note that this version of the norm of criticism and response does not require that everyone agrees that a criticism is on target or that a response is convincing. This more demanding view is found in De Melo-Martin and Intemann's recent work (De Melo-Martin & Intemann, 2018, pp. 46–48). Because they require a stronger evaluation of criticism and response, De Melo-Martin and Intemann argue that such evaluation cannot proceed without substantive shared standards, i.e., more than the mere presence of some response not already addressed. My account does not depend on such substantive shared standards. Indeed, I am skeptical that we can or should demand such substantive disciplinary shared standards generally in inquiry. See the next norm below. Further, pointing to looping responses is exactly what De Melo-Martin and Intemann identify as problematic about intelligent design promoters (De Melo-Martin & Intemann, 2018, p. 47). The weaker standard I present here is both functional and suffices for protecting inquiry from inquirer facades.

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those engaged in the debates. This is perfectly acceptable, given the cacophonous nature of political discourse and the fact that accountability rests with democratic voting mechanisms for removing problematically unresponsive politicians from power. We may be frustrated that a politician does not respond to a particular criticism (especially if we agree with the criticism), but such a lack of response is not a violation of democratic political norms. Criticism in democratic politics is used to show the audience something about the claims being made or the person making them, so the audience can make their own judgements. Criticism (and any response, which is optional) is thus more a form of theatre, a performance for the broader public, rather than an attempt to convince one's interlocutor of something (as is the case within the space of inquiry). Televised political debates are an excellent example of this practice. It is a vitally important form of theatre for deciding how we should proceed with democratic decision-making.

Thus, although both inquiry and democratic politics make use of criticism and response, the function is different within the two spaces. Within inquiry, all participants should be engaged in the practices of criticism *and* response. Failing to participate in criticism *and* response is a reason to be excluded from the space of inquiry, to be tagged as an inquirer facade. Inquirers should not bother paying serious attention to inquirer facades, even if they might occasionally offer critiques of such facades as a public service (to any audience in the broader society). In politics in contrast, it is acceptable to repeat the same arguments over and over and to not respond to criticism, even if criticism is a general feature of democratic politics. The norm of criticism and response is distinct within the space of inquiry from the space of democratic politics, and part of the delineation of who is a genuine participant in inquiry.

3) *Norm of fostering diversity*

This delineation between genuine inquirers and inquirer facades is important for the third norm. The norm of fostering diversity is the requirement that spaces of inquiry be genuinely welcoming and supportive of a wide range of perspectives, experiences, and personal identities in order to generate the necessary critical interactions for inquiry. The importance of such diversity for inquiry has been noted by many (e.g., Solomon, 2001, 2006; Harding, 2015; Longino, 1990, 2002; Intemann, 2009). The norm is tempered, however, by the demand that all those participating in the space be genuine inquirers, not inquirer facades.

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Fostering genuine diversity, including epistemic diversity, in spaces of inquiry requires us to attend to broader issues of power in society. We cannot merely throw open the doors of science and say we will support whomever walks through the doors – Mertonian universalism is not enough. We need to be actively recruiting and supporting diverse participants (Branch, 2016). Nor can we require those who walk through the doors to maintain all the discipline-specific standards in order to belong. Newcomers can and will challenge standard practices. Such challenges are part of the space of inquiry and are part of the criticism and response essential to inquiry (Longino, 2002).

Part of the challenge of epistemic decolonization and of epistemic justice is working to ensure that criticisms of normal practices coming from marginalized voices within the space of inquiry get serious attention and response. It is difficult to raise challenges to ‘how we do things’ in a particular field, and to argue against normalized practices.⁴ Yet those challenges need to be taken seriously and be given serious responses. Such responses need not be just capitulations. Some practices have good reasons (beyond entrenchment) behind them, and those reasons should be articulated. Challengers then can respond to those reasons, propose changes to practices that work with those reasons, or accept the practices. Some practices are more a result of resource constraints, and as such can be genuinely limiting (at least temporarily). Acknowledging that standard practices are less than ideal opens the door to conversations about how to garner more resources or to shift practices within existing constraints. Regardless, diverse voices should not be excluded solely because of a failure to adhere to field-specific shared standards.

One might worry, though, that fostering diversity can include bringing into the space of inquiry ideological views impervious to criticism (Hicks, 2011). However, if we keep in mind that all participants in the space of inquiry must be responsive to criticism (norm 2), this concern is alleviated. The ideologically pre-committed cannot survive the demands of criticism and response for long, revealing the fact that they are inquirer facades and thus can be legitimately ignored within the space of inquiry.

⁴ Normalized practices here refer to field-specific shared practices and standards, rather than to the more potent clear and public restraints described in norm 1. Such restraints can also be challenged, but because they are already supported by good public reasons, such challenges will be even more difficult to make.

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This is quite different from how diversity should work in broader democratic politics. Although the total space of democratic politics should not be exclusionary, particular political spaces can be legitimately exclusionary. Political spheres can have demands of conformity (e.g., safe spaces for the already marginalized justified by existing power imbalances); the Black Congressional Caucus can allow only Black members of Congress in. Every door in politics need not be open to all, even if exclusionary tactics can be politically weakening (reducing the scope of possible allies). While not every exclusionary tactic is politically acceptable (those protecting the already powerful are not, thus exclusively White spaces in the USA would not be acceptable), there are some that are quite acceptable. In the space of inquiry, however, the only legitimate exclusionary criterion is that one is failing to abide by the norms of the space of inquiry (such as being an inquirer facade or failing to respect clear and public restraints).

4) Norm of open-ended debate

A general feature of the space of inquiry is the lack of procedures for debate closure regarding which claims to accept. Debates get settled when the participants decide to stop debating, usually because everyone remaining in the space of inquiry is convinced. (The unconvinced could have already left – retiring, refocusing their attention elsewhere, becoming unresponsive to criticism, or dying.) Organic consensus formation is the norm within the space of inquiry on the topics of inquiry. Further, debate on any given issue can (usually) be reopened at any time, precipitated by new evidence or methods or theory. In cases where public constraint has been put in place for inquiry (norm 1), the demands for re-opening debate can be quite stringent. But such explicit constraints are rare.

This norm undergirds the non-dogmatism so important to inquiry (as Merton noted). There is no such thing as permanently settled views in science or inquiry. Long-standing views widely held as obvious ‘truths’ have been overturned, including Euclidian space, the inherent inferiority of women or particular races, the immovability of the continents, and the non-inheritability of acquired characteristics (overturned by epigenetics). Scientific inquiry must always be open to future revisions of what appears to be settled. Epistemic communities can consider some claims, theories, or methods sufficiently well established to not warrant further debate at the moment; we cannot debate everything all the time. But no claim, theory, or method can be held permanently outside the reach of contestation or debate.

This does not mean that challenging widely held views within the space of inquiry is easy. Those challenging the consensus cannot expect the mere fact of a challenge to overturn broad acceptance. Often the ‘mavericks’ raising challenges bring to the table counter-claims and evidence that have already been addressed within the space of inquiry. The epistemic community should point to the work already done, and then the maverick must do the work of incorporating that previous work into their views. Those challenging widely held views must themselves be open to criticism and respond to critique properly. Being a maverick is no excuse for ignoring the second norm. If they do, the maverick shows themselves to be an inquirer facade.

This non-dogmatism can make inquiry feel unsafe. And that is a correct view of the space of inquiry. It is not a safe space for dearly held views, with the need to engage in criticism and response, and the need to foster diversity. However, it should be a safe space for the *people* engaged in this work, willing to commit to these norms, even if views held must remain open to criticism (*à la* norm 3).

Comparing inquiry and democratic politics, there are two key differences. First, debate closure mechanisms are central to the processes of democratic politics – such as elections and votes by elected officials – and are crucial to generating the main products of democratic governance – the rules by which society will operate. Even if democratic debate can (and often will) be reopened after a decisive vote, the vote is still binding at the moment (the representative gets elected, the law gets passed). Debate closure mechanisms are not central to the main products of inquiry, deciding what to think about the world.⁵ Second, debate closure mechanisms in democratic politics are often votes that must pass a clear threshold (e.g., a majority or super-majority vote). In the space of inquiry, such precise voting standards are rarely employed, in favour of consensus.

⁵ One might note that there are some debate closure mechanisms operating within the institutional spaces of inquiry (e.g., universities, grant funding agencies, journals). These institutions of inquiry need to make decisions about the allocation of resources (such as jobs, grants, and publication space). For these resource allocation decisions, there are some debate closure procedures, but they tend to be more consensus oriented than the majority voting mechanisms typical of democratic politics. Departments that do not express consensus support for job candidates often fail to get hiring approval from administrators; grant decision-making is supposed to be consensus based. Journals vary widely in how they use peer review reports, but many try to get articles to be revised to the point of acceptability for all the peer reviewers.

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Thus, the difference between politics and inquiry on debate closure arises from important differences in the purpose of inquiry vs politics. Politics would be wholly ineffectual without processes for debate closure. We need to make decisions in clear ways for how to govern our complex and pluralist societies, and we cannot wait for consensus to emerge in order to do so. In addition, the need for safe spaces within politics (created by bonds of loyalty, common cause, or alliance) where debate is closed by adhering to the admission to the space (e.g., some shared starting points are presumed, some issues are held off the table) is distinct from the space of inquiry. Although both democratic politics and scientific inquiry are generally anti-dogmatic, the precise flavour of non-dogmatism, and how debates end, is different.

Discussion

I have articulated four norms for the space of inquiry that can appear similar to norms for democratic politics at first glance, but when examined more closely reveal important differences that make the space of inquiry distinctive. There are also important interrelationships among the four norms – for example, that the norm of criticism and response serves to legitimately bound the norm of fostering diversity, or that the norm of open-ended debate can be bound by the norm of clear and public restraints. The norms together serve to make the space of inquiry different from the space of democratic politics.

What I have not done, nor have the space to do, is discuss ideals for the space of inquiry, such as ideals for criticism (constructive vs purely destructive), ideals for responsible impact of inquiry (making the world a better place), or ideals for fostering diversity (how we should do it). That must await future work. This overview provides an account of minimal norms instead. Those are crucial to delineating inquiry from politics, and to defining the politicization of science.

While these norms build upon Merton and Longino, not all aspects of their norms are present in this set. Most obviously, Longino's norm for shared standards within the epistemic community is not part of the set here. That is because I do not view that as a necessary norm within the space of inquiry, beyond the four norms articulated above.⁶ Longino's shared standards might make some debates more efficient, but as Longino notes, standards

⁶ See De Melo-Martin & Intemann (2018, pp. 48–53), and Rolin (2017, 2021) for additional discussions of shared standards.

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themselves are subject to criticism. Alternative views that take issue with shared standards need to be taken seriously within the space of inquiry. Adding an additional norm of shared standards can serve to make the space of inquiry too exclusionary. It is crucial to the norm of fostering diversity that newcomers to a space of inquiry are treated with initial respect and listened to carefully, even if they are critical of existing shared standards. Only when they refuse to acknowledge the reasons given for existing standards of work, or refuse to engage in criticism and response over the claims and standards for the space, should they be ignored (as inquirer facades). Other norms, such as Merton's universalism, I have strengthened (to fostering diversity).

Finally, I make no claims to providing a complete account of all norms relevant to inquiry or politics. For example, one norm not discussed here is a norm of credit allocation. This norm operates in a similar way in both inquiry and politics. For both, no one 'owns' an idea, which is in line with Mertonian communalism. Further, if you generate a novel idea in both inquiry and politics, it might be named after you (as with either natural or legislative laws), but there is no guarantee that even if your work was central to the new idea, you will be properly recognized for it. Ideas and insights are valuable only insofar as they are shared and taken up by others, and one cannot be assured that one's contributions will be fully acknowledged.

The four norms I describe above are central to the issue of politicization concerns because 1) there are broad parallels between inquiry and politics; 2) there are important differences in the details between inquiry and politics; and 3) conflating the details of the norms for politics with those in inquiry produces politicization. It is to diagnosing and protecting scientific inquiry from politicization that I now turn.

5. Protecting Scientific Inquiry from Politicization

As noted above, there are legitimate political constraints on inquiry, including making some areas of research illegal (such as bioweapons), placing some methods under regulatory constraint (such as the demands for meeting biosafety levels, animal subject regulation, and human subject regulation), and shifting funding away from some research towards other areas. Politicization concerns are raised when political influences on science are seen as illegitimate. If we are to protect inquiry from politicization, we need a way to

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differentiate between political influences on science that are legitimate and those that are not. I will argue in this section that politicization of inquiry occurs when norms of democratic politics are used in place of norms of inquiry, within the space of inquiry. Consider the following examples:

1. The imposition of vague, unclear, or unreasoned restraints

Politicization of inquiry occurs when restraints on inquiry are hidden, operating out of sight, or unclear, so that restraint expands well beyond the initial target. Consider the way in which researchers in the USA avoided any work on the public health impact of gun violence because of the 1996 Dickey Amendment. That provision more narrowly forbade the Centers for Disease Control from funding research that would promote or advocate for gun control. But its impact in practice was much broader, effectively preventing public funding for any research on the public health impact of guns (Dzau & Leshner, 2018). Such tacit and cultural constraint, generated because of political pressure, is an illegitimate politicization of inquiry. If Congress wants to ban public funding for some areas of research, it must do so openly, clearly, and with precision.

2. The intrusion of inquirer facades into spaces of inquiry

A now standard way to politicize inquiry is to support inquirer facades that pretend to be part of the practice of inquiry, but are mere shells to sow doubt and/or confusion, failing to respond to criticism (Oreskes & Conway, 2011). Such inquirer facades distract from the genuine practices of inquiry and take time and effort away from those actually pursuing scientific inquiry. Worse, they can fake inquiry practices sufficiently well to confuse the broader public about the findings of a field. The harmful effects of inquirer facades means that every field of inquiry must worry about the detection and flagging of inquirer facades. Failing to note the pernicious influence of inquirer facades can distort entire fields (Holman & Bruner, 2015).

3. The reduction of diversity within inquiry

Politicization also occurs when interlocutors are excluded from the space of inquiry for reasons other than their failure to adhere to the norms articulated here. If interlocutors who honour the norms of

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clear and public restraints, criticism and response, fostering diversity, and open-ended debate are ignored, whether because of their gender status, ethnicity, epistemic orientation, way of carving up problems, political leanings, *etc.*, this is a politicization of inquiry. This can be done within a field (e.g., the historical exclusion of women, Jews, and Blacks) or on a particular science advisory body (e.g., excluding particular expertise). Reducing diverse (and non-facade) views from spaces of inquiry in order to forestall difficult questions or challenges, or in order to make consensus easier to reach, politicizes the practices of inquiry. Individuals can be excluded because they are inquirer facades (norm 2), but not because they ask difficult questions.

4. The premature closure of debate

The demands of loyalty and ideological commitment acceptable within politics are harmful to inquiry, and using the political norm within inquiry can generate premature closure of debate and discourse, producing politicization of inquiry. Classic examples of politicized science from the Lysenko Affair fit readily into this mode of politicization. So too do examples where debate about what an advising document should say force closure without either 1) presenting minority views or 2) reaching genuine agreement.

In each of these examples, the conflation of how a norm works in politics with how a norm works in inquiry generates a politicization of inquiry. What counts as acceptable practice in politics, ignoring criticisms, following tacit restraints, displaying or demanding loyalty to one's party or ideals, forcing votes to end discussion, and so forth, are not acceptable practices within the space of inquiry and violate the norms distinctive to inquiry. We can define and detect politicization of science by noting the important differences between the norms of politics and the norms of inquiry, and use this understanding to protect inquiry in the face of political pressure.

6. Conclusions

At first glance, it might seem that the practices of scientific inquiry and democratic politics follow the same norms. But a closer examination reveals important differences between inquiry and politics. Allowing the political version of the norms to operate in the space of inquiry results in the politicization of science. Defining, enforcing,

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and protecting the norms of inquiry is crucial to the proper functioning of scientific inquiry and protecting inquiry from politicization.

Within the space of inquiry, the norm of clear and public restraints requires that restraints be clear, explicit, well reasoned, targeted, and known by all within the space of inquiry. The norm of criticism and response requires that each critique receives a response, even if to just point to already existing responses. The norm of fostering diversity requires that the space of inquiry's doors must be open and welcoming to all, except inquirer facades. Inquiry facades, those fake participants in the space of inquiry, cardboard cut-outs impervious to reason-giving that parrot the same lines repeatedly, demanding a response that has already been given to them, can be and should be legitimately ignored within the space of inquiry. The norm for open-ended debate forbids premature debate closure procedures regarding the results of inquiry.

Democratic politics are not governed by the same norms. Democratic politics do not have the same rigorous demands for responding to criticisms, for fostering diversity within every space, or for having public and clear restraints. Democratic politics have a need for clear debate closure procedures, even if political debate continues afterwards. Politics can be structured by demands of loyalty and adherence to ideological commitments (dogma). In contrast, loyalty and dogma have no place in the space of inquiry. In inquiry, everything can be criticized (even if in practice not everything is). Criticizing any particular view (as long as one is receptive to some responses) is never anti-science, even if it is uncomfortable for some within science.

Finally, we must recognize what protecting the space of inquiry does not entail. It does not entail that the space of inquiry is value-free, or removed from societal responsibilities, or purely epistemic, or independent from society. Inquiry must be societally responsible and can be legitimately influenced by politics. Restraints on inquiry can be political or moral, as long as they are clear, public, well reasoned, and targeted. Politicization occurs when the norms of inquiry are conflated with the norms for democratic politics, to the detriment of inquiry.

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