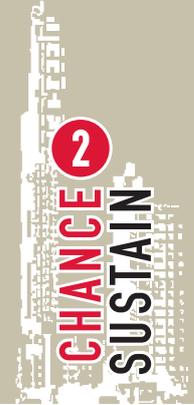




The Role of a Spatial 'Civic Science' in Repositioning Scientific Expert Knowledge in Society: A Case from South Africa

By Dianne Scott



With the emergence of the network society in recent decades and the shift towards more participatory forms of urban governance, there are various 'communities of interest' which make knowledge claims regarding the benefits of urban development processes and the impacts on opportunities, quality of life and health of urban residents (Potts, 2008). These knowledge claims exist in various forms; expert knowledge; sectoral knowledge; community knowledge and tacit knowledge (van Ewijk and Baud, 2009). Using these different types of knowledge, including *spatialised forms of these knowledges*, networks of actors engage in *participatory* decision-making processes focused on 'joint problem solving' (Hajer, 2005). These actors include the state, NGOs, business, consultants, scientists and civil society. Alternatively, civil society groups use their knowledge and present it publicly through mobilisation processes and social protest and in this way 'participate' in urban development processes.

The opinion expressed in this paper, based on growing evidence, is that these different types of knowledge can be spatialised, and that *participatory spatial knowledge can provide a means for greater inclusion, empowerment and accountability in urban development processes and for the creation of a more resilient city*.

There is much debate about the extent to which shifts to more participatory decision-making are taking place, particularly the extent to which increased participation is occurring; the form of deliberation in these processes; and in what kind of 'spaces' they take place (Barnett and Scott, 2007a). It has been proposed that participation can take place in 'invited' spaces where citizens are invited into state managed processes to engage and deliberate; in 'claimed' spaces where citizens create their own spaces through which they present their interests through mobilisation and protest

(Miftirab, 2004; Healey, 2008), or in 'negotiated spaces' (Baud and Nainan, 2008). There is thus much debate on the extent to which civil society is 'included' or 'excluded' from the state in the process of policy-making (Dryzek, 1996, Young, 2001). Deliberative public participation processes, aimed at including the knowledge of all actors, have been increasingly critiqued as being part of "a managerial strategy for regularizing urban conflicts in the state" and for the taming 'citizen protest' (Healey, 2008, 381). There is growing support for the view that there is a need to develop oppositional forms of democratic practice (Kan Ng in Healey, 2008) through which social and environmental movements can contribute to the creation of urban futures.

In deliberative urban development processes, in the North and South, expert scientific knowledge has greater power and legitimacy. In the South African environmental and planning governance system in the post-apartheid period, social issues are marginalized and local knowledge devalued (Scott and Barnett, 2009). There is a dominance of science based policy-making (Eden, 1996; Fischer, 2003). Community knowledge in the form of narratives and experiential accounts is not officially acknowledged in deliberative decision-making forums as it is considered as being 'too subjective' and not considered as 'science'. Communities, by the same token, often do not trust official sources of knowledge. As a result, scientific expert knowledge is being increasingly challenged by 'citizen expertise' or 'civic science', which Potts (2004) claims is leading to the 'repositioning' of scientific knowledge in society (cf. O'Riordan, 1998; Kerr et al, 2007). In this way, the oppositional politics of civil society employs scientific discourse to frame the presentation of alternative societal visions (Scott and Barnett, 2009). 'Civic science' is defined here as knowledge production by civil society which claims to be valid and reliable scientific

knowledge. Civil society organisations employ scientific technologies to formalise and spatialise the often 'tacit knowledge' of residents.

An illustration of 'civic science' can be found in the community mapping undertaken by the South Durban Community Environmental Alliance (SDCEA), which is an environmental civil society organisation in Durban, South Africa¹. SDCEA has, since 1996, mobilised against industry, and local and national government because of the impact of air pollution from heavy industry (including two refineries) on resident communities. It has established itself as the largest and most influential environmental movement in South Africa. SDCEA has engaged in collective action to challenge industry and local government regarding the current problems experienced by communities and future development plans for South Durban (SDCEA, 2006). Realising that the experiential and narrative knowledge of respiratory illness and cancer among residents in South Durban was not accepted as valid and reliable knowledge in deliberative forums, SDCEA set about to create their own 'civic science' to represent and argue their position.

As part of this strategy, SDCEA established a community GIS, which visually displays the spatial distribution of community complaints; point sources of air pollution; and pollution incidents, overlain over the topography of South Durban. Using the Memo function, the GIS is capable of capturing the narrative evidence, provided by residents, of the impacts of air pollution on health. Njoya Silas (20/9/2002; personal communication) who managed the GIS system in its initial stages recalled how a local resident lodging a complaint requested that he be able to log the narrative of his wife's respiratory problems as he felt he wanted this knowledge to become public and 'visible'. The

1 The South Durban Basin, with approximately 285,000 people, is the major industrial area of Durban (3.47 million inhabitants) where residential communities live immediately adjacent to heavy industries as a result of apartheid planning.

resident "felt relieved, he had been given a channel and his story had been captured".

These maps, which can be thought of as a form of 'counter mapping', are thus a form of spatial community knowledge which has proved to be a highly successful tool for the mobilization of communities; for use in advocacy and deliberative strategies; and for environmental education (Scott and Barnett, 2009). The maps were initially presented in 2002 at the World Summit for Sustainable Development (WSSD) in Johannesburg, at the NGO session on Corporate Accountability. Here, SDCEA used this 'counter mapping' strategy to 'name and shame' the industries producing the pollution. One of the challenges experienced is that the lack of funding has prevented the updating and expanding of the GIS software which limits the sustainability of the community mapping process.

'Civic science' is a form of knowledge production used by communities in the "struggle over facts and science" (Brown, 1997). Brown (1997) provides a very useful account of the ten stages that communities go through in the production of spatial community knowledge. Building on lay knowledge, environmental and social movements employ science, even if it is only "piecing together the extent of the problem and (organizing) it coherently" to create knowledge about the impacts of capitalism on nature and human well-being (Brown, 1997, 140). Brown (1997) proposes that the process of creating 'science' is dialectically related to social movement mobilization.

There is an increasing emphasis on the 'civil legitimacy' of scientific research and 'socially acceptable science' for democratic environmental governance (Hajer, 1995). Participatory spatial knowledge production by communities can be classified as a form of knowledge which incorporates many voices (Ravetz, 2004). Participatory spatial knowledge production therefore contributes to the democratisation of knowledge production in urban decision-making processes and hence to a more inclusive and resilient city.

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