Towards a pragmatic research agenda for the PSS domain

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ABSTRACT

The tenuous link between knowledge and processes of urban strategy-making leads to sub-optimal plans, time delays and financial costs. The planning professional is ill-equipped to deal with fundamental urban challenges that threaten the quality and competiveness of cities and regions. For decades, Planning Support Systems (PSS) are being developed to address this challenge. The PSS research domain grew accordingly. Only recently did researchers start to focus more directly on how PSS are used (or not used) by planning practitioners. Understanding the real-life application of PSS is fundamental for addressing the challenges of knowledge use. This commentary argues that we need to go beyond the current simplistic understanding of several key concepts. It identifies academic pathways that further mature the conceptualization of PSS, of planning processes, of the participants and the relationship between them. The argument builds on ten years of full-time research in this domain and combines this with recent insights from other academic fields, such as group performance and behavior psychology. This provides us pathways towards a more realistic evaluation of how knowledge can regain its important role in urban planning.

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1. Introduction

Urban planning processes—especially their more strategic initial phases—have seen rapid and fundamental changes in the past decades. Complex and continuously shifting networks have replaced the stable hierarchical processes marked by clear relations between financial power, problems and solutions. These networks include many actors with widely varying goals, interests, power and professional languages. Planning research and practice pays much attention to how this communicative turn is organized (Allmendinger and Tewdwr-Jones, 2002; Healey, 1996). Strong differences in educational and professional backgrounds, combined with institutional contexts and views of the urban system, resulted in a highly fragmented knowledge base. Each actor brings their unique—and often highly specialized and fragmented—focus and language to the table. Since planning is about linking knowledge to actions in the public domain (Friedmann, 1987), it is both important and challenging to combine and transform these diverse contributions into a meaningful and shared understanding of the complex relations between urban interventions, political goals and their effects on a wide range of important indicators (i.e. social, economic, spatial and environmental).

Next to this process complexity, we have become increasingly aware of the complex relations between the components of the urban system itself. The causes of many unsustainable urban trends are largely unknown, uncertain and complex. But also the effectiveness of interventions increasingly depends on a myriad of reciprocal relations between numerous variables.

Because of this double complexity of process and object, it is crucial to structure the interaction between planning actors as well as to ensure that relevant knowledge about the urban system is properly included, contested, processed and shared

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among them. A narrow *process* focus runs the risk of being superficial and leading to unrealistic, ineffective or even counterproductive strategies for urban interventions (i.e. 'negotiated nonsense' (Van de Riet, 2003)). A narrow *object* focus cannot yield the necessary agreements on strategies in the highly fragmented governance context. The financial implications and potential time delays are staggering. Hidden conflicts or superficial and naïve strategies have often resulted in dire legal and financial problems. Previous research identified these knowledge gaps and their consequences on socio-economic costs and benefits (Beukers et al., 2011), mobility impacts (Te Brömmelstroet and Bertolini, 2011), and environmental impacts and constraints (Fischer, 2003).

Planning Support Systems (PSS) aim to structure the exchange of different types of knowledge in planning processes (Klosterman, 2001). Seeing strategic urban problems as 'wicked' (Rittel and Webber, 1984), without a one optimal solution, and increasingly political and contested, they attempt to improve the strategic capacity and the ability of planning actors to go through a shared 'enlightenment' process and create 'negotiated knowledge' (Amara et al., 2004; Gudmundsson, 2011). In contrast to computer models, PSS have the explicit aim to support and improve specific steps of the planning process (Geertman and Stillwell, 2003b). To do so, explicit and codified information (often provided by these computer models) is systematically fed and shared into planning processes. Many PSS offer a visually attractive platform that structures the mutual exchange of knowledge among many actors. Typically organized in a setting of one or more workshops, a group of planning actors comes together to learn about the planning issue at hand and to develop shared ideas.

Although planners 'can obviously use all the support they can get' (Couclelis, 2005), and large private and public funds are used to further develop the suite of tools, PSS use in planning practice still lags far behind expectations (Te Brömmelstroet, 2012; Vonk, 2006). There seems to be a persistent mismatch between characteristics of the PSS and those of strategy-making processes. Planners see PSS as overly detailed and precise, mathematically complex, rigid, slow, unintelligible and not transparent enough to be compatible with the unpredictable and dynamic nature of strategy-making processes (Te Brömmelstroet, 2010a; Vonk et al., 2005). The recent literature proposes three main mechanisms for improving this perceived mismatch: simplifying underlying models, increasing transparency, and increasing flexibility (Brail, 2008; Geertman et al., 2013).

2. State of the debate

Most PSS studies are case-based reports of pilot applications, authored by the PSS developers themselves (Brail and Klosterman, 2001; mostly in edited volumes such as: Brail, 2008; Geertman and Stillwell, 2003a, 2009; Geertman et al., 2013). While they do offer valuable insights into the technical details and context specifics, they fail to develop a generalizable body of knowledge on the effectiveness of the mechanisms for bridging the implementation gap (Te Brömmelstroet, 2013). The limited studies that did aim to provide an overview were mainly geared towards identifying implementation problems and hardly explored potential solutions (Vonk, 2006).

Recently, several researchers have been testing claims about the added value of PSS for strategy-making and with some significant progress (see Goodspeed, 2016, 2013; Pelzer, 2015). In my own research I first focused on testing the effectiveness of participative design mechanisms. Through three experiential cases a structured dialogue between PSS developers and intended users was developed, tested and refined (Te Brömmelstroet, 2010b). A follow-up study was designed to test hypotheses about PSS usability and their expected added value for multi-actor strategy-making. One project focused on context-rich observations in workshops (Pelzer et al., 2014, 2015; Pelzer and Geertman, 2013). In close relation, a control-rich experimental research environment was setup to test the added value of PSS under controlled conditions. Urban planning students, working in small roleplaying groups, were asked to design urban strategies, with the level of PSS support varying between the groups. We found only limited positive effects on the quality of the group process and the outcome (Te Brömmelstroet, 2015, 2016). Also, Goodspeed (2013, 2016) followed a context-rich approach to develop valuable insights into how PSS knowledge and technologies influenced group learning.

An overview of the seminal academic publications (most notably edited books such as: Harris, 1989; Geertman and Stillwell, 2003a; Brail, 2008; Geertman et al., 2013) reveals that there has been a shift away from the pure technical considerations of PSS design towards a focus on the impacts that PSS might have on planning practices. Increasingly, studies focus on possible reasons for a lack of such impacts to actually occur. The study of Vonk (2006) explored these 'bottlenecks' and propelled the academic PSS community into mapping the 'implementation gap'. The most recent advances go one step further and start to re-examine the key premise: Even when PSS are used, do they actually have a significant impact on the quality of planning? These studies translate the conceptual work of scholars like Couclelis (2005) and Innes (1998) into specific PSS test cases. Examples of this are Pelzer's field observations and the controlled experiments conducted by our own research team.

This commentary identifies four academic pathways to further mature the PSS debate. Fig. 1 presents an epistemic map that builds on a large body of academic research on the general performance of groups (Nijstad, 2009). It describes group processes such as urban strategy-making as an exchange among individuals with a shared purpose. It follows Healey's collaborative perspective (Healey, 1997, 2007) and indirectly builds on the wider conceptual work on planning as a social process (e.g. Forester, 1999; Friedmann, 1987; Innes and Gruber, 2005). There are those who are 'in' and those who are 'out' of the group. The output that the group produces is used to communicate with those outside. The group itself essentially engages in a process of exchange of knowledge and skills, which leads to learning at the individual level and the creation