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## Commentary

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This section presents a series of cases that draw on and extend the themes raised in the last section. They illustrate interactions between publics and science in a variety of settings, raising questions about forms of knowledge, epistemology and expertise. These cases show public engagements with science to be bound up with material struggles for health and livelihoods, and social solidarities that emerge to address these, whether among patient groups in the UK, labour unions in India or HIV/AIDS activists in South Africa. The cases consider how contemporary configurations of the state, civil society, the private sector and international organizations, as well as emergent coalitions and alliances that cross-cut these categories and distinctions, shape the possibilities of different types of citizen engagement.

Richard Tutton, Anne Kerr and Sarah Cunningham-Burley's chapter, through an examination of a focus group working on gene patenting in the UK, shows how perspectives brought to public debates about science and technology reflect different people's lived or imaginary perspectives. This is true for both 'publics' and 'experts'. Tutton et al., however, show the necessity of deconstructing such categories, demonstrating them to be contextual, performed and contingent as people seek to position themselves and each other in ways that might shift even in the course of a conversation. Particular ideas of citizenship or non-citizenship are created through these discussions. There are limits to this negotiability, however, as, in order to create meaningful alliances, people latch on to particular discourses or framings; for example, a company being an exemplar of 'good practice' or a pariah. This is an illustration of a broader pattern where, in order to create political solidarities, multiple subject positions and perspectives must coalesce around a particular discourse in order to press claims.

Engagements between publics and science involve complex forms of (often temporary) coalition, alliance and hybrid organization between actors of different kinds. This is illustrated by Steven Robins in his discussion of the alliances that formed around the 'dissident science' camp, arguing against a singular viral cause of AIDS, and the Treatment Action

Campaign (TAC) position, fighting for access to anti-retroviral drugs in HIV/AIDS treatment in South Africa. Robins's chapter also shows how public science engagements interrelate with, and can become coloured by, historically embedded cultural and political frames of meaning, in this case the interpretation of AIDS through racialized lenses linked to South Africa's apartheid and post-apartheid history. In this context, TAC has adopted a very particular, and effective, campaigning discourse that has foregrounded treatment regimes and access to drugs, and has backgrounded the well-recognized complexities of AIDS causation. As TAC activism shows, emergent solidarities straddle local, national and global spaces, perhaps, as Robins suggests, constituting a form of 'globalization from below'.

Other chapters similarly address the processes and terms by which public science policy engagements proceed, drawing attention to a variety of dimensions and scales. Thus Dr Murlidhar V's chapter on occupational health in India illustrates the role of a non-governmental organization (NGO), in alliance with labour unions, in forging a connection between the previously quite autonomous life-worlds of workers and medical scientists, struggling to get the former recognized by the latter. The terms of this engagement are, however, those of medical science, as are their mechanisms and means of legitimacy – such as publications in scientific journals and training workers to use measuring instruments. This is an example of 'citizen science' in the classic and relatively restricted sense of equipping publics with the ability to engage with science on its own terms. Nevertheless, in facilitating access to medical science for workers, it offers opportunities for treatment, compensation claims and improvement in working conditions. These feed positively into other dimensions of citizenship, including the claiming of political and economic rights. This illustrates a more general point – that public engagements with science can have wider and unanticipated effects on other dimensions of empowerment and citizenship. Potentially, such dimensions could also feed back into a reflexive capacity and an epistemic awareness, and so claims for 'cognitive justice' around other issues.

As Kees Jansen and Esther Roquas show, many of these context-specific understandings of issues are occluded through processes of internationalized science. Looking at the particular case of biotechnology regulation, they examine how international epistemic communities, particularly as propagated through international networks and committees of scientific advisers, construct and impose internationalized forms of 'cognitive consensus' and notions of 'best practice', whether around risk assessment or instrumentalized forms of participation. They draw attention to the inequalities in these international forums and the frequent under-

representation of developing-country perspectives. These internationalized perspectives are often detached from locally contextualized experiences and complexities, yet they become imposed on them via national regulatory frameworks that are expected to implement them. They characterize this process and the problems it causes as 'absentee expertise'. With their focus on Latin America, they show how this arises in places where there is limited national scientific capacity.

While globalization may be promoting and giving power to such international epistemic communities, their effects in particular countries are inevitably mediated by the nature of states, bureaucracies and society. This is illustrated clearly in James Keeley's chapter, which examines the relationship between international discourses concerning biotechnology and the modernizing developmental projects of the Chinese state. Keeley's account echoes the familiar observation that significant cultural and social issues are seamlessly translated into scientific discourses. In this case, we see the state's overall commitment to modernization as a socio-historical project being manifested in discourses around science, risk and nature. The chapter discusses how a pro-genetic modification (GM) discourse, propagated by alliances between private sector actors and international organizations, has been partially taken on, but also in parts subverted and challenged, by actors within China. He also locates the construction of citizenship in this context, showing how a state collectivist notion of the Chinese citizen is being challenged by more liberal, individualist, market- and consumer-oriented perspectives.

Considering citizenship in terms of mobilization around highway construction in Brazil, Angela Alonso and Valeriano Costa's chapter focuses on the political conditions for such mobilization. The chapter reminds us of the importance of social profiles, social and political interests, membership of and engagement with forms of association and access to formal institutions in effecting patterns of mobilization. These structural political dimensions interplay with the more cognitive, discursive dimensions, which are given more emphasis in other cases, in shaping the way public engagements with science play out.

Sheila Jasanoff starts from these important political questions, but moves on to a more explicitly discursive analysis, asking, for example, what implicit political subjects are inhabiting the definitions and framings of issues. She shows how, in the case of Golden Rice biotechnology, it is framed as a universal solution, 'a view from everywhere'. Yet this serves also to erase particular forms of political subject or citizen in favour of a mass representation, skipping over lived experiences and erasing particular political constellations that might articulate these lived experiences and

alternative possibilities. Her discussion of this case echoes Brian Wynne's argument about technical discourses embodying implicit assumptions about the human subject and social relations. As Jasanoff suggests, this raises major questions about the avenues through which alternative views of what a technological society might look like can be expressed.

One such avenue is discussed in Paul Richards's chapter, where he makes the case that discussions about biotechnology and plant breeding need to be embedded in international human rights discourses concerning the right to food. Richards shows how institutionalized science – increasingly a private-sector-led version – embodies a particular construction of farmers and the needy poor, yet there exist a variety of other technology needs that may be more appropriate responses. By shifting the frame from one focused on the risk of starvation to one of rights and cognitive justice, a different perspective on agricultural/food technology priorities opens up; one that can be more attentive to the rationalities and agendas of poor farmers' own agricultural innovations. These agendas also embody alternative political and societal agendas: as Richards suggests, local ideas about food security and seed exchange reinforce notions of solidarity and rights – in effect, citizenship. As he puts it, 'local seed systems do not just yield food; they also "grow" communities'.