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Mark Brown, *Science in Democracy: Expertise, Institutions and Representation* (Cambridge, MA: MIT Press, 2009), 368 pp., £20.95/\$28.00/€23.99 (pbk), £41.95/\$56.00/€48.99 (hbk). ISBN 978-0-262-51304-3 (pbk), 978-0-262-01324-6 (hbk).

‘The technical is political’ could stand as a slogan for a critical aspiration shared by the varied research programs of science and technology studies (STS). If nothing else, the field has been loosely unified by opposition to the idea that science and technology are politically neutral and autonomous. As Charles Thorpe notes, the founding epistemological commitments of STS stood in polemical opposition both to ‘positivism’ and ‘liberalism’. Importantly, these two oppositions were linked: the ‘[l]iberal values of individualism, instrumentalism, meliorism, universalism, and conceptions of accountability and legitimacy have been closely related to understandings of scientific rationality, empiricism, and scientific and technological progress’ (Thorpe, 2007: 63). The critique of liberal values has been motivated in part by a sense that the institutions and practices of liberal representative democracy are not equipped to recognize, or democratically respond to, political conflicts and controversies over science, technology and expertise. STS research, particularly on expertise and scientific governance, identified politics in places where politics was not supposed to be, such as science advisory committees (Jasanoff, 1990), and thereby exposed a blind spot in mainstream political science and political theory. Furthermore, in addition to raising consciousness about politics within expertise (Wynne, 1996), such STS work has often advocated greater public participation within these newly revealed political arenas. Whether the emphasis is on activism or administration, the aspiration to bring the sciences into democracy has often been guided by participatory democratic ideals. A pithy summary of this aspiration is that the technical is political, the political should be democratic, and the democratic should be participatory.

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Epistemological and political critiques from within this participatory paradigm have been closely linked, but they need not be. The political demand for greater inclusion and participation in the conduct of administration, policy analysis, regulation and risk assessment depended on epistemological critiques of expert claims to knowledge and a parallel valorization of alternative 'ways of knowing'. The critique of claims that technical and scientific advice is politically neutral and therefore not an appropriate site for public participation opened the door, and the identification of 'lay knowledge' and alternative 'ways of knowing' then authorized non-experts to go through it. Whether deployed for or against lay inclusion in ostensibly technical policy debates, this approach to expertise and democracy focuses on epistemic qualifications for participation. This approach has probably reached its limit with Collins and Evans' (2007) recent book on expertise. They make a good case against the uncritical valorization of lay knowledge, and they subsume that notion under a more general account of expertise in terms of skill acquisition. Their central point is that some people really do know more than others what they are talking about, and it really is important for political decision-making to be able to reliably tell the difference between them. However, while their account of expertise as dependent upon 'tacit knowledge' acquired by immersion in a particular social milieu provides clear terms and a useful typology for thinking about claims to expertise, their political theoretical presumptions are poorly elaborated. They take for granted that there should be public involvement in some aspects of technical decisions, and then ask 'How, when, and why, to limit participation in technological decision-making so that the boundary between the knowledge of the expert and that of the layperson does not disappear?' (Collins and Evans 2007: 10). Their answer is that the scope and limits of citizen involvement in technical decision-making should be determined by exclusively epistemic considerations. In their analysis the delineation of the proper domain of politics appears as a matter for epistemological analysis. Jasanoff and Wynne criticize this epistemic demarcation of expert from non-expert sites of public involvement. For them the critical task is to reveal the values implicit within science and expertise and thereby remove artificial obstacles to broader participation. However, repoliticizing science in this manner says little about why responses to the resulting politics should be guided by participatory models of democracy.

The participatory paradigm has practical and analytical weaknesses. The practical problems are old, yet stubborn. Only a tiny fraction of the citizenry could conceivably participate directly in scientific governance. More importantly, most people most of the time have no desire to participate in technical decision-making. Mark Warren, quoted approvingly by Mark Brown, points out that people want safe food and airplanes, not the opportunity to participate in meat inspection and air traffic control (Warren, 1996: 49). The analytical problem concerns the ability of participatory ideals to make sense of a changed landscape of institutional innovations in science governance. The growing patchwork of citizen panels, public engagement exercises, consensus conferences, and deliberative polls, along with bioethics commissions and routine lay representation on some technical regulatory bodies and committees, demands a more differentiated account of what a democratized politics of expertise and scientific governance should look like. The participatory lens produces analyses that oscillate between hopes for authentic participatory governance and fears of renewed technocracy. Political critiques in the

participatory paradigm were principally concerned with removing objections to greater participation, and that struggle has largely succeeded. In a situation of widespread elite endorsement of public engagement of some sort in technical and policy domains, the critiques of expertise have lost some of their political purchase. Neither the critique of expert claims to knowledge nor the recovery and valorization of knowledge claims made by non-accredited lay people are sufficient to flesh out an account of a democratic politics of expertise. The epistemological critiques pioneered by STS, the unmasking of ordinary politics inside the closed loop of technical assessments and expert claims, do not tell us how to conduct a democratic politics. It seems that the claim that 'the technical is political' and that the political should take the form of participatory democracy needs, at the very least, some serious refinement.

STS is starting to recognize this problem, and has begun to engage more critically and creatively with its political/theoretical entanglements. Bruno Latour (2007) concedes, in the face of Gerard de Vries's (2007) criticism, that STS took its political theory 'off the shelf' and unwittingly slipped into a largely uncritical advocacy of participatory democracy as the chief vehicle for bringing the sciences into democracy. De Vries himself advocates an Aristotelian conception of politics to equip us to conceptually differentiate the senses in which the technical is political. Noortje Marres (2007) uses Dewey's pragmatism to focus on the co-constitution of issues and publics. Latour, too, draws on Deweyan pragmatism as a way to conceive the political in terms of the trajectory of issues (Latour, 2007: 814). Sheila Jasanoff (2003) regards opening up technical policy domains to participation as necessary but not sufficient for the development of 'technologies of humility'. Alan Irwin (2006) has drawn attention to the role of institutions in constructing publics, thus further questioning the nature of the publics who are supposed to be participating in the politics of science and technology. We are beginning to see new lines of inquiry into the political theoretical underpinnings of STS critiques of science and technology expertise, which, as Marres puts it, move 'beyond the opposition between technocracy and public participation' (Marres, 2007: 766).

It is in this context that we should welcome Mark Brown's (2009) recent book, *Science in Democracy: Expertise, Institutions and Representation*. Brown begins by addressing the common lament that science has been politicized. Science, he argues, is always potentially political. And when science becomes political the task is to ensure that the institutional responses are democratic rather than technocratic. Brown argues that if we are to identify the democratic potential in public engagement initiatives in scientific governance we will need a conception of democracy and expertise that goes beyond calls for more participatory or direct democracy. To this end, he attempts to extend the democratic theory of representation. He wants to rescue representation from its conflation with correspondence theories in both science and politics; theories in which scientific representations should mirror reality, and political representations should 'correspond to the pre-existing reality of either popular will (delegate model) or the objective public interest (trustee model)' (p. 6). Democratizing science, he suggests, is less a matter of increasing public participation than of supporting a diverse ecology of modes of political representation.

Brown draws on the classic work of Hanna Pitkin, and on the recent revival of representation in democratic theory (see Urbinati and Warren, 2008). He argues that liberal-rationalist accounts of representation came to dominate democratic theories of

government, and that the critical reaction to those theories from participatory and deliberative democratic theorists did not challenge the central assumptions. The first part of the book critically examines the formation of the modern version of liberal rationalism and suggests alternative interpretations. He revisits central works in the history of political thought to explain the rise of modern notions of expertise and its place in political institutions, emphasizing the contingent emergence of the particular ideas and institutions that frame our understandings of politics and science. In the early modern rhetoric of expertise, which ‘casts the scientist in the role of objective spokesperson of inert nature’ (Brown, 2009: 51) such that ‘facts speak through him’ (p. 27), Brown finds a precursor for today’s ideal of the objective (as distinct from impartial) expert. Yet he uses this historical analysis not only to question dominant narratives on the rise of modern science and liberal representative democracy, but also to identify alternatives. Accordingly, Brown’s Machiavelli not only pioneers the ‘rhetoric of distance’ and ‘rhetoric of humility’ (pp. 29, 30) through which the credibility of his own advice to the prince is in part generated, but also gives a protective republican account of the value of institutions that, in John McCormick’s phrase, provide many ways of ‘patrolling the elites’ (quoted on p. 42), and thus suggests a quite different direction for current understandings of expertise in politics. This analysis attempts to pick up lost threads in the history of political thought and draw them together in a reconception of representation and expertise.

The second part of the book reconstructs representative democracy through a consideration of concepts of representation put forward by three major critics of liberal rationalism: Hobbes, Dewey and Latour. He is careful to avoid defining what representation essentially means, because, like Pitkin (1967), he regards it as an ‘internally complex concept’ that is defined in terms of certain limits. Within these bounds, he differentiates five ‘elements’ of representation – participation, deliberation, accountability, authority and resemblance – which serve to guide analysis and evaluation of an entire ecology of forms of representation. Brown’s account of representative democracy attempts to incorporate these diverse elements of representation while subordinating them to the deeper value of freedom as non-domination. In this protective republican account of politics, the elements of representation serve the wider goal of facilitating contestation by equalizing power. He places particular emphasis on ‘epistemic power’, illustrated by emblematic STS research, and in this way he directs his critique against forms of representation in both science and politics that privilege ‘elite reason’ by securing a pre-political space in which epistemic power is insulated from democratic challenge. Thus, his central objection to liberal–rationalist models of representation in science and politics is that they serve to protect elite reason from contestation. This model of representation is then brought to bear on the contemporary politics of science, as Brown works back and forth between political theory and practical problems. The latter include the politicization of science in expert advisory committees, mini-publics and bioethics commissions. He then gives a number of recommendations for enhancing the ‘epistemic and social potential’ of the different elements of representation in such institutional locations.

Brown is clearly sensitive to both the importance and opacity of expert committees and science advisors. However, he takes care not to claim that expertise is simply political. He adopts Mark Warren’s conception of politics, in which ‘politics is a subset of social relations in which people face pressure to undertake collective action in the

context of conflict over the means, goals, or domain of their activity, where at least one party seeks to resolve the conflict through the exercise of power' (Brown, 2009: 188; Warren, 1999). This definition gives us a neat set of conditions under which things are not political. Where there is no conflict and no power there is no politics. Things that once were political might now be routine and uncontested ('black-boxed, as it were'), their politics replaced by 'cooperation based on implicit or explicit consensus' (p. 189). Where there is conflict but no power, as when a couple argues about which movie to rent, then the conflict is not political. Science, technology and expertise, on this account, are often not political. Not all people should be involved in every decision on sociotechnical issues, for 'where there is no politics, there is no need for democracy' (p. 191). Brown, then, arrives at a new formulation of the argument for democratizing science: the technical is potentially political, 'democracy is the most political way of responding to politics', and 'if representative democracy is the best form of democracy, then democratic representation is the best response to the politics of science' (p. 193).

This analysis of politicized science sets bounds to the apparently limitless reach of the claim that the technical is political: democratic responses only make sense in those contexts where science has already become political. However, he also wants to say that 'public deliberation and representation is required, not only in cases of obvious technical failure or public controversy, but also at the front end of technical development' (p. 90). Public deliberation and representation are required, that is, in cases where there is no conflict but where there is a danger that 'unjust power relations' could become 'embedded within an expert consensus' (p. 90). This places a lot of weight on distinguishing just from unjust power relations, and between different kinds of non-conflictual relations under power, yet he gives no substantive account of what he means by social justice. The clarity he gives us in saying when science *is political* thus gives way to an unspecific appeal to 'social justice' when it comes to the question of when science *should be politicized*. Langdon Winner's (1993) identification of a normative weakness in STS, it seems, continues to cause problems for those who seek to do more than just trace the contours of contestation over science and expertise.

Science in Democracy presents a useful collection of arguments for anyone concerned with the politics of science and the relations between political theory and STS. Brown recognizes that '[p]oliticizing science by revealing suppressed relations of conflict and power does not yet establish a political framework for responding to such power-laden conflicts' (p. 197). Furthermore, he makes a case for bringing STS approaches to bear on the study of political theory: because science 'provide[s] a conceptual toolkit' (p. 67) drawn on in the development of political ideas and institutions, if we want to understand historical and contemporary political and institutional developments then we need to pay more attention to science than had earlier been the case. Finally, he argues that modern societies require an epistemic division of labor, but that – in contrast to Collins and Evans – the boundaries between science and politics 'need to be politically established' and, indeed, democratically established. Brown's aim is to detach this boundary from 'pre-political' accounts of the distinction between scientific and political representation (p. 90). What he gives us is a richer conception of the political, and a strongly pragmatist account of the production of issues and public problems. Democratizing science, on this account, is not a matter of devising ways to assimilate expert knowledge with public

decision-making, but rather of finding democratic ways to settle issues after they have become political. Brown's book makes a number of important steps toward showing how to bring STS into conversation with political theory, and showing the benefits of such an engagement.

The loose unity of STS, forged by opposing positivism and liberalism and making polemical claims to the effect that the technical is political, is giving way to a greater diversity of attempts to come to grips with the specific senses in which science has become political. Brown's book shows one of the many paths opened up by bringing STS concerns into contact with political theory. Such attempts are valuable, not because they would find the right prescriptive theory with which to enable STS analyses to overcome the normative deficit (Hamlett, 2003), but because they would highlight tensions and potentials in the political theoretical commitments at work within STS. Thus, the recent work of Brown (2009), Latour (2004), Kitcher (2001), and Turner (2003), among others, serves to expand our ways of thinking about institutional responses to politicized science, and also opens up new areas of contestation and disagreement. Participatory ideals will not disappear, and nor should they, but they may no longer be the principal heuristic guiding analyses of new institutional responses to politicized science. Democratic responses are underdetermined by the epistemological critiques of positivist accounts of science and technology. STS can benefit from developing a wider range of competing political ideals when working out how to extend the value of democracy into the space those ideals open up.

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Biographical note

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