
Public Participation in the Making of Science Policy

Darrin Durant
York University

This paper argues that, because Science and Technology Studies (STS) lost contact with political philosophy, its defense of public participation in policy-making involving technical claims is normatively unsatisfactory. Current penchants for political under-laboring and normative individualism are critiqued, and the connections between STS and theorists of deliberative democracy are explored. A conservative normativity is proposed, and STS positions on public participation are discussed in relation to current questions about individual and group rights in a liberal democracy. The result is avenues to normatively defend public participation, by analogy with identity politics and Habermas, while also theorizing its limits.

Introduction

Lately, one can distinguish two strands within Science and Technology Studies (STS): theorists who understand science as an agent of culture and tend to discipline public challenges to experts, and theorists who insist on greater public participation and thus criticize expert autonomy. Harry Collins and Robert Evans (2002, 2003, and 2007) represent the former strand. They contend that STS ought to address how far public participation *should* extend rather than just the grounds for its legitimacy. Knowing why (and when) *expert* advice should be especially valued requires, for Collins and Evans, a normative theory of expertise. Sheila Jasanoff (2003a, 2003b) and Brian Wynne (2003, 2007) represent the latter strand. They contend that public participation ensures that issues are not framed too narrowly, that institutions behave properly, that expertise is held to cultural standards, and that tacit assumptions are aired and thereby debated. Yet Jasanoff and Wynne, the most prominent STS theorists of participation and cited widely with approval, disavow the

language of normative prescription and instead argue that political engagement properly ends at revealing connections otherwise unseen or questioning taken-for-granted issue definitions. This paper argues that when this under-laborer conception of political engagement is coupled to two associated practices—the idea that understanding is the end of analysis, and that normativity can be reduced to individualism—the result is that STS participation theorists fail to clearly articulate why the public ought to be involved in science policy. What emerges instead is an ironic presentation of deconstruction as the only secure kind of political engagement, taking the form of an inverted Rawlsian (1971) veil of ignorance—from a hypothetical actor who knows neither self nor others and can thus speak for all, to the STS participation theorist who graciously knows too much to speak for anyone. Part of the attractiveness of Collins and Evans' recent proposals is thus their more intuitive normativity, that expertise has some virtues and ought to be defended via some substantive prescriptions, in contrast to STS participation theorists' counter-intuitive claim that public participation has a host of virtues yet is not to be defended via substantive prescriptions. I chart a path away from this unsatisfactory normativity, in part by arguing that what is needed is more careful thinking about the relationship between STS and normative political theory, and indeed an effort to reconnect STS and political philosophy.

This paper thus sets out how advocates of public participation, who follow in the (deconstructionist) footsteps of Jasanoff and Wynne, could benefit from constructive engagement with political philosophy. An alliance with deliberative democrats is suggested, due to the shared focus on responsiveness, deliberation, and accountability as democratic prescriptions. This alliance can be made if STS conceives of normativity as grounded in communal activity and immanent norms. My route to showing the potential benefits is contained in five steps. First, I broaden the horizon of STS: I connect STS theorizing about experts and publics to the question of whether collectives or individuals should possess and exercise rights. Second, I critique the popular notion in STS that political under-laboring suffices to claim political engagement. Third, I argue that an unsatisfactory normative individualism afflicts STS participation theorists. Fourth, I argue that once political under-laboring and normative individualism are set aside, STS can be seen to already share both epistemic and normative commitments with theorists of representative and deliberative democracy. Fifth, I argue that specific avenues for normatively defending public participation in science policy are available to STS, if one is prepared to argue by analogy with existing normative stances within political philosophy. These include affinities between STS participation theorists, and either identity politics theorists or work by or responding to Jurgen

Habermas. The point is to show that it is possible to normatively defend public participation on constructivist grounds, but also theorize its limits, contra Collins and Evans' claim that a normative theory of expertise is required to theorize such limits.

I. Experts, Publics, and Normativity

Collins and Evans proposed to construct what expertise ought to be, rather than deconstruct it. This normative theory of expertise is inspired by a frustration with prominent characterizations of publics, their knowledge, and their recommended roles in decision making. The following two paragraphs summarize Collins and Evans (2002, 2003, and 2007) and Evans and Plows (2007).

Collins and Evans begin with the following claim: citing the legitimacy of including public views in considerations related to technical decision-making does not *ipso facto* tell us how far that participation ought to extend. Unless expertise is to be collapsed into politics, then one must prescribe where the boundaries ought to be drawn. Description alone will not suffice because, to the extent that boundaries are treated as contingent and expertise as attributed status, an experts' regress applies (in analogous fashion to Collins' experimenters' regress). If the class of experts can only be identified with hindsight, after the credibility contest is over and/or the scientific matter decided, then to the extent that the need for political action is moving faster than scientific consensus, an attribution-based means of separating expertise from politics can provide no guidance to political decision-makers. With the need for a normative theory of expertise thus grounded in the pragmatics of business-as-usual democracy, Collins and Evans asked what justifies treating expertise as especially valuable in various contexts (from consensus to uncertainty to disagreement). Their argument hinges on a preference for a particular form-of-life, in which politics is intrinsic to science but is not a legitimate extrinsic input into technical decision-making. Decisions about technical matters ought not to be made based upon ethical-political positions. Similarly, the sphere of judgment about technical matters ought to be bounded, and this means treating expertise in a realist fashion, in which only some are competent to make or judge scientific claims. The right to make such judgments would thus be distributed unevenly; while the rights accruing based upon stakeholder status would have to be conceived of differently to rights accruing due to specialist knowledge and experience.

Collins and Evans distinguish between two kinds of analytic questions: downstream addresses consensus formation, and upstream addresses how to influence the course of decisions as they happen and how decisions ought to be taken prior to consensus formation. Upstream questions entail

constructing categories to guide the making of discriminations. The category of expertise was thus expanded beyond qualifications to include interactive abilities and contributory experience (experience that was continuous with core-set specialists even if it was not accompanied by qualifications). Discriminatory abilities were divided into the kinds of judgments everyone could generally make and those possible only through local experience and familiarity with institutionalized science or particular issues of concern. Disputes were divided into the types of questions that could occur (political and technical questions were thus separated). Problems themselves were conceived of along a spectrum of techno-sciences in which political or technical questions came first or second, or were more important depending upon the level of consensus that existed or could possibly be available to the scientific community prior to political action being desired. Thus with already settled science, experts would have priority to make judgments, but in cases like climate change where uncertainty and disagreement prevails, political decisions would need to be made so as to contextualize what was needed or desired from science. The overall effect was to create room for public individuals and groups to be involved in decision-making regarding political questions, and in making technical judgments where public individuals possessed local discriminatory abilities, interactive competences, or contributory experience. This expansion of expertise simultaneously bounded expertise: limiting it to those who know what they are talking about in regard to technical matters. Roles for specific types of expert are thus warranted according to the types of problems and types of input that science is able to provide. Being circumspect about efforts to ground public participation in explicit political position alone creates a social space within which expert autonomy can operate. This social space of expert skills and understandings becomes more than just a resource; it becomes a domain partly constituting culture. By outlining the limits to public participation and a conception of when and where a politically autonomous technical culture is justified, Collins and Evans provided normative grounds for viewing expertise as more than contingent, politically attributed status. Armed with this normative theory, Collins and Evans criticized case-studies in STS that conflated political rights accruing to public groups because of their stakeholder status with rights and/or abilities to make technical judgments.

Jasanoff (2003a, 2003b) and Wynne (2003, 2007) have responded by defending public participation in science policy, but have mostly done so by restating the description-based, downstream project Collins and Evans have said they are not doing. Hence Collins and Evans do not deny the points Jasanoff and Wynne offer in critique: that boundaries are made via

social battles, and that the public is often concerned with the ability to deliberate upon the human purposes driving technical projects and the nature of the issue in the first place. Jasanoff and Wynne's real challenge begins when they defend public participation as an aspect of *good* democratic decision-making: public participation acts as a democratic check on the scope of expert judgment (Jasanoff); functioning democracies minimize the exclusion of potentially affected groups and/or operate best when agendas are set by the widest possible audience (Wynne). Yet what is the scope and applicability of these defenses? How do we know if democratic checks are working? When should we use referenda as opposed to representation, and how should the latter operate within complex and large democracies? Jasanoff and Wynne's populist styled defense of public participation means Collins and Evans can be read as offering answers to such questions. Have Collins and Evans not offered one means to adjudicate conflicting claims, to provide a measure of democratic checks, and to settle membership claims regarding decision-making forums (presuming not everything is handled via referenda)? It seems that to defend the public's right to participate in science policy, in the face of such a challenge, one might want to justify it. That means making normative claims about it, and doing so is helped by having some boundaries or measures to work with in regard to it. These do not have to be 'foundational' or 'transcendental' or even 'realist', a point to which I return below.

The question this dispute raises is whether liberal democratic decision-making forums are enhanced by limiting the public, and thereby securing the participation of experts, or by limiting experts and thereby securing the participation of the public. Fence-sitting ('both') is technically correct but normatively and pragmatically of little guidance. Collins and Evans also provide little guidance, if we take their normative demarcation of expertise from politics as justified simply by the claim that the Western scientific form of life involves denying that extrinsic politics is a legitimate influence in settling technical questions (Collins and Evans 2002, pp. 244–52; 2007, pp. 125–31). If a form of life "can be thought of as a pattern of socially sustained boundaries" (Bloor 1983, p. 140), then it makes sense to explain actions in terms of how they are believed to be the right things to do within particular forms of life. Yet political philosophers are clear that attempting to justify specific boundaries by referring to the fact they exist is to confuse the moral discourse of defending a practice with the anthropological-sociological statement of a fact (cf. Barry 2001, pp. 252–58). Collins and Evans' approach provides guidance because they pursue the implications of these claimed conventions: if expertise is to be preserved as a public good, then efforts to politicize expertise ought to be rejected. This normative claim is itself a form of life: it is

compelling to the extent people accept and use it, rather than being transcendently true. The guiding principle offered by Collins and Evans is thus to deny epistemic rights to groups simply by virtue of those groups' claim to political rights and, because epistemic and political rights are conceived of as distinct, this preserves the convention of denying that politics is a legitimate influence in the making of technical decisions. We thus see Collins and Evans rejecting standpoint sciences, which have their grounding in overt political positions or states of mind, and are thus discontinuous with each other (2002, pp. 281 and 286; 2003, pp. 442–43; 2007, pp. 127–28).

Collins and Evans thus reject politicized group-based claims to technical rights, and argue that technical authority should transcend the boundaries of community-based social identities and political commitments. Collins and Evans' approach thus finds a philosophical home—intentional or not—within current liberal (egalitarian) democratic theory that also evinces skepticism about group-based rights. It is thus politically naïve and inaccurate to brand Collins and Evans bad democrats simply for wanting to theorize the limits to public participation (as Jasanoff and Wynne have done; see Jasanoff 2003a, pp. 394 and 397, and 2003b, p. 158; Wynne 2003, p. 402, and 2007, p. 108). Rather, and in regard to the right to render technical judgments, Collins and Evans are claiming experts are the bearers of such rights only in their capacity as qualified and experienced (individual) agents, and that technical rights should not be extended to groups in their capacity as bearers of political/cultural positions and identities. This is analogous to egalitarian liberals with regard to civil, political and social rights; that such rights accrue to individuals *qua* autonomous agents, and that rights should not be extended to collective identities. By contrast, STS participation theorists typically defend public participation in science policy as if what is at stake is the recognition of the identity and difference claims of marginalized public *groups*, or at least the critique of their exclusion/marginalization. To the extent that group rights is in the background of STS participation theorists in their defenses of public participation, one can see why Collins and Evans' proposals would provoke opposition. I return to these analogies in the conclusion of the paper.

Yet in order to pursue the meaning of these analogies, for the question of justifying public participation in science policy, I need to confront the following question: to what extent is deconstruction antithetical to prescription? I suggest the antithetical relation is sustained by three analytic practices. One is political under-laboring, which tends to suggest deconstruction exhausts political engagement. A second is the idea that *verstehen* (understanding) is the end-point of analysis rather than its beginning. A

third is normative individualism, in which an anti-foundationalist philosophy morphs into a disappointed foundationalism by refusing to countenance that prescriptions could be something other than transcendently grounded. To say such practices sustain the antithetical relation, and that to reject such practices makes prescription possible on constructivist grounds, is of course to invite the perception of impending intellectual schizophrenia (pulled in one way by deconstruction and another by prescription). We thus need a practice to sustain the *lack* of antithesis. Here I suggest the utility of importing from political philosophy the practice of conservative normativity, which accepts that an ungrounded way of acting is the end point of justifications. I suggest such conservative normativity is practiced by contemporary deliberative democrats, leading to democratic prescriptions concerning diverse modes of political representation, responsiveness, accountability and deliberation. I also suggest STS participation theorists share these prescriptions (thus Wynne criticizes unreflexive experts (1992b, 2005) and Jasanoff demands experts should only receive “carefully circumscribed power” (2003b, p. 158)). My criticism here thus admits that STS has theorized the political underpinnings of expertise by linking with critical traditions in social theory (cf. Fuller 2000, Guston 2000, Woodhouse et.al 2002, Frickel and Moore 2006). Nevertheless I claim STS defenses of public participation, which utilize the three practices noted above, obscure what it is that normatively justifies public participation in science policy.

II. The Political under-Laborer at Work

Prominent STS theorists paint a bleak picture for political philosophy: it is a clumsy behemoth, practicing a generalized will to universal prescription, and unable to see the nature-culture hybrids that demand a new agenda. This picture underplays the difference between those who outline normative standards intended to justify and guide real-world participatory practices (such as Rawls and Habermas), and those who relate practices to forms of life (such as Rorty and neo-Wittgensteinians) (Mouffe 2000, Chap. 3). This split is evident in that political philosophy does not have a commonly accepted account of deliberative democracy (Freeman 2000, p. 373). What STS emphasizes is the yawning gulf between STS and political philosophy, which is plausible to the extent one characterizes political philosophy as engaging in universal prescription but STS as engaging in case-studies of actual deliberations, trust relations, and identity formation. Yet to the extent that the claimed gulf rests upon the case-study orientation within STS (for such, see Shapin 1995a, Irwin and Wynne 1996, Kleinman 2000, Jasanoff 2004a) the gulf measures special-

ization as much as conceptual outlook (see Shapiro's (2002) critique of separating normative from empirical political theory).

Latour has led the charge, beginning with an underlying anti-explanatory approach: both nature and society are the outcomes of controversy and thus cannot be invoked as the cause of any particular settlement as to what constitutes nature and society (Latour 1987). For Bruno Latour (1991), the entire field of political philosophy inherited a Kantian provincialism—nature and culture were separated in order to protect political philosophers from positivistic social science. Applied to the standard objects of political philosophy, the co-production of nature and society means the nature-culture divide at the heart of Western political philosophy is but a mechanism for sorting hybrids¹ elevated to a constitutional given (Latour 1993). While modernity is populated by hybrids as a matter of fact, for Latour the essence of modernity is in its efforts to purify the hybrid networks of nature and culture: to make people and things appear wholly one or the other. Political philosophy is a partisan in this war, preserving the dichotomy wherever possible. Latour declares that political philosophy must embrace the hybrids revealed by STS, thus moving beyond the dichotomy between things-in-themselves and humans-among-themselves. This pursuit of the Enlightenment into the “dark tangles of science and society mixtures” will secure a ‘parliament of things’ for non-humans (Latour 1991, p. 18). Latour thus rewrites political philosophy, beginning with a refusal to “tie politics to humans” (Latour 2004a, p. 89). Indeed politics is exhausted by ontology, because politics is just “the entire set of tasks that allow the progressive composition of a common world” (p. 53).

Ironically (or not?²), later users have done more to fill out the normative implications. If agency is about connecting things, and an action is a series of interconnections (Bruun and Hukkinen 2003, p. 104), the result is to reduce the mystique of being an agent by dissipating the structures of activity/passivity required to maintain power relations. Some have criticized this for maximizing self-representation in politics, rather than accountability relations (Fuller 2007, pp. 97–108). Others have argued the principles are sufficiently vague to allow strategic manipulations of pseudo-democratic proposals in aid of legitimizing interests or decisions (Tucker 2007, p. 219). Latour's own statements, aside from gesturing toward extending democracy to things (1993, p. 12; 2004a), have involved a refusal to tie politics to social critique. References to entities like ‘power’ are

1. Disputes about the boundaries between technical and political issues create contingently stabilized ‘hybrids’ (Latour 1993). Hybrids both embody accounts of material and social order and shape that material and social order (Jasanoff 2004b, pp. 15–19).

2. Statements of fact are in the hands of later users (Latour 1987, Chap. 1).

deemed no better than conspiracy theories (Latour 2004b). In response to the accusation that Latour and STS in general have expanded politics to the extent where it is meaningless, Latour's disconnect from political philosophy has come home to roost. Latour offered as a defense what is really just a recapitulation of the empty politics accusation: everything is political, "but not at all in the same way" (2007, p. 818). Confronted with what to say about politics, Latour either deflates it to a conspiracy or inflates it to everywhere in some way. Ultimately Latour has never gone far past his early injunction that the STS scholar is limited to a "tiny breathing space . . . to study independently the extensions of all these networks" (1987, p. 257). The discovery of associations between humans and non-humans remains the height of STS's contribution to politics (2007, p. 818).

Jasanoff continues this discovery-claim rhetoric, repeating that Latourian hybrids demand a new politics, but also criticizing Latour for losing sight of the moral and political conflicts of actual haves and have-nots and thus for not handling human values very well (2004b, pp. 22–23). Jasanoff does not locate the source of such deficiencies in Latour's anti-explanatory approach, because for Jasanoff the co-production methodology usefully avoids natural or social determinism and the making of *a priori* distinctions (2004a, p. 3; 2004b, p. 22). Explanatory accounts are (regrettably) equated with "reductionist, linear accounts" that fail to capture "ambiguity [and] richness" (2005, p. 11). Jasanoff attempts to solve Latourian deficiencies at the level of research choices: STS approaches politics to the extent its research choices and styles of explanation trace patterns of social conflict and destabilize dominant narratives (2004a, p. 3). Jasanoff has consistently explicated the relation between such unmasking efforts, and the struggles of actual haves and have-nots, via abstract metaphors of illumination and revelation. STS makes "visible" the "unsuspected dimensions" and "unseen patterns" of material and social order (1996, p. 413; 2004a, p. 4). STS overcomes the negative connotations of deconstruction ("mindless relativism" and "moral nihilism") by emphasizing the construction of "socially grounded accounts" and by recognizing that "its ultimate aim is to piece things together constructively" (1999, pp. 65–66 and 69–70). STS "enables normative analysis by following power into places where current social theory seldom thinks to look for it . . . allow[ing] us to imagine the pathways by which change could conceivably occur. It illuminates, in this way, new possibilities for human development" (2004a, p. 42). This project is a division of labor: the "fitting place" for STS is not to "make demarcations" but to "show what is at stake in the making of such boundaries" (2003a, pp. 398–99). Given that such an 'emergence ethos' charts power relations (Durant 2006, pp. 200–202) it seems fair to characterize the implied political philosophy

as deconstructive and facilitative. Indeed, comparisons of different political cultures “should aspire less to prescribe policy solutions” or to embrace some “divine prerogative of producing universally valid principles of knowledge or governance,” than to offer “understanding” and to “reveal . . . what gives significance to another culture’s distinctions and differences” (2005, p. 291). Note that prescription is equated with universalizing tendencies and contrasted with cultural differences, where culture is constructed as self-contained enough that cross-cultural generalizations are to be avoided.

Wynne (1992b) seeks to deconstruct as well, revealing the tacit insecurities, implicit meanings, and presumptive commitments embedded in science. Wynne is concerned with how such features are projected onto the public, leading to dominant institutions unreflexively colonizing the public sphere. Although Latour’s hybrids imply an “enlarged human agenda,” commitment to any particular possibility is an “extra” commitment not to be confused with STS (Wynne 1996, p. 381). Wynne’s concern is with the “retrieval of authentic democratic potentials with a legitimate science” and the “need therein to identify, and hold to account, the normative models” responsible for colonization. The recommendation is that “undemocratic . . . framings” be “insistently and carefully addressed in practice” (2005, pp. 81–82). Although Wynne has been misread as romanticizing the public, much of this misreading stems from subtle oscillations within Wynne’s theorizing, which tends to simultaneously focus on the social identities of lay public actors and whether they are being recognized, and also the way in which those social identities are embedded within social relationships (Durant 2008). Yet it is clear from Wynne’s work that a political project exists. Questions regarding the qualifications of public actors to participate in science and policies about science ought not be confused with questions about whether the full range of issues the public remains concerned about are available for discussion in deliberative forums, while vigilance must be displayed in regard to whether scientific framings of issues are being imposed upon a silently disempowered public (Wynne 2007). Nevertheless, what to do about such situations of imposition and denial, and the task of negotiating “more broadly legitimated principles . . . in some way,” is a task explicitly left to others (Wynne 1992a, p. 127).

The engagement conceived of by deconstruction-styled STS participation theorists amounts to political under-laboring, clearing away the underbrush preventing truly democratic framings of hybrid entities. Latour, Jasanoff, and Wynne all tell political philosophers what to do (take account of this hybrid and these dimensions) but otherwise find the project of telling people what to do to be a topic and not a resource. My complaint

is not specifically about the political under-laboring itself; to each their own. My complaint is about an associated practice, what I call normative individualism. To bring this practice into focus it is helpful to concentrate on actual instances of political under-laboring. Drawing from the list of contributors to the mid-1990's 'politics of SSK' debate, I focus on Wynne's 'engagement' (cf. 1996, 1998) perspective and the Actor Network Theory (ANT) perspective of Vicky Singleton (1996, 1998), and I concentrate on their shared normative individualism.

Singleton's ANT analysis of the UK cervical screening programme explored the question of whether women should participate in the programme. Apparently ANT suggests "no women should but all women could" (Singleton 1996, p. 459). Singleton's reasoning was:

Surely we need to talk more about could than the guilt inducing discourse of should, which seems to be based in a discourse of oppression and domination. . . . There is no room in a 'should' discourse for ambivalence, negotiation of identity and multiple identities. Morally, politically, intellectually and personally I cannot tolerate that. (pp. 462–63)

Hans Radder replied that Singleton illegitimately disqualified 'should' discourses, for they can also be subtle and differentiated rather than absolute and inflexible (1998).

Singleton's response to Radder demonstrated some equivocations in ANT. Singleton claimed issues surrounding neutrality/commitment and descriptive/normative are "inextricably linked," that ANT is used even while "the shortfalls of this approach in its purely descriptive form" are discussed, and that while refusing to "endorse the use of any particular approach" Singleton was "personally . . . enamoured of ANT [because it is] theoretically and politically sophisticated" (1998, p. 333). Notice that what happens at the level of theory (all is inextricably linked, nothing is endorsed) does not quite translate into practice (there is something called a *pure* descriptive form of ANT, and Singleton is personally taken by it). It is thus almost ironically prophetic that Singleton favored ANT because it "exposes how difficult it is to say what to do" (1998, p. 336). Yet ANT does more than identify the difficulty of prescription: it finds something wrong with it (continued in Latour 2004b). Singleton sought to evade Radder's critique by qualifying the 'should discourses are oppressive and guilt inducing' claim to the case of the UK cervical screening programme alone (1998, p. 337). Yet Singleton immediately *generalized* her point that 'should is oppressive' by citing Michel Callon's general rule that "to speak for others is first to silence those in whose name we speak" (p. 337; citing Callon 1986, p. 216). Thus Singleton's cervical screening case is meant to

be an instance of Callon's general rule, even though Callon qualified that rule to the effect that silencing human beings was "very difficult" to do in a "definitive manner" while speaking for entities without voices could be even more difficult (1986, p. 216).

Wynne's political under-laboring shares with ANT the goal of disintegrating reified notions, such as 'side' (Wynne 1996). Yet Wynne also presupposes stable enough groups that can have political messages directed at them. For Wynne, any approach that contributes to "public reflexivity about received issue-definitions" thereby contributes to an enlarged political agenda (1998, p. 339). A narrow political agenda, which scientists often attempt to impose on the public, involves restricting debate to propositional questions such as 'safe or not' (1992b, 2003). An enlarged agenda would broach the "tacit contextual commitments and assumptions" of the "cultural fabric" (1998, p. 339; 2003). A proper agenda would thus be responsive to public culture. Indeed 'should' discourses that are more flexibly adaptive to local culture (1992b, p. 299) are valued because they may increase the "autonomous capacities" of citizens (2005, p. 68). So here we see the beginnings of an account that creates a politically autonomous realm for the public. Yet Wynne retreats from articulating this autonomous realm. For Wynne, unmasking technical culture only creates the *possibility* of an "*engaged contribution*," rather than pointing directly to any particular "*normative prescription*" (1998, p. 340; emphasis in original). In forging this division the full import of 'being responsive' appears to be lost. Normative prescription is said to go "beyond the analysis alone . . . to add a *personal* moral ingredient—for which we should obviously take *personal* responsibility" (1998, p. 340; emphasis added). Whereas normativity involves "direct and final" positive prescriptions (p. 342), an 'engaged' contribution is associated with being "more *relational*, and more open-ended with respect to specific practical prescriptions" (p. 341; emphasis in original).

These two accounts differ in their stances toward representation, but each disclaims prescriptive aims. ANT political under-laboring hinges on the effort to "describe, unravel, unpack, expose, to leave open . . ." and ultimately to unravel "to disintegration" any pretense to "definitive" answers (Singleton 1998, p. 337). Yet packed within this scheme is an impoverished conception of normative prescription: it is guilt inducing, oppressive, exclusionary, individualistic, silencing and couched in definitive terms. Of course normative claims can function as such, but it is not necessarily so and only silencing to the degree that *responsiveness* to those being spoken *for* has not been provided as a democratic condition. Politically speaking Singleton's anti-representation stance implies direct democracy is the only feasible democratic model, and that representation can

only be political *substitution* for actual constituents. Yet as noted below, theorists of representative democracy have for decades claimed responsiveness is a fundamental precondition of representative government (cf. Pitkin 1967, pp. 232–233). What matters is the mediation between constituents and delegates involved in representation (Warren 1996, Urbinati 2000, Brown 2007). Indeed even Callon’s ANT rule about spokespeople silencing the represented can be interpreted as acknowledging mediation is important, because Callon claimed the level of silencing varied with the degree of difficulty attached to speaking for humans and non-humans (Callon 1986, p. 216). Nevertheless, in application, Singleton’s account explicitly ignored the actual political dimensions of ‘speaking for’. By contrast, Wynne’s efforts at engagement appear to depend upon representation. In practice it is not Wynne’s *personal* moral ingredient that informs the critique of dominant and unreflexive scientific institutions. Such institutions adopt poor ‘body language’, lacking *responsiveness* to “public experiences of . . . scientific information [and] material social relationships” (Wynne 1992b, p. 281). Wynne invokes such plural categories, of public experience and dissatisfaction, as a means to construct how institutions should behave. The normative ingredient in Wynne’s ‘engagement’ is a *representation* of a public phenomenon, a group lament concerning *unresponsive* expertise. This ingredient should not be confused with Wynne’s sense of personal responsibility for identifying with public dissatisfaction (given the ordinary sense of ‘personal’ as consigned to the individual).

III. On Normative Individualism

The elision in Singleton and Wynne’s theorizing is to slip straight from *universal* moral ingredients to *personal* prescriptions. It is as if an engaged contribution that avoided absolutist discourses (final, direct, oppressive, silencing) would have no choice other than to embrace individualized discourses (personal preferences; what the “me” in Singleton’s article title can “personally tolerate” (1996); the “personal moral ingredient” for which Wynne must assume “personal responsibility” (1998, p. 340)).³ The normative orientation discussed by Wynne and Singleton trades on a dichotomy between normativity grounded in transcendental forces and normativity as personal preferences. Rejecting the former, they take their normativity to be bounded by the latter. This is an implicitly *individualistic* normativity. Analogous to the individualistic account of knowledge as the possession of the individual, normativity is here conceived of

3. Latour had similarly spoken of ‘principles’ as “my personal summary of the empirical facts at hand after a decade of work in this area”, which he expected to be falsified and/or modified (1987, p. 17).

as a personal ingredient. Were the claim just that we cannot escape our own skins, that a God's-eye viewpoint is unavailable to us, this practice would be unexceptionably but uninterestingly true. But it appears to be more than that, for 'we' or 'our' skins appear to be reduced to 'my' skin, and there appears the individualism.

My critique of normative individualism is modeled on Barbara Hernstein-Smith's (1997) incisive criticism of the question-begging ways of philosophical orthodoxy. Classical accounts of the relation between thought and action claim that without appeal to 'objective' and 'universal' standards—as classically conceived (*a priori*, necessary, universal, self-evident)—no basis for action and activism exists. This claim, says Hernstein-Smith, is leveled at the relativist to render the relativist self-refuting, but is question-begging. It is the very foundationalist assumptions presupposed by the classical critic that the relativist is denying. What I am proposing is to turn this argument on its head: constructivists often implicitly presuppose classical conceptions of prescription in arguing against them. That is, the constructivist accepts the terms of prescriptivism articulated by classical philosophies, and rejects prescriptivism as such. But constructivists could just as well deny that prescriptivism must be grounded in universal, foundational, and transcendental norms and principles. Exploring alternative 'groundings' could help avoid the political equivocations attached to normative individualism, such as allowing particular commitments but not general commitments. It also bears stating here that another reason given by STS participation theorists, for avoiding prescription, relies on positing a contrast between *Verstehen* (understanding) and *Erklärung* (causal explanation) (cf. Jasanoff 2005, p. 291). Not only did Weber (1949) see these principles as correlative not opposed, but *Verstehen* is supposed to be about where inquiry starts not where it ends. Moreover, within an interpretive understanding approach, of course the analyst must understand the language game being played, but by this very fact the analyst's categories of understanding, explanation, and justification are mediated through the participants' language games.

The problem with normative individualism is analogous to the problem Wittgenstein identified in individualism. That is, without a standard external to the individual, whatever seems right to the individual is right. Wittgenstein pointed out that under such circumstances we cannot talk about right at all (Wittgenstein 1953, §258). We can also now see that while political under-laboring itself is not necessarily problematic, it is so when tied to the practice of normative individualism (and the idea that *Verstehen* is an end-point). What happens in this shift to normative individualism is the recreation of Wittgenstein's problem of private experi-

ence. If one asks what kind of problem this might be for being political, then Wittgenstein provides a clue: “a wheel that can be turned though nothing else moves with it, is not part of the mechanism” (1953, §271). But there is a Wittgensteinian solution to the problem. Groups furnish a normative standard for the individuals within it (Bloor 1983, pp. 91–94 and Chap. 8; 1997, Chap. 7 & 8). STS Participation theorists rightly reject transcendental norms as the external standard, but insufficient attention is paid to the argument that actual communities can provide a normative standard external to its individual members. Noticeably with Wynne we see that representations of such communal standards inform arguments about why the public should participate in science policy. To the extent we rewrite normative prescription as grounded in representations or invocations of community standards, even if primarily drawn upon as explanations of public discontent and inadequate expert behavior, one could argue that many STS participation theorists are implicitly normatively prescriptive. Simultaneously such theorists help to constitute the publics that form the subjects of their empirical analysis, as Wynne does in treating the lay public as possessing reflexive capacities (Durant 2008). Yet if the reader denies the claim of implicit normative prescription, in this rewritten sense, at the very least rewriting normative prescription in the sense suggested here would make a useful extension of current approaches to discussing public participation.

Of course any prescription can itself be deconstructed, but deconstruction itself cannot undermine a knowledge claim unless one presupposes that social grounding distorts knowledge (Bloor and Edge 2000). The nettle that will always have to be grasped here is Wittgenstein’s point about the groundlessness of our beliefs.⁴ Justification ends in “an ungrounded way of acting” (Wittgenstein 1969, p. 110), rather than “a state of intellectual doubt or in the apprehension of self-evident truths” (Bloor 1983, p. 162). If this rewritten normativity is accepted, deconstruction would reveal community standards not individualized preferences. To recap: where political under-laboring is joined to the practice of normative individualism, a kind of individualized private experience results that is politically akin to an idle wheel and also the thinking of a disappointed foundationalist rather than a constructivist cognizant of the groundlessness of our actions and justifications. In other words, STS participation theorists have poor arguments against normativity. Under such circumstances there is much to be gained by taking note of how political philosophy approaches normativity.

In the following section I discuss features of contemporary theorizing

4. See Wittgenstein (1969, pp. 94, 100, 110, 140–41, 166, 253, 298, 477).

about representative and deliberative democracy: that different modes of political representation are theorized in terms of how they constitute the publics represented; that an emphasis upon analytic mediation means analysts are considered part of the representative system doing the representing. Representative and deliberative democrats focus upon responsiveness, accountability and deliberation as one way to approach the ideal of the ‘consent of the governed’. I claim the normative approach of deliberative democrats involves immanent rather than transcendent norms. Prescription is grounded in aspects of tradition, history, localism, contingency, and the generative power of collective culture. Normative principles emerge from collective action, or an ungrounded way of acting, derived from the fact we belong to a community. Karl Mannheim would have called this a ‘conservative’ normativity.⁵ This approach suggests means to translate current STS preferences for political under-laboring into more normatively productive political engagement (one candidate stance being that of the “modest scholar-activist,” see Woodhouse et al 2002, p. 301).

IV. Representative and Deliberative Democracy

In this section I indicate that general skepticism about public participation often holds that interactions between political actors is a cause for concern, and that an emphasis upon the generative properties of collective action grounds positive views of public participation. I show that deliberative democrats ground normative claims in representations of collective action, thereby connecting a constructivist epistemology of political knowing to normative schemes, and I suggest STS participation theorists could usefully model their own normativity on this practice.

Besides *pragmatic* concerns about time, organization, efficacy and manipulation (Walzer 1999; Cooke and Kathari 2001), a *general* way to be a participation skeptic is to argue that without appeal to universal and self-evident standards no basis for activism exists (Hernstein-Smith 1997). Mark Warren (1996, p. 259) has noted this argument at work in the ‘demand overload’ thesis of democratic realists: “democratic challenge and authority are incompatible . . . authorities can hold institutions together only because they have special access to scientific or moral truth.” Democratic realists, pursuing a Schumpeterian approach, thus claim that lay public incompetence and industrial-capitalist complexity warrant elitist

5. The notion of conservative used here has only the connotations referred to in the text (tradition, history, contingency, localism, collective action, immanence), and not its more everyday connotation of complacent resistance to change. On this conception of a ‘conservative thinker’, see Mannheim (1927, Chap. 2), and as applied to Wittgenstein, see Bloor (2000). For Wittgensteinian political philosophy, see Pitkin (1972), Tully (1989), and Mouffe (2000, Chap. 3).

representative democracy and militate against direct participation (see Sartori 1962, pp. 102–15; Schumpeter 1962). Schumpeter thus questioned whether a common good existed (1962, p. 251), in part because public deliberation based upon conflicting values and interests was regarded as unlikely to generate consensus. Many philosophers of science have argued similarly, and typically operate within an individualistic framework in which interests are individual biases (cf. Kitcher 2001, p. 87). In such schemes limits upon public participation in science policy-making are premised on the assumption that an unruly public needs a ‘tutoring’ of their preferences in order to reach ‘correct outcomes’ (for critiques, see Turner 2003 and Brown 2004).

Public understanding of science research informed by the ‘deficit model’ is also *generally* skeptical about public participation (for a critique, see Irwin and Wynne 1996). Deficit models of the public treat science as unproblematic (coherent, unitary), but the public as cognitively deficient. The public is thus said to require science to disseminate understanding, measured in terms of the number of individuals correctly knowing (appreciating) technical knowledge. Apparently lacking autonomous meanings of its own with which to engage knowledge claims, the public is thought to evince a concern with propositional questions rather than the human purposes embedded in knowledge. The assumption at work in deficit models is that narrow bodies of expertise discover correct knowledge. On the basis of this correct knowledge, technical and governing institutions download education to the unwashed masses, which now have an objective and universal basis upon which to act. As with democratic realists and much philosophy of science, deficit models of the public distrust ‘the social’. The dualist schemes of fact-value and reasons-interests politically encode ‘the social’ as the untutored public: epistemologically constrained, politically restraining, and in need of democratic control/education.

In contrast the basic theory of knowledge espoused by STS makes it difficult for the field to be *generally* skeptical about public participation. Social factors are considered necessary (though not sufficient) in any explanation of knowledge, and society is conceived as enabling a collective engagement with the world (Bloor and Edge 2000). Reality is conceived of as contingent, open-ended and hybrid enough to sustain conflicting interpretations (Wynne 2005, p. 67). For STS the primary (empirical) task has been to make plausible how (technical) judgment and action can be possible on contingent foundations and in context-specific ways. The political focus has been on how public groups experience and define science (and politics) in social life and on how credibility is achieved. The distribution of credibility in a culture is conceived of as bound up with that culture’s moral and political life, rendering trust integral to culture and boundary

maintenance and transgression activities contestable (Shapin 1995b). It is this constructivist view of knowledge that warrants the claim of participation theorists that the broader public is necessarily participating in the creation of communal knowledge, for the warrant of a broader moral and political community is required for science to be able to *be* public knowledge.

STS participation theorists translate this view of knowledge into a concern with the social-prescriptive role that science plays as it goes public. The context for such concerns should be understood as an interest in kinds of political action, and here deliberative democracy theorists emphasize a broad spectrum of political action. Thus Nadia Urbinati has championed deliberative democracy as allowing us to

. . . perceive participation and representation not as two alternative forms of democracy but as related forms constituting the *continuum* of political action in modern democracies. Seen from this angle, the distinction between direct and indirect politics is a promising path of interpretation: it frames the institutional and sociocultural space within which the various components of political action—from opinions and will formation to political action—take shape. (2000, p. 759)

This political continuum is routinely given a constructivist grounding. ‘Politics’ is said to involve continuous interaction between governing institutions and various modes of public talk, thus highlighting the importance of collective activity and acts of mediation in knowledge creation. But a political continuum also means politics has edges, in that politics is situated within social relations, so that politics might be pervasive but is not everywhere. As Warren (1996, pp. 244–48) notes, social relations involve an uncontested immediacy grounded in routinized collective action, and politics is what emerges when the automatic regulation of social interaction becomes problematic. Power can thus infuse social relations, but is not thereby necessarily political.

Emphasizing a continuum of political action is part of a claim for the normative superiority of deliberative forms of representative democracy (Dahl 1989, part 6; Kateb 1992, 36–56; Warren 1996; Habermas 1996a; Plotke 1997; Young 1997; Elster 1998; Bohman and Rehg 1999; Urbinati 2000; Dryzek 2000; Freeman 2000; Gunderson 2000; Mansbridge 2003; Gutmann and Thompson 2004; Brown 2007). Thus David Plotke noted “participatory democrats and postmodern radicals often reject representation altogether in favour of immediacy and political control.” Plotke counters that “the opposite of representation is not participation.

The opposite of representation is exclusion. And the opposite of participation is abstention” (1997, p. 19). Similarly Urbinati separates direct from representative government, asserting the normative superiority of the latter. Direct democracy is the argument that individual citizens should have the opportunity of actual decision-making in policies affecting them. The normative core of the theory is the claim that participation can change the outlooks and attitudes of those who engage in it (Barber 1984, Laird 1993). This restates the core principle of Athenian democracy, the right of an individual to speak in the assembly (*isegoria*). Yet as Urbinati notes, ‘directness’ often follows Rousseau’s preferences for Sparta over Athens as the model of a Republic. For Rousseau a well-ordered republic was one in which individual citizens made up their mind in isolation and then voted, bypassing public deliberation. Any threats to political autonomy came from citizen interaction, not citizen passivity (2000, pp. 763–65). As a form of representative democracy, deliberative democracy reverses this emphasis upon isolated voting (and, in Taylor’s (1994) view, rescues democracy from Rousseau’s suspicion of social differentiation). In contrast to political theorists who conceive of democratic talk along the model of a solitary thinker having a discussion in their own imagination (as in Rawls’ (1971) hypothetical ‘veil of ignorance’), with democracy about the aggregation of votes arrived at via such means, deliberative democrats stress the actual interactive aspects of deliberation (cf. Dryzek 2000, pp. 1–30; Habermas 1996a, pp. 118–131, 295–302).

The critique of the model of the direct participant, understood in terms of Rousseau’s isolated voter, recapitulates the general STS opposition to individualistic modes of thinking. Individualism deploys a model of the ideal knower as an isolated individual. Surrounding social environs are potential distorting agents to what the individual is rationally capable of knowing on their own. Individuals and not communities are the generators of knowledge. Martin Kusch outlined a definition of individualistic thinking (in order to oppose it): “Knowledge is the possession of the individual, and our epistemic interdependence can only reside in the fact that we, as individuals, need to get knowledge from other individuals. But epistemic interdependence cannot be generative of knowledge” (2002, p. 345). Though some STS participation theorists unwittingly fall into individualism when discussing normativity, in general STS is anti-individualistic. Knowledge is generated out of communal processes. Deliberative democrats build on such conceptions of the public sphere, as both crucial and as existing as a part of political representation, to argue that communal acts of representation (by both analyst and actor) are necessarily implicated in creating any kind of knowledge. As Mark Brown indicates,

One implication of this view is that the various interests, perspectives, facts, values and opinions that are represented are best understood as partially constituted by, rather than existing prior to, practices of representation. Just as scientific representations of nature are mediated by various social practices and laboratory instruments, political representation involves more than a simple transmission or 'making present' of constituent ideas and interests. Not only are constituent opinions often inchoate or nonexistent, but in a complex pluralist society, whatever constituent opinions exist almost always conflict. Political representatives are thus required to engage in various practices of mediation; they must elicit, educate, anticipate and aggregate constituent interests and opinions in the process of representing them. Such practices of mediation, moreover, are themselves mediated in various ways by, among other things, material structures, technological devices and scientific claims. (2006, pp. 205–206)

Despite the complexities of the concept of representation (cf. Pitkin 1967; Brown 2007), both fields conceive of technical and political knowledge and representation(s) as mediated by communal activities rather than individual acts of presence making. Yet it is representative and deliberative democracy theorists who explicitly integrate this constructivist view of knowledge into a means to evaluate political outcomes.

John Dryzek thus argued the representation of competing discourses in public debate satisfies the legitimacy requirement of deliberative democracy (those subject to the final decision should be able to participate in arriving at it and be able to reflect on it). Dryzek realizes an obvious objection concerns the losers of such public debate, but argues the solution is to avoid an "individualistic ontology" in which individuals are required to give assent to each and every decision. Rather, subjectivity is multidimensional, so that discourses are legitimate to the extent they underwrite or destabilize collective outcomes (2001, pp. 661–62). Dryzek thus constructs politics as about more than *decisions*, because the broader *meaning* of political actions and issues, for relevant communities, is also at stake (Wynne argues similarly in 2003, 2007). Urbinati's defense of the normative superiority of representative government hinges on a similar conception that public *deliberation* and not simply voting characterize democracy. Rather than the terminal image of an agora in which judgment and decision occur simultaneously, Urbinati champions an image of an agora that is temporal, not spatial, and characterized by an endless course of action. Public speech is an indirect form of political action, mediating between citizens separated spatially and temporally. This deferred kind of politics,

which Urbinati attributes to Mill (1861, Chap. 10; also see Young 1997), necessitates an articulated public sphere in which trust, control and accountability are prominent features of civic life (Urbinati 2000, pp. 765–67). In effect *deliberating communities* are the seat of representative democracy; just as in STS they are the seat of scientific knowledge and the rightful seat of public meaning for participation theorists. Hence Wynne critiques Collins and Evans for reducing science policy arenas to domains of specific and unrelated *decisions*. Issues in the public domain are about “the democratic cultivation and negotiation of public meanings through the continuities and interwoven textures of public experiences, relationships, knowledges and interactions, in essentially open-ended historical form” (Wynne 2003, p. 410; also see Wynne 1996, p. 359).

STS participation theorists thus share with their representative democracy cousins a conviction that democratic discourse ought to be deliberative. For Collins and Evans deliberation about technical matters must have its boundaries, because if Wynne were correct that “the proper participants are in principle every democratic citizen” (Wynne 2003, p. 411), then the result might entail “undermining . . . the norms and culture of evidence-based, scientific argument” (Collins and Evans 2003, p. 441). Yet for Wynne every democratic citizen has a potential role to play, rather than just “specific sub-populations qualified by dint of specialist experience-based knowledge,” where the issue is “arrogant and illegitimate institutional presumption of public meanings” (Wynne 2003, p. 411). For Wynne, science has “colonized” public meaning under the “umbrella of ‘science’” (p. 411). STS participation theorists thus value responsiveness as a normative condition of deliberative democratic discourse. Similarly, political philosophers often follow Hanna Pitkin in arguing “there need not be a constant activity of responding, but there must be a constant condition of *responsiveness*, a potential readiness to respond” (1967, p. 233). Wynne’s lament about the colonization of public meaning implies science has closed down the social space required for discussion and negotiation about public meanings, collapsing any sense of tension about what constitutes ‘scientific’. For deliberative democrats the condition of responsiveness, embodied by various kinds of political representation, serves to maintain the tension between constituents and institutional bodies of knowledge and policy-making (Manin 1997, pp. 174–75). Urbinati thus refers to the “spatial and temporal gap” between social actors that is required for “trust, control, and accountability” to be feasible (2000, p. 761).

The normative theory of representative and deliberative democrats thus amounts to the claim that participation ought to be deliberative, and that a constant condition of responsiveness ought to prevail. These conditions

ground the superiority of representative forms of government, for representation is seen as a “comprehensive filtering, refining, and mediating process of political will formation and expression” (Urbinati 2000, p. 760). STS participation theorists share much of these normative commitments, which are manifested as a concern with the grounds of public discourse about science and policy, and which are directed toward establishing the scope of science and role of the public as democratic agent. By analogy with the political philosophy discussed here, for STS participation theorists public participation is especially valued to the extent it redresses the closing down of the political space needed for deliberation about public meanings. Where science has become *unresponsive*, public participation is especially justified. What form would that participation take? Here again political philosophy can provide assistance, for representative democracy theorists distinguish between normative concerns about the grounds of public discourse and practical concerns about forms of political action and representation. Thus Brown (2007) delineates a spectrum of representation that includes symbolic (affective associations), formal (authorized and accountable representatives), delegation (substituting for constituents), and trustee (responsible to interest groups, social movements, or the public good). The conditions under which these practices operate are of paramount importance: “political representatives can neither reflect nor filter a pre-existing public will, because the practices and institutions of representation help constitute the same public they represent” (2007, p. 15). Thus a democratic theory of participation must support a full spectrum of political representation, with a dispersed locus of representation rather than a linear arrangement of citizen input and technical outcome. Yet democratic shaping also becomes a matter of deliberative and responsive adjustment to changes in science *and* civil society. The very grounds of debate matter.

Wynne’s prescriptivism with regard to ‘every democratic citizen’ can thus be resituated, not as a contribution to debates about who is ‘qualified’ and how political action could unfold (a reading rejected by Wynne 2007, pp. 108–09), but as a commitment to the norms of deliberation and responsiveness. Unlike the “spooky” norms derived from transcendentalist schemes, in which prescriptions are posited as both independent of human culture and causally efficacious within human culture (Turner 2003, pp. 591–96), STS participation theorists could advocate such norms as representations of conventions evident in communal activity (as outlined by Bloor 1996a, p. 372; Bloor 1996b). Normatively speaking, deliberative practices thus become a straight response to the “groundlessness” of representative democracy (Warren 1996, pp. 244–48) and the fact that ends collide. I suggest the political sentiments of representative and delib-

erative democracy theorists, and STS participation theorists, arrive at the same rejection of Rousseau's argument that "long debates, dissension, and tumult betoken the ascendance of private interests and the decline of the state" (1762, section 4.2). Rather, the political sentiment is that

[Public] speech is a means of mediation that belongs to all citizens, linking and separating them at the same time . . . the character and broadness of its mediated politics [entails that representation is] . . . a 'course of action' rather than a 'simple act'—a practice of political interaction among citizens . . . [in which] words 'give life' . . . Thanks to deliberation, the common good can be seen as a co-operative conception of the whole community and as the outcome of ongoing persuasion and compromise that never ends in a permanent verdict. (Urbinati 2000, pp. 765–72)

V. Future Avenues for STS Discussions of Public Participation?

If we say political under-laboring does not exhaust political engagement, that normative individualism is an unsatisfactory view of normative prescription, that conservative normativity (grounded in immanent norms and the representation of community standards) is a viable form of prescription, and that norms of deliberation, responsiveness and accountability are shared by deliberative democrats and STS participation theorists, then what specific political avenues are opened up? Here I sketch some analogies between current approaches within STS and current divisions within contemporary political philosophy, showing different avenues available to STS for justifying public participation in science policy.

For comparative purposes we should return to Collins and Evans. Their normative theory of expertise finds a mildly comfortable niche within current strands of liberal democratic theory that utilize conceptions of deliberation owing to John Rawls. For Rawls (1971, Chap. 3), substantive political, ethical and religious doctrines ought to be excluded from public discourse, and replaced by an approach (the veil of ignorance) in which deliberators reach conclusions by supposing which options would be chosen if they lacked knowledge of such doctrines (including their own stake in them). The point was not to posit disembodied beings, but to deal with the differences between them by arguing that we know our conclusions are fair when they are capable of being endorsed by people with different identities and commitments (Freeman 2000, pp. 396–405). Collins and Evans deploy a similar conception of deliberation in supposing that a genuine *civic* epistemology involves either the self-compartmentalizing or the marginalization of claims (and possibly people) where they are tied directly to committed knowledge cultures (Evans and Plows 2007, pp. 844–

45), and that technical judgment ought to mean subject-specific knowledge and experience independent of how it is connected to politicized lifestyles and identities (Collins and Evans 2007, pp. 113–133). We can also tie Collins and Evans fairly closely to the political outlook of contemporary liberal egalitarians (who do not necessarily follow Rawls on deliberation). So-called liberal egalitarians argue that group-based rights jeopardize the egalitarian liberal project of recognizing difference but ensuring that all groups are accorded equal basic liberties and rights within a system of equality of opportunity and the right of free association (cf. Barry 2001), and/or that when tied to the politics of recognition they threaten to dissipate efforts to secure fair distribution of social and economic resources (Gitlin 1995). Thus the rejection of group-rights is taken as an objection to the political projects associated with ‘identity politics’ (cf. Young 1990, Taylor 1994) and ‘liberal multiculturalism’ (cf. Kymlicka 1995), both of which claim important judgments within liberal democracy ought to be made with group-rights in view (for such objections see Kateb 1992, Chap. 9; Habermas 1994; Gitlin 1995; Barry 2001, Part II; O’Neill 2002). By analogy, Collins and Evans are limiting public participation on the grounds that social identities and substantive ethical-political commitments do not amount to the democratic right to participate in the making of technical judgments.

Collins and Evans’ approach hinges on their newly expanded and purified category of expertise constituting an authoritative base upon which governance groups can draw in response to politicized community-based claims about what to do. In this sense, Collins and Evans project is a left-Liberal critique of group-based rights to the making of technical judgments. Where might STS participation theorists stand in regard to the question of group rights? Jasanoff claims that what matters for comparative politics is “the meanings [and] what gives significance to another culture’s distinctions and differences . . . the normative implications of different forms of contemporary scientific and political life, and to show what is at stake, for knowing and reasoning human beings, in seeking to inhabit them” (2005, p. 291). Wynne writes that elite attitude to what constitutes publics “has to be seen as a profound inability and refusal of modern scientific culture, as mutually-evolved or co-produced with late-modern capitalism, to internalise, respect, and reflect *difference*. . . . [Experts institutions ought to be critiqued for their] blithe lack of recognition [and their] alienation and denial of the public” (2007, p. 101; emphasis in original). This emphasis upon difference, identity, and recognition appears to align Jasanoff and Wynne with identity politics theorists. Not being political philosophers, Jasanoff and Wynne do not elaborate upon the group-rights aspect of the politics of identity project. Political philos-

ophy is here appealed to in order to buttress claims that public participation in public policy involving technical claims is warranted to the extent respecting difference is desired. Thus Wynne cites (2007, p. 101) mostly edited collections on deliberative democracy, thereby avoiding internal differences over group rights but attaching academic weight to the focus on difference. Similarly, Mark Elam and Margereta Bertilsson (2003, pp. 243–246) invoke Seyla Benhabib to support recognition of difference as a justification for public participation. Nevertheless they do not note that Benhabib opposes group rights to the extent they encourage “the tyranny of intolerant minorities and narcissistic collectivities” (1999, p. 412).

My point here is that aligning with the identity politics literature allows STS participation theorists to suggestively allude to normative means to defend public participation, but that more constructive engagement with political philosophy could clarify what kind of politics is specifically envisioned. Thus, by analogy with the identity politics literature, STS participation theorists could justify public participation in technoscience to the extent that recognition and respect of difference is required to challenge externally imposed identities and negative representations, and because participation in social life can alter how decisions are made that affect marginalized groups and how worth is evaluated in general. In political philosophy the former project is closest (by analogy) to that of Charles Taylor (1994) and Axel Honneth (1995), and the latter to that of Iris Marion Young (1990). Two problems, though, arise in the alignment with identity politics. One is the extent to which identity rests on essentialism about groups. Without the assumption that groups are internally homogenous and sustaining of determinate interests, there appears little reason to claim groups deserve representation or recognition as a group (Jaggar 1999). The point is not what identity politics theorists claim in principle—that social identity is constructed, or that it is fluid and negotiable (as Taylor and Young do; and so too Wynne 1992b, p. 228)—but what the assumption must be that grounds calls for extending rights to groups. Note above that both Jasanoff and Wynne spoke of cultures and publics in a way that suggests such entities are bounded and stable enough to be studied, recognized, and protected. If publics are treated the same as groups are by politics of identity theorists, then regardless of whether the ‘bounded’ publics are indeed essentialized or just treated as such for strategic purposes (as discussed by Bernstein 2005 and critiqued by Benhabib 1999, pp. 405–06), might not publics *qua* collectives have rights? That publics might have rights, in the same sense as the group rights of identity politics theorists, is suggested in current public understanding of science literature (the ‘applied’ wing of STS participation theorizing). Thus in regard to dialogue and engagement efforts, it has

been said that the goal involves “allowing public *groups* to frame issues in a manner that approximates to their *own* experience” (Irwin 2006, p. 316; emphasis added). If publics are like groups with collective rights, this would be a very strong normative claim for their participation to the extent one accepts collective rights.

Nevertheless publics as groups, with collective rights, court the objection that granting such rights invites the reification of social groups. Steven Epstein’s (2007) recent study of the ‘inclusion-and-difference’ paradigm (IDP) in biomedical research suggests a word of caution about possibly reifying groups. The IDP is a response, within the past few decades, to inequities in medical research and treatment. The IDP holds that biological categories of group membership (such as sex, gender, race, ethnicity, and age to a lesser extent) deserve attention, and Epstein shows that the IDP has been relatively successful in expanding who is involved in clinical trials. However, Epstein also notes that, while the IDP reinforces the politics of difference and identity politics, it does so by reinforcing rigid biology-based conceptions of social identity and runs the risk of reproducing—because disparity is interpreted as difference and as ‘natural’—the very socio-economic inequities and disenfranchisement it was ostensibly attempting to challenge (2007, pp. 291–302). If the move to treat publics as like groups with claims to collective rights is resisted on pragmatic grounds, this still leaves in place normative arguments that recognizing group identity is essential to democracy. Thus identity politics theorists also claim mis-recognition and non-recognition damages self-identity (see Taylor 1994 and Honneth 1995 especially). Wynne seems to follow suit, holding that constructing understanding/knowledge “should be seen as a process of identity-construction” (Wynne 1992b, p. 283). Thus to deny and marginalize public views on knowledge must be a threat to identity. Following Taylor (1994), we are only equal in our dignity to the extent our uniqueness is known and has worth, and our unique identity is formed by processes of mutual interdependence (dialogically), in which the collective identity-related goals of socio-cultural groups provide the frame in which identities are formed. One can see why group rights enter the picture, as groups provide the frame in which identity is formed and thus require the protection liberalism uses rights to afford the individual. By analogy, STS participation theorists could justify *group* involvement as required for identity-formation within deliberative forums in which ends and values vary, and *individual* participation as representatives of collective ends. Still, a problem remains. If Taylor originally criticized liberalism for its atomism about individuals, his solution appears to displace to the group level this atomism. Socio-cultural groups appear to be treated as isomorphic units. Hence STS participation theo-

rists would still be required to face the group rights problem, even if recognition and identity-formation were their concern rather than the pragmatics of mobilizing collective identities.

One resource for STS participation theorists, in regard to problems with claims to recognition and difference, is the critique offered by Nancy Fraser (2002). Fraser distinguishes two senses of misrecognition: as an issue of ethics (identity) in which damaged self-identity, and thus harm to the capacity to achieve the good life, is at issue (the approach of Taylor and Honneth), or as an issue of justice (status), in which social groups have been denied the opportunity to fully participate in social interactions as peers or on a par with others. While misrecognition as ethics pushes dispute toward potentially irresolvable evaluations of different claims to the good life, misrecognition as justice can be tackled by the norm of participatory parity (Fraser 2002, p. 27). Wynne runs both of these senses of misrecognition together: institutionalized expertise ignores the capacity of publics to arrive at autonomous meanings (2008, pp. 30 n.5, and p. 28), must respect them much more than it does (2007, p. 101), and needs to include them because collective notions—of what issues and concerns should be—are at stake (2007, p. 109). By distinguishing specific forms of misrecognition, ethical (identity) or justice (status), Fraser seeks to avoid the trap where identity is recognized but participatory parity is not addressed. Fraser argues that parity of participation is especially justified where subordinated actors confront dominant actors. STS participation theorists could use this kind of distinction to tag demands for public participation to claims about specific forms of misrecognition, especially to the effect that participation is justified to the extent participatory parity is at issue. It seems, for instance, that much of Jasanoff's and Wynne's critique of Collins and Evans hinges on misrecognition as an issue of justice not ethics. Similarly, while Benhabib (as noted above) is cited to support the claim that difference needs to be 'recognized', Benhabib rejects recognition of identities conceived of in either the essentialist or strategic/political sense of "seamless wholes" (1999, p. 405). Benhabib argues that if identities are fluid and negotiable then group-rights ought to be rejected, replaced by "groups as positional subjects [according to] shared experiences of exploitation, marginalization and domination" (pp. 405–406). By analogy with Benhabib, in controversies involving technical claims public participation would be especially justified where marginalization, discrimination and disadvantage were in play, but also in the general sense that citizens ought to have an equal right to represent themselves in public.

The key point to make here is that, were STS participation theorists to deploy identity politics arguments in the spirit of Taylor and Honneth—

where rights to participation include group rights and recognition of identity—there appear no boundaries to public participation in policy-making involving technical claims. Some will find identity politics a useful resource for just this reason. But it might come at a price, such as having to defend claims that groups are treated in an essentialist fashion, that misrecognition is used without sufficient clarity, that group rights is either incoherent or invites social fracturing rather than meaningful collaboration, and that identity politics is subsuming the effort to ensure participatory parity and redress socio-economic inequity. However, as discussed above, claims about recognition and difference can also be couched in a way that does not rest so heavily on ethics and group rights. Thus Fraser suggests participatory parity as a means to redress misrecognition, and Benhabib does not allow claims to recognition and difference to translate directly into group rights (as doing so encourages narcissistic participation). In each case, participation can be theorized as bounded to the extent that dialogue ought not to focus strictly on either claims to the good life or narrow perspectives of self. If Epstein's study is any guide, one might expect that STS case-studies may continue to challenge essentialist (even if just strategically so) notions of identity, and thus justifications of public participation within STS may wish to be circumspect about the constitution of the public(s) so invoked for such purposes.

If STS participation theorists were to play down any alignment with the identity politics approach, then one avenue to pursue would be to play up the alignment with Jurgen Habermas. As noted above, Habermas stresses actual deliberation by real citizens. Of most relevance here is the problem Habermas specifically addresses in *Between Facts and Norms* (1996a): how to sustain democracy in complex societies faced with problems, the solutions to which incorporate the kind of technical skill and specialist knowledge not possessed by ordinary citizens. Habermas appears to concede that administrative systems of the State must be granted autonomy to make technical judgments without relying on public input, for in complex societies the public can only direct uses of knowledge (p. 300), and because will formation in the public sphere is said to lack the ability to mobilize the requisite knowledge required to judge technical matters themselves (p. 320). But this seems broadly compatible with what Jasanoff and Wynne say; both call for mechanisms to control the scope of expert judgment, especially where expert judgment is allowed to presumptively impose upon the public what an issue is supposed to mean. Indeed in Wynne's critique of Collins and Evans he is denying to science the sole right to determine meaning, not denying expert judgment itself (2007, pp. 107–09). Where the normative affinity with Habermas arises is in Habermas' 'colonization of the lifeworld' thesis (1984, 1987), which

is a cautionary tale about allowing administrative and instrumental systems—characterized by the steering mechanisms of power, money and purposive action—to colonize (or recast, like colonial masters) the lifeworld (shared, taken-for-granted understandings and assumptions, naively mastered capacities; the horizon within which individuals realize their projected ends). As noted above, Jasanoff and Wynne speak similarly of the danger of colonization. Jasanoff cautions against expert institutions being allowed to impose understandings on publics’ “radically ‘other’ ways of understanding the world . . . rooted in different life worlds” (2003a, p. 392). Wynne cautions against “technoscientific–commercial–policy actors” being “allowed [to] dramatically . . . enlarge its material, symbolic, economic and psychological intervention into global social lifeworlds” (2007, p. 104).

Setting aside the extent to which system and lifeworld can in fact be decoupled (Habermas equivocates on the question, admitting the lifeworld can never be “completely husked away” (1987, pp. 310–11)), the animating drama of the colonization thesis is the idea of an intervention, an imposition, or something out of place and beyond its scope. I suggest STS participation theorists utilize the same kind of animating drama and thus share normative affinities with Habermas. On the one hand this creates a general normative justification for public participation, as democratic check upon the colonization of the public sphere. But how far does this participation go and what form does it take? Here the distinctions Habermas makes in *Between Facts and Norms* (1996a) might inform a more specific normative justification for public participation in matters involving specialist knowledge. For one thing, Habermas conceives of society as constituted by a host of spheres of action, but only the political sphere mediates them all, so that administrative systems cannot act paternalistically but political systems can. Thus for Habermas normative questions about issues and concerns are a matter for the public sphere, in part because the closed language of expert groups is subordinate to circulating common languages in the public sphere (p. 436). Habermas formalizes this in terms of weak and strong publics (thus creating the conditions for mediated and deferred democracy, as discussed above in relation to deliberative democrats). Weak publics refer to the informal deliberations among ordinary citizens about salient political issues. Strong publics refer to formal institutions (such as the law and parliament), burdened with both decision-making requirements and the trappings of socio-economic and power relations. Habermas seeks to preserve the radical and transformative potential of weak publics by keeping them at the periphery (p. 362), thereby maximizing their reflexivity (pp. 370, 442; Wynne similarly constructs reflexivity as inversely proportional to power, see Durant 2008). Moreover,

weak publics are to set the agenda within which strong publics operate (p. 184).

In Habermasian terms, public participation—*qua* weak public—in matters involving specialist knowledge is normatively justified because such peripheral social actors are reflexive enough to challenge and (re)invigorate society, because informal, deliberative, even anarchic social talk mitigates elitism and channels the lifeworld into strong publics, and because the bottom-up agenda-setting aspects of weak-strong public relations creates the basis of social legitimation for strong public decisions. Given the emphasis upon weak publics, Habermas thus ties his conception of rights to the protection of deliberative procedures. Rights thus “presuppose collaboration among subjects” (p. 88), meaning Habermas is not a strict liberal in the classical sense of emphasizing private rights conceived of as pre-political endowments. Rather, because social identities are formed intersubjectively through socialization in lifeworlds, private autonomy can only be secured by ensuring civic autonomy (participation in democracy). Marginalized and disenfranchised social and cultural groups thus assume importance for Habermas as the lifeworld within which social identities are formed, and thus their incorporation into weak publics ensures the reciprocal creation of both individual and civic autonomy. This brings a more specific, almost literal, sense to saying the public has a right to participate in deliberations about science. Moreover, the recognition of social and cultural rights becomes important for lifeworld maintenance. Yet here we begin to see how Habermas limits claims to difference and diversity, in part by rejecting group rights. Lifeworlds are not to be preserved along the model of endangered species: rights are legitimate only when exercised as individual liberties, cultures only deserve protection to the extent they promote individual autonomy and reflexivity, and the ethical integration of group members around a conception of ‘the good’ must be uncoupled from abstract political integration if there is to be a common horizon of interpretation (Habermas 1994).

Habermas holds that recognizing difference and diversity is about securing the interdependence of private and civic autonomy, and as such rights are tied to the idea of a common democratic culture. Public discourse is bounded by the idea that democracy cannot give up on the ideal of consensus. Habermas thus imposes conditions on public speech: moral discourse aims at impartiality and a perspective not tied to egocentrism and ethnocentrism, whereas political-ethical discourses express the authentic self-understanding of a particular community (1996a, pp. 107–108). Participants in deliberative exchanges should not rest content with ethical-political discourses, but ought to push “beyond contested interests and values” and seek to establish “deeper consonances [*Übereinstimmungen*]

in a form of life” (p. 165). For Habermas, were participants in deliberative exchanges to rest content with ethical-political discourse, and reject the assumption that consensus is possible in principle or that negotiated agreements (*Vereinbarung*) ought to be sought, then “political disputes would forfeit their deliberative character and degenerate into purely strategic struggles for power” (1996b, p. 1493). What kind of application to public disputes, involving technical claims, might this Habermasian perspective inspire? One account has noted potential limitations. Barry Barnes and John Dupre (2008, pp. 220–41) discuss Habermas’s answer to ‘should we allow the manipulation of human genomes?’ Habermas recommends repair be allowed but enhancement denied, that manipulation ought to be resisted where it would violate nonpersonal forms of human dignity, and that the credo ‘born not made’ means our ethical self-understanding militates against enhancement. Barnes and Dupre think Habermas ultimately speaks to power in seeking to reconcile the views of two great institutions—science and the churches. Barnes and Dupre praise as well as criticize this effort, first noting efforts to cultivate agreements to disagree serves valuable coordinating functions in value-pluralist societies (p. 238), but then suggesting Habermas has abandoned the project of public engagement and taken up camp with powerful institutions (p. 239). Their solution is to recommend the “need for unending debate” in the absence of “indefeasible answers” to how publics should participate and how epistemic authority ought to be apportioned to different social actors (p. 240).

But is this a decent interpretation of Habermas? Does a negotiated agreement abandon public engagement, or protect democracy by ensuring strong publics do not colonize weak publics? And are the lifeworlds of weak publics being protected if ‘made not born’ endangers private autonomy? And should we accept Barnes and Dupre’s implied normative position, that a public engaged is one embarking upon an unending conversation? Might this not ultimately fragment the lot of us into whatever ethical-political position we take to be sacrosanct? And is public participation justified to the extent that it fails to challenge anyone to move beyond what they recognize in the mirror, or do we justify it to the extent we might want to do more, as a collective, than that?

References

- Barber, Benjamin. 1984. *Strong Democracy: Participatory politics in a new age*. Berkeley: University of California Press.
- Barnes, Barry and John Dupre. 2008. *Genomes: and what to make of them*. Chicago: University of Chicago Press.

- Barry, Brian. 2001. *Culture and Inequality: An egalitarian critique of multiculturalism*. Cambridge: Harvard University Press.
- Benhabib, Seyla. 1999. "The Liberal Imagination and the Four Dogmas of Multiculturalism." *The Yale Journal of Criticism* 12 (2): 401–413.
- Bernstein, Mary. 2005. "Identity Politics." *Annual Review of Sociology* 31 (1): 47–74.
- Bloor, David. 1983. *Wittgenstein: A social theory of knowledge*. London: Macmillan.
- . 1996a. "The Question of Linguistic Idealism Revisited." Pp. 354–82 in *The Cambridge Companion to Wittgenstein*. Edited by Hans Sluga and David G. Stern. Cambridge: Cambridge University Press.
- . 1996b. "Idealism and the Sociology of Knowledge." *Social Studies of Science* 26 (4): 839–856.
- . 1997. *Wittgenstein, Rules and Institutions*. London: Routledge.
- . 2000. "Wittgenstein as a Conservative Thinker." Pp. 1–14 in *The Sociology of Philosophical Knowledge*. Edited by Martin Kusch. Dordrecht: Kluwer Academic Publishers.
- Bloor, David and David Edge. 2000. "Knowing Reality through Society." *Social Studies of Science* 30 (1): 158–60.
- Bohman, James and William Rehg, eds. 1999. *Deliberative Democracy: Essays on reason and politics*. Cambridge: MIT Press.
- Brown, Mark B. 2004. "The Political Philosophy of Science Policy." *Mind* 113: 77–95.
- . 2006. "Survey Article: Citizens Panels and the Concept of Representation." *The Journal of Political Philosophy* 14 (2): 203–25
- . 2007. "Can Technologies Represent Their Publics?" *Technology in Society* 29 (3): 327–338.
- Bruun, Henrik & Janne Hukkinen. 2003. "Crossing Boundaries: An Integrative Framework for Studying Technological Change." *Social Studies of Science* 33 (1): 95–116.
- Callon, Michel. 1986. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay." Pp. 196–233 in *Power, Action and Belief: A new sociology of knowledge*. Edited by John Law. London: Routledge & Kegan Paul.
- Collins, Harry & Robert Evans. 2002. "The Third Wave of Science Studies: Studies of Expertise and Experience." *Social Studies of Science* 32 (2): 235–96.
- . 2003. "King Canute Meets the Beach Boys." *Social Studies of Science* 33 (3): 435–52.
- . 2007. *Rethinking Expertise*. Chicago: University of Chicago Press.
- Cooke, Bill and Uma Kothari, eds. 2001. *Participation: The new tyranny?* London: Verso.

- Dahl, R. A. 1989. *Democracy and its Critics*. New Haven: Yale University Press.
- Dryzek, John S. 2000. *Deliberative Democracy and Beyond: Liberals, critics, and contestations*. NY: Oxford University Press.
- . 2001. "Legitimacy and Economy in Deliberative Democracy." *Political Theory* 29 (5): 651–669.
- Durant, Darrin. 2006. "Managing Expertise: Performers, Principals, and Problems in Canadian Nuclear Waste Management." *Science and Public Policy* 33 (3): 191–204.
- . 2008. "Accounting for Expertise: Wynne and the Autonomy of the Lay Public Actor." *Public Understanding of Science* 17 (1): 5–20.
- Elam, Mark & Margereta Bertilsson. 2003. "Consuming, Engaging, and Confronting Science: The Emerging Dimensions of Scientific Citizenship." *European Journal of Social Theory* 6 (2): 233–51.
- Elster, Jon, ed. 1998. *Deliberative Democracy*. Cambridge, UK: Cambridge University Press.
- Epstein, Steven. 2007. *Inclusion: The politics of difference in medical research*. Chicago: University of Chicago Press.
- Evans, Robert & Alexandra Plows. 2007. "Listening Without Prejudice? Re-discovering the Value of the Disinterested Citizen." *Social Studies of Science* 37 (6): 827–853.
- Fraser, Nancy. 2002. "Recognition without Ethics." Pp. 21–42 in *Recognition and Difference: Politics, identity, multicultural*. Edited by Scott Lash and Mike Featherstone. London: SAGE.
- Freeman, Samuel. 2000. "Deliberative Democracy: A Sympathetic Comment." *Philosophy & Public Affairs* 29 (4): 371–418.
- Frickel, Scott, and Kelly Moore, eds. 2006. *The New Political Sociology of Science*. Madison: University of Wisconsin Press.
- Fuller, Steve. 2000. *The Governance of Science: Ideology and the future of the open society*. Philadelphia: Open University Press.
- . 2007. *New Frontiers in Science and Technology Studies*. Cambridge: Polity Press.
- Gitlin, Todd. 1995. *The Twilight of Common Dreams: Why America is wracked by culture wars*. NY: Henry Holt.
- Gutmann, Amy & Dennis Thompson. 2004. *Why Deliberative Democracy?* Princeton: Princeton University Press.
- Gunderson, Adolf G. 2000. *The Socratic Citizen: A theory of deliberative democracy*. NY: Lexington Books.
- Guston, David. 2000. *Between Politics and Science: Assuring the integrity and productivity of research*. Cambridge: Cambridge University Press.
- Habermas, Jurgen. 1984. *The Theory of Communicative Action. Vol. 1: Reason and the rationalization of society*. London: Heinemann.

- . 1987. *The Theory of Communicative Action. Vol. 2: Lifeworld and system: A critique of functionalist reason.* Oxford: Polity.
- . 1994. "Struggles for Recognition in the Democratic Constitutional State. Pp. 107–148 in *Multiculturalism: Examining the politics of recognition.* Edited by Amy Gutmann. Princeton: Princeton University Press.
- . 1996a. *Between Facts and Norms: Contributions to a discourse theory of law and democracy.* Cambridge, MA: MIT Press.
- . 1996b. "Reply to Symposium Participants, Benjamin N. Cardozo School of Law." *Cardozo Law Review* 17 (4–5): 1477–557.
- Hernstein-Smith, Barbara. 1997. *Belief and Resistance: Dynamics of contemporary intellectual controversy.* Cambridge: Harvard University Press.
- Honneth, Axel. 1995. *The Struggle for Recognition: The moral grammar of social conflicts.* Translated by Joel Anderson. Cambridge: Polity Press.
- Irwin, Alan. 2006. "The Politics of Talk: Coming to Terms with the 'New' Scientific Governance." *Social Studies of Science* 36 (2): 299–320.
- Irwin, Alan and Brian Wynne, eds. 1996. *Misunderstanding Science?: The public reconstruction of science and technology.* Cambridge: Cambridge University Press.
- Jaggard, Alison M. "Multicultural Democracy." *The Journal of Political Philosophy* 7 (3): 308–29.
- Jasanoff, Sheila. 1996. "Beyond Epistemology: Relativism and Engagement in the Politics of Science." *Social Studies of Science* 26 (2): 393–418
- . 1999. "STS and Public Policy: Getting Beyond Deconstruction." *Science, Technology & Society* 4 (1): 59–72.
- . 2003a. "Breaking the Waves in Science Studies." *Social Studies of Science* 33 (3): 389–400.
- . 2003b. "(No?) Accounting for Expertise." *Science and Public Policy* 30 (3): 157–62.
- . 2004a. "The idiom of co-production." Pp. 1–12 in *States of Knowledge: The co-production of science and social order.* Edited by Sheila Jasanoff. NY: Routledge.
- . 2004b. "Ordering Knowledge, Ordering Society." Pp. 13–45 in *States of Knowledge: The co-production of science and social order.* Edited by Sheila Jasanoff. NY: Routledge.
- . 2005. *Designs on Nature.* Princeton, NJ: Princeton University Press.
- Kateb, G. 1992. *The Inner Ocean: Individualism and democratic culture.* Ithaca: Cornell University Press.
- Kitcher, Philip. 2001. *Science, Truth and Democracy.* NY: Oxford University Press.

- Kleinman, Daniel Lee, ed. 2000. *Science, Technology and Democracy*. Albany: State University of New York Press.
- Kusch, Martin. 2002. "Testimony in Communitarian Epistemology." *Studies in History and Philosophy of Science* 33 (2): 335–54.
- Kymlicka, Will. 1995. *Multicultural Citizenship*. Oxford: Oxford University Press.
- Laird, Frank N. 1993. "Participatory Analysis, Democracy, and Technological Decision Making." *Science, Technology, & Human Values* 18 (3): 341–61.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Milton Keynes: Open University Press.
- . 1991. "The Impact of Science Studies on Political Philosophy." *Science, Technology, & Human Values* 16 (1): 3–19.
- . 1993. *We Have Never Been Modern*. NY: Harvester.
- . 2004a. *Politics of Nature: How to bring the sciences into democracy*. Cambridge: Harvard University Press.
- . 2004b. "Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern." *Critical Inquiry* 30 (2): 225–48.
- . 2007. "Turning Politics Around: a note on Gerard De Vries' paper." *Social Studies of Science* 37 (5): 811–820.
- Manin, B. 1997. *The Principles of Representative Government*. Cambridge: Cambridge University Press.
- Mannheim, Karl. 1927 [1953]. "Conservative Thought." *Essays on Sociology and Social Psychology*. London: Routledge & Kegan Paul.
- Mansbridge, J. 2003. "Rethinking Representation." *American Political Science Review* 97 (4): 515–528.
- Mill, John Stuart. 1861 [1991]. "Considerations on Representative Government." In *On Liberty and Other Essays*. Edited by John Gray. Oxford: Oxford University Press.
- Mouffe, Chantal. 2000. *The Democratic Paradox*. Verso.
- O'Neill, John. 2002. "Oh, My Others! There is no other: Capital Culture, Class and Other-Wiseness." Pp. 77–90 in *Recognition and Difference: Politics, identity, multicultural*. Edited by Scott Lash and Mike Featherstone. London: SAGE.
- Pitkin, Hanna F. 1967. *The Concept of Representation*. Berkeley: University of California Press.
- . 1972. *Wittgenstein and Justice: On the significance of Ludwig Wittgenstein for social and political thought*. Berkeley: University of California Press.
- Plotke, David. 1997. "Representation is Democracy." *Constellations* 4 (1): 19–34.
- Radder, Hans. 1998. "Second Thoughts on the Politics of SSK: A Re-

- sponse to the Replies by Singleton and Wynne." *Social Studies of Science* 28 (2): 344–48.
- Rawls, John. 1971 [1991]. *A Theory of Justice*. Cambridge: Harvard University Press.
- Rousseau, John-Jacques. (1762) 1987. "The Social Contract." In *The Basic Political Writings*. Edited by Donald A. Cress. Indianapolis: Hackett.
- Sartori, Giovanni. (1962) 1987. *The Theory of Democracy Revisited*. Chatham: Chatham House.
- Schumpeter, Joseph. 1962. *Capitalism, Socialism and Democracy*. NY: Harper & Row.
- Shapin, Steven. 1995a. "Here and Everywhere: Sociology of Scientific Knowledge." *Annual Review of Sociology* 21: 289–321.
- . 1995b. "Cordelia's Love: Credibility and the Social Studies of Science." *Perspectives on Science* 3 (3): 255–275.
- Shapiro, Ian. 2002. "Problems, Methods, and Theories in the Study of Politics, or What's Wrong with Political Science and What to Do about It." *Political Theory* 30 (4): 596–619.
- Singleton, Vicky. 1996. "Feminism, Sociology of Scientific Knowledge and Postmodernism: Politics, Theory and Me." *Social Studies of Science* 26 (2): 445–68.
- . 1998. "The Politic(ian)s of SSK: A Reply to Radder." *Social Studies of Science* 28 (2): 332–38.
- Taylor, Charles. 1994. "The Politics of Recognition." Pp. 25–73 in *Multiculturalism: Examining the politics of recognition*. Edited by Amy Gutmann. Princeton: Princeton University Press.
- Tucker, Aviezer. 2007. "The Political Theory of French Science Studies in Context." *Perspectives on Science*. 15 (2): 202–221.
- Tully, James. 1989. "Wittgenstein and Political Philosophy: Understanding Practices of Critical Reflection." *Political Theory* 17 (2): 172–204.
- Turner, Stephen. 2003. "The Third Science War." *Social Studies of Science* 33 (4): 581–611.
- Urbinati, Nadia. 2000. "Representation as Advocacy: A Study of Democratic Deliberation." *Political Theory* 28 (6): 758–86.
- Walzer, Michael. 1999. "Deliberation, and What Else?" Pp. 58–69 in *Deliberative Politics: Essays on democracy and disagreement*. Edited by Stephen Macedo. NY: Oxford University Press.
- Warren, Mark E. 1996. "What Should We Expect from More Democracy? Radically Democratic Responses to Politics." *Political Theory* 24 (2): 241–270.
- Weber, Max. 1949. *The Methodology of the Social Sciences*. Translated by Edward A. Shils and Henry A. Finch. NY: The Free Press.

- Wittgenstein, Ludwig. 1953 [1997]. *Philosophical Investigations*. Translated by G. E. M. Anscombe. Second Edition. Oxford: Blackwell.
- . 1969. *On Certainty*. Edited by G. E. M. Anscombe and G. von Wright. Translated by D. Paul and G. E. M. Anscombe. Oxford: Blackwell.
- Woodhouse, Edward, David Hess, Steve Breyman & Brian Martin. 2002. "Science Studies and Activism: Possibilities and Problems for Reconstructivist Agendas." *Social Studies of Science* 32 (2): 297–319.
- Wynne, Brian. 1992a. "Uncertainty and Environmental Learning." *Global Environmental Change* 2: 117–127.
- . 1992b. "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science." *Public Understanding of Science* 1 (3): 281–304.
- . 1996. "SSK's Identity Parade: Signing-Up, Off-and-On." *Social Studies of Science* 26 (2): 357–91.
- . 1998. "Reply to Radder." *Social Studies of Science* 28 (2): 338–44.
- . 2003. "Seasick on the Third Wave: Subverting the Hegemony of Propositionalism." *Social Studies of Science* 33 (3): 401–417.
- . 2005. "Risk as Globalizing 'Democratic' Discourse? Framing Subjects and Citizens." Pp. 66–82 in *Science and Citizens: Globalization and the challenge of engagement*. Edited by Melissa Leach, Ian Scoones and Brian Wynne. London: Zed Books.
- . 2007. "Public Participation in Science and Technology: Performing and Obscuring a Political-Conceptual Category Mistake." *East Asian Science, Technology and Society: An International Journal* (1): 99–110.
- . 2008. "Elephants in the Rooms Where Publics Encounter 'Science'?: A Response to Darrin Durant, 'Accounting for Expertise: Wynne and the Autonomy of the Lay Public.'" *Public Understanding of Science* 17 (1): 21–33.
- Young, Iris Marion. 1990. *Justice and the Politics of Difference*. Princeton: Princeton University Press.
- . 1997. "Deferring Group Representation." Pp. 355–57 in *NOMOS XXXIX Ethnicity and Group Rights*. Edited by Ian Shapiro and Will Kymlicka. NY: New York University Press.