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Digital and spatial knowledge management in urban governance: Emerging issues in India, Brazil, South Africa, and Peru

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ABSTRACT

The main question concerns the ways in which knowledge management configurations (KM) within urban governance are being transformed through digitization and spatializing information (GIS). This question fits into broader discussions on how knowledge construction, circulation and utilization can improve competences in local government (efficiency and effectiveness), make urban planning more knowledge-based, and provide greater recognition of citizens' knowledge (accountability). Local governments need such instruments in dealing with increasing complexity and uncertainty in urban development.

We examine how uneven patterns of technological change in using ICT and GIS are transforming current local government work processes in terms of efficiency and effectiveness in their outcomes, utilizing empirical data from extended case studies in six medium-sized cities in India, South Africa, Brazil, and Peru, participating in the Chance2Sustain research network. Knowledge management in cities is configured through several dimensions: 1) discourses for digitizing KM in local urban development; 2) actor networks producing socio-spatial knowledge; 3) embedding KM in decision-making processes (power struggles, exclusion); and 4) influences of KM on work practices and interfaces with citizens.

The case study results show that 1) KM discourses concerned four issues: strategic urban planning and integrated land use planning; determining geographic boundaries in urban development discourses; streamlining work processes of local governments, and mapping poverty and needs assessments; 2) initiatives mainly link government with the private sector at various scale levels; 3) codified and technical knowledge remains dominant in discussions on urban development; and 4) effects of KM are uneven, but improve work process efficiency, although the interface with citizens remains limited, focusing on middle-class relations to the exclusion of the poor.

Introduction

In recent discussions on urban development, the role of knowledge construction, circulation and utilization are given increasing importance (e.g. McFarlane, 2011; McCann & Ward, 2011; Campbell, 2012). Several debates deal with this issue, in a fragmented manner and with varying emphases. Theoretical debates are dominated by discussions in the global North, which leaves wide gaps for understanding how cities in emerging economies deal with knowledge management. As future urbanization is going to be concentrated in the global South, it is essential to shift attention to changing knowledge management in cities there (Robinson, 2006). Two processes are transforming knowledge management currently: expansion of digitization and communication technology (ICT) and the spatialization of information worldwide in technical GIS systems (administrative databases, real-time monitoring with GPS) and interfaces with citizens through open-access platforms (e.g. Google Earth). (Georgiadou & Stoter, 2010).

In this article we raise the question of how digitization and spatialization of knowledge management (KM) is transforming urban governance in six medium-size cities in India, Brazil, South Africa and Peru. This question fits into broader discussions on how knowledge construction, circulation and utilization can improve competences in local government (efficiency and effective government processes),

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and provide a better recognition of the rights and entitlements of citizens, (accountability) (cf. McCall & Dunn, 2012; McCall, Martinez, Verplanke, 2014). Local governments need such instruments in dealing with the increasing complexity of their mandates, addressing social inequalities and economic growth, in a context of increasing environmental and economic uncertainty. Therefore, the major debates within which our questions fit are discussed shortly here.

The first debate concerns how discourses on urban development and policy mobility develop. Such discourses have three main themes; 1) *changing mandates for urban local authorities*, particularly those stimulating local growth policies and 'visioning' city development in line with international expectations, 2) how to promote cities providing attractive lifestyles and facilities, and therefore how to *deal with inequalities and differing levels of citizenship in cities*, and 3) the ways in which knowledge travels in *policy mobility,* focusing on the potential of the internet and other electronic means to stimulate such mobility globally. In this debate, dominated by discussions on global city networks, the substantive focus is on economic growth and development, and how to provide facilities for a middle-class lifestyle (Brenner, 2004; Kennedy et al. 2011; McCann & Ward, 2011). Although the necessity for governments to deal with social inequalities is recognized, discourses about slums are usually couched in quite negative terms – apocalyptic descriptions of inequalities and policies focusing on 'slum-free cities' (Davis, 2006). There is little recognition of how people in non-standard settlement areas contribute to building cities economically or incrementally building neighborhood habitats.[3]

International city networks are seen as important means for knowledge/policy mobility, and recent discussions suggest that hybrid arrangements are becoming more prevalent, in which various knowledge sources are incorporated through networks of professionals across sectors, organizational levels and geographic locations (McCann & Ward, 2011).

Several gaps remain in this debate. Emphasizing urban development discourses on growth ignores the need to include discussions on affordable and livable city habitats for all urban residents; in the global South extensive informality in settlements in cities make this a major requirement. In terms of knowledge networks and policy mobility, there is an implicit assumption of universal (individual) and easy access to digitized databases and Internet sources, as well as open sharing and utilization of information and knowledge. Given the politics of policy-making and the power that access to information and knowledge provides, that assumption is an unlikely one (Baud and De Wit, 2008; Kennedy. et al., 2011).

The second debate concerns the networks involved in managing and planning cities, and the knowledge produced, circulated and utilized in that context (transparency, accountability). A major concern in this debate is which actors are involved in city policy-making, and what powers they have to express their priorities. On the one hand the discussion focuses on the power of coalitions between local authorities and the private sector (regime theory); on the other hand, the discussion focuses on the relation between local state and civil society (participation and 'spaces' approaches, citizenship discussions) (e.g. Cornwall & Gaventa, 2001; Gaventa, 2006). Recent discussion focus on the hybrid arrangements found (e.g. Jaffe, 2013; Roy, 2009). In this discussion the main question is what power civil society organizations have to put across their visions of urban development and how the lived experiences of marginalized social groups is included. The deliberative processes by which such power is built are well-known, particularly for South America where they developed originally, but also in other regions (Fung & Wright, 2003; Gurza Lavalle & Buenos, 2011; Scott & Barnett, 2009). We draw out a few relevant issues from this large debate for this article.

Deliberative processes and the political contexts in which they take place have provided platforms for developing stronger forms of citizenship among marginalized groups (Heller, 2009; Heller and Evans, 2010). 'Negotiated spaces' provide for possibilities for ongoing discussions between urban residents and government, although the channels and degrees of power remain quite variable and differ for the middle class and less recognized urban citizens (cf. Baud & Nainan, 2008; Chatterjee, 2004; Jaffe, Klaufus, & Colombijn , 2012; Shatkin, 2007). Such spaces provide platforms for producing citizen-based contextual-embedded knowledge (civic science) and bringing such knowledge into the political discussions within networks, as part of counter-mapping processes (Scott and Barnett 2009; van Ewijk and Baud 2009).

The third debate concerns the ways that knowledge is built, exchanged, and contested in urban knowledge management systems (cf. Harvey & Tulloch, 2006; Kahila and Kyttä 2009; Lin 2014). There are two major strands to this discussion currently; one on producing spatialized knowledge and the other on opportunities provided by digitization and digital databases, ICT-based systems. The former is interesting because it discusses how the construction of maps incorporates specific views of the issues shown (Monmonnier, 1991; Wood, 2012) and how constructing maps is an iterative process reflecting ongoing thinking (Kitchin, Gleeson, & Dodge, 2013). Spatializing information adds to our knowledge of concentrations of inequalities in urban areas and other pressing urban issues (crime, health or environmental vulnerability) supporting local government applications towards e-governance (Baud et al. 2008; Martinez, 2009; Pfeffer, Deurloo, & Veldhuizen, 2012; Scott & Barnett, 2009). Digitization provides governments with possibilities to streamline their work processes, reduce corruption practices and make their work more effective (e.g. effective tax collection). Feedback systems potentially enable governments to be more transparent and accountable towards citizens, by providing information and including citizen feedback in interactive monitoring processes (e.g. Martinez, Pfeffer, & van Dijk, 2011; van Teeffelen and Baud 2011). The major questions raised within this debate are whether the digitization and spatialization of information and knowledge empower citizens (transparency and accountability) or whether such tools increase levels of surveillance (both reducing corruption opportunities and political freedom) (Prins, Broeders, & Griffioen, 2012). In the North the increasing surveillance of citizens is considered a strongly negative phenomenon; in the South the weakness of the state might be reduced by more effective monitoring systems that reduce corruption and strengthen state competencies.

Research approach and methodology: configuring knowledge management in urban governance

We now return to the main question of this article, which concerns how knowledge management (KM) within urban governance is becoming transformed through digitization (the use of ICT), spatialized through the use of geographic information systems (GIS). This article focuses specifically on knowledge management in which local governments play a central role, both within government itself (G2G) as well as in the interface with citizens (G2C, C2G).[4]

[3] The alternative discussion on informality in cities focuses on lived experiences and arrangements not recognized by governments, and provides much-needed knowledge on emerging arrangements in practice (Dupont 2011; Rodgers, Beall, & Kanbur, 2011).

[4] A number of abbreviations are used in this paper; MIS = management information system, G2C = government to citizen, C2G = citizen to government, G2G = government to government (departments or scale levels), C2C = citizen to citizen (also including social media, volunteer geographic information), LG = local government, and PPP = public private partnership.