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## Making urban design a public participatory goal: toward evidence-based urbanism

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*Original Citation:*

*Availability:*

This version is available <http://hdl.handle.net/2318/1750476> since 2020-08-17T18:07:06Z

*Published version:*

DOI:10.1680/jurdp.16.00038

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Article in *Urban Design and Planning* · February 2017

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## **Making urban design a public participatory goal. Explorations toward evidence-based urbanism**

Mark Dyer, Trinityhaus, Trinity College Dublin, [MDYER@tcd.ie](mailto:MDYER@tcd.ie)

Filippo Corsini, Scuola Superiore Sant'Anna, Pisa, [f.corsini@sssup.it](mailto:f.corsini@sssup.it)

Chiara Certomà, Scuola Superiore Sant'Anna, Pisa, [c.certoma@sssup.it](mailto:c.certoma@sssup.it) (corresponding author)

Published on “**Proceedings of the Institution of Civil Engineers - Urban Design and Planning**”, published online March 6, 2017, ISSN 1755-0793 | E-ISSN 1755-0807

*Post-refereeing version*

Printed version available at <http://www.icevirtuallibrary.com/doi/pdf/10.1680/jurdp.16.00038>

### **Abstract**

The paper builds upon the evidence of an increasing consensus toward citizens' engagement practices in shaping both the form and functioning of the city; and upon the apparent distance between the setting up of governance structures adequate for participatory processes to be performed, and the daily urban planning and design. Against this context, the research investigates whether public participation processes are adequately and appropriately addressed in urban planning and design practices. A bibliometric analysis on participatory processes' connection with urban studies (including urban governance, planning, design and development) is described, together with an in-deep evaluation of some works which makes it possible to appreciate the complexity of the topic. The bibliometric analysis reveals a significant divide between the traditional fields of social sciences, built environment disciplines and information technologies; and no common understanding or framework to translate aspirations for greater citizen participation into improved planning, design and construction of city infrastructures. Discussion and conclusions provide, thus, some guidelines for an ambitious research agenda to address these shortcomings based on a systems approach, able to integrate the processes and results from direct participatory processes into decision making for urban planning and design.

**Keywords:** participatory processes, bibliometric analysis, urban governance, urban planning, urban design

### **1. The need for cross fertilisation between urban studies and participatory processes**

It is nowadays clear in socio-spatial research that those who have the means and the legitimacy to produce the physical space inhabited both in terms of planning, design and development practices, are equally – still more subtly- endowed with the power to foster democracy, equality and participation or, conversely, to produce exclusive spaces where injustice and inequality are perpetuated (Harvey 1990; Soja 2000). The power to shape the form and functioning of the city has been for a long time almost exclusively hold by urban design professionals, exerting it under the guide of public administrations and in strict alliance with building companies. Nowadays the vastly documented complexification of the urban governance sphere (Sassen 2006), in response to a crisis of confidence in the ability of national states to create socially cohesive and green-oriented cities inhabited by public-spirited citizens (Coaffee and Healey, 2003; Garcia 2006; Jones and Evans 2006 and de Wilde et al 2015), required an increased attention toward truly participatory practices granting access for citizens to urban-related decision making processes. Cities confront today a host of challenges and opportunities, as witnessed by policy and state of the art reports emerging from regional and international governmental agencies during the last decade (UNICEF 2004, IEA 2008, EC 2011, EC 2011a, OECD 2016). The unparalleled attention being paid to cities is due to urban centers being at the nexus of unprecedented societal, environmental and technological changes. These dynamics are characterized by an exponential growth of connectivity (Neirotti et al 2014) fostered by

increasing levels of digitalization (Caves and Walshok 1999; Mahizhnan 1999) which has been accompanied by a drive towards greater social and environmental concerns.

In this context urban designers have shown a greater interest in engaging with citizens and communities toward the creation of people-friendly cities through active listening practices and access points for urban dwellers to share their own vision of the city future (Crewe 2001; Lessard 2007; Dubbeling et al 2009; Geld 2010; Mallan and Greenaway 2011; Warner and Rukus 2014).

Nevertheless, the implementation of participatory processes in urban studies is recognized to raise a basic issue of whether participatory processes, despite appearing to be a positive response to increased democratic aspirations by challenging the top-down processes of the centralized city government ruled by functional and technical rationalities, are actually leading toward a real empowerment of people in real context. Doubts exist about whether citizen participation processes *via* appropriate governance structures are actually feeding real urban planning and design when coming to the decision-making step. Even though participatory processes appear to cut across traditional professional boundaries and academic disciplines from social sciences to the built environment; however it raises the question about whether there is sufficient cross fertilization of knowledge and ideas between these mature fields of work to support direct participatory design.

The paper addresses the key question of whether public participation, in shaping both the form and functioning of city life, is adequately (in term of quantity) and appropriately (in term of quality) addressed in urban design practices (as documented by scientific and grey literature), or is it merely a buzzword whose actual potentiality are only partially explored only in urban governance and development studies. Furthermore, the research investigates to what degree public participation translates into participatory urban design or it turns citizen engagement into a mere information gathering exercise.

To address this question, a bibliometric survey was carried out of published academic literature on urban studies and participatory practices converge and offer new opportunities. This methodology is useful to integrate data from different, yet complementary research fields (urban governance and development, urban design, urban planning, citizen participation, and participatory design) highlighting gaps in knowledge and understanding about the implementation of direct participatory urban design in improve the livelihood and liveability of cities. Indeed, bibliometric mapping allows representing how “disciplines, fields, specialties, and individual papers or authors are related to one another as shown by their physical proximity and relative locations” (Small, 1999 p.799). The research was then completed using information gathered with an in depth analysis of scientific and grey literature to interpret the results of the bibliometric maps.

Emerging evidences and results can be profitably adopted by urban studies scholars and practitioners – both professionals and public administrations - in order to gain a stronger sense of the goals and possibility for their work to be effective in fostering democratisation of city design and management.

## **2. A bibliometric analysis of connections and disconnections in urban studies and participation**

The objective of the bibliometric mapping is to produce a visual representation of the relationships among several items of interest (Heersmink et al., 2011) by collecting data and mapping the results on the scientific production in English, the most widespread language among scientists worldwide. The bibliometric survey was developed in February 2016. In order to build a representative dataset of literature a straightforward research protocol was adopted. Firstly, the ISI Web of Knowledge academic citation indexing was selected as repository for gathering the references. This is widely acknowledged as being reliable in providing bibliographic contents and tools to analyse research information (Aguillo, 2011).

Secondly, selection criterion for the publications to be considered in the mapping process was identified; this includes scientific literature, i.e. manuscripts published in scientific journals and presented in conferences, with the exclusion of the grey literature (e.g. patents, technical reports, working papers, etc.). Only the scientific literature was included because, as suggested by Light and Pillemer 1986, the requirements of international peer-reviewed journals and conferences improve the quality of the analysis. With the assistance of the ISI Web of Knowledge search service publications were filtered by the following keywords ‘urban planning’ OR ‘urban development’ OR ‘urban design’ OR ‘urban governance’; this means



sustainable development occur pretty much in the centre of the cluster with equivalent relevance in all of the three areas of governance, planning and development. Thus an in-depth reading of relevant articles revealing a common concern for public participation and sustainable development was expected.

In comparison, the clusters for urban design (UDG1) and urbanization (UDG2) reveal a less coherent collection of terms pointing to different sets of priorities. In the case of urban design (UDG1), most readily detected terms are architecture, physical activity, physical environment, accessibility and walking. These terms are located at a distance from the terms urban governance and public participation, suggesting that the two sets are largely unrelated in published literature and academic research. Likewise, in urbanization cluster (UDG2), most frequently detected terms relate to green space, ecology, pollution, biodiversity, landscape and water sensitivity – particularly with regard to the negative impacts of development. Many of the terms including green space and ecology are located far away from urban governance and public participation in the term map, again indicating the two sets of terms are largely unrelated in published literature and academic research. Such an apparent limited affinity between urban design and public participation raises questions about the lack of understanding and experience on combining direct democracy with participatory design.

Finally, the composite cluster (UDG4), which is related to vulnerability and resilience issues, represent an underdeveloped area of research.

In order to further investigate the connections between urban studies sub-fields, a co-citations analysis has been performed. Co-citation can be defined as the frequency with which two papers are cited together by another paper (Small, 1973). Results for the 30 most highly cited publications are visualised in Fig. 2.

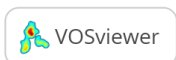
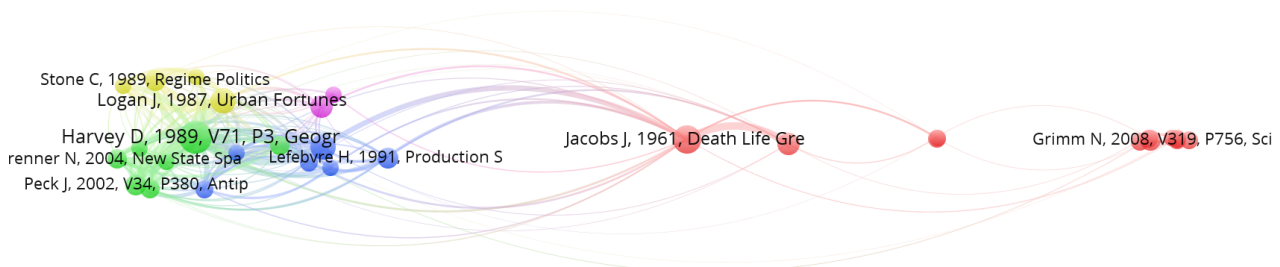


Fig. 2. Primary co-citation map for manuscripts in the field of urban studies

The map shows two clusters focused around the distinct research areas of urban governance and urban design. For highly cited works, the tenuous lines between the different topic areas was provided by a small number of papers on urban design in particular the seminal work by Jacobs (1961) entitled *Death and Life of the Great American City*, which criticises the modernist approach in planning and argues for the need to look inside the real mechanisms allowing cities to function. Controversially at the time, the publication claimed that modern city planning and urban renewal was largely a pseudo-science that did not respect the needs of city-dwellers or take the trouble to understand if urban design decisions really worked in practice.

It led to an angry rebuttal from leading members of the American architectural and city planning profession but nevertheless became very popular textbook and introduced terms such as ‘eyes on the street’. Despite tenous the link via Jacobs’ work is nevertheless crucial for the analysis as it show how governance and design domains can build a more solid link today by recalling Jacobs’ intuition and focusing on citizens’ agency in the city.

## 2.2 Visual representation of links between urban studies and public participation

As already suggested, previous maps (figs 1 and 2) suggest a tenuous link in literature between the field of urban design, and the field of planning and governance - particularly when referring to public participation. With the aim of digging deep into connections and disconnection between the main clusters (i.e. UDG1, UDG2, UDG3 in fig. 1) a secondary term map was produced (fig.3). This is based on a sub set of literature amounting to 185 papers including ‘public participation’ or ‘citizen participation’ in the abstract or title.

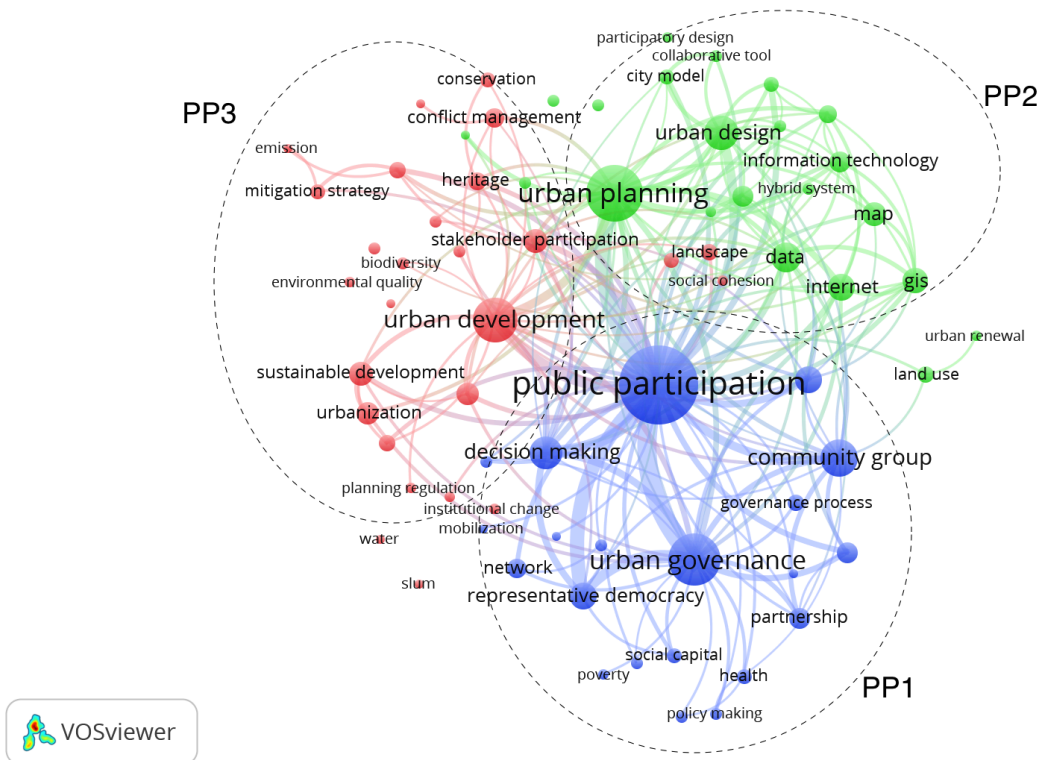


Fig. 3. Secondary term map on public participation in urban governance, planning and design.

The largest cluster, marked as (PP1), is a composite cluster comprising public participation and urban governance; it refers to governance process, representative democracy, social capital, community groups, decision-making, policymaking, partnerships and health. The second cluster (PP2) is a composite of urban design and urban planning; and it comprises terms as information technology, data, internet, city model, data, map, participatory design, urban renewal and land use. This set of terms is in marked contrast to the results for the primary term map (Fig.1), which displayed the terms architecture, physical environment, accessibility and walking for the cluster UDG1. Lastly, the third cluster (PP3) characterised by urban development topic displays the terms sustainable development, urbanization, stakeholder participation, heritage, conservation, emissions, mitigation strategy, and conflict management. Co-citation map helps at further exploring the relationships between urban studies and participatory processes (fig. 4).

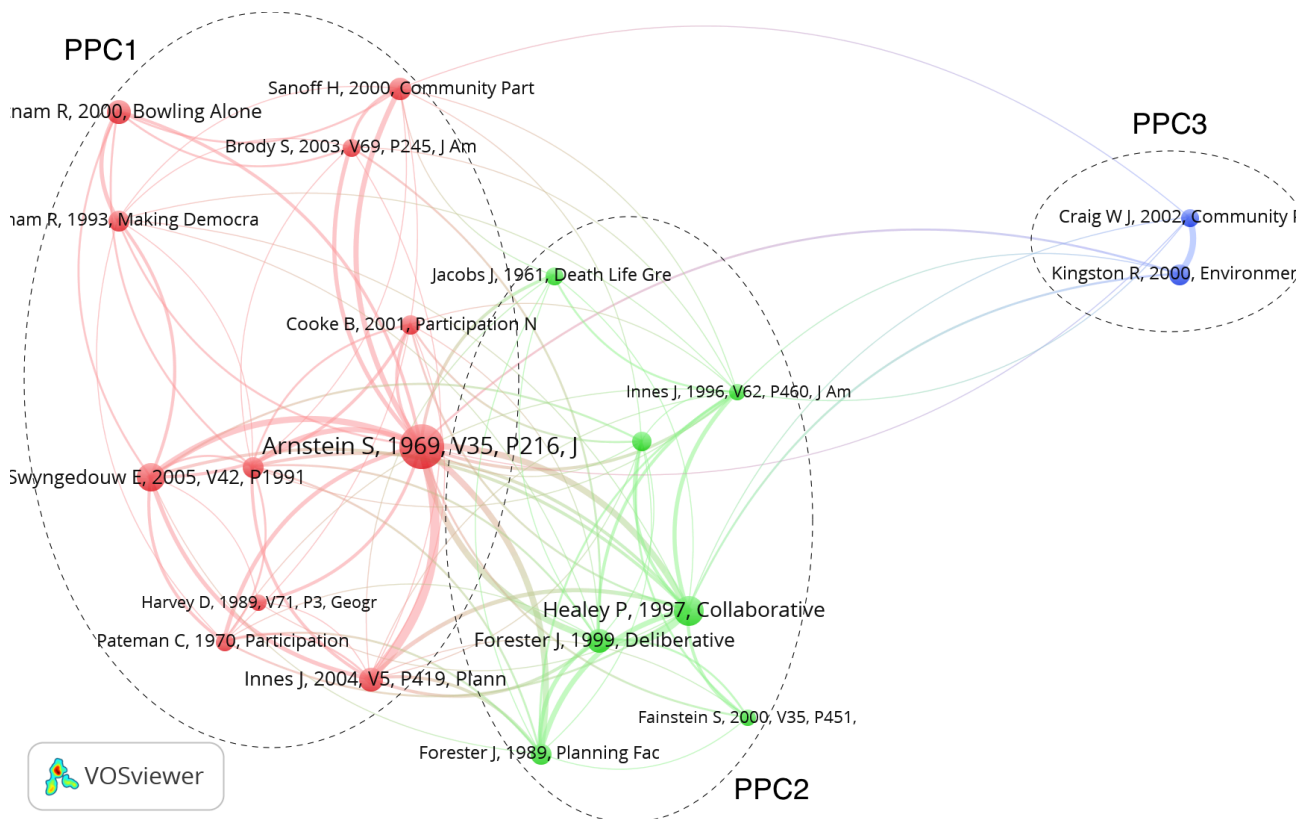


Fig. 4. Co-citation map for a sub set of manuscripts on urban studies and participation processes

It can be seen that the majority of highly cited works have been focus on urban governance - as shown from cluster (PPC1) - with smaller clusters of highly cited works for researchers in the field of urban design (PPC2) and urban development (PPC3).

Moreover even though practitioners and researchers have advocated combining public participation with design processes to facilitated citizen engagement in urban design and planning, the primary term map displayed in Fig 1, shows the term urban design lacking in similarity with public participation and urban governance (Crewe 2001, Mallan and Greenaway 2011, Nisha and Nelson 2012, Picken 2013, Eshuis and Edwards 2015). Instead, the term design is in closer proximity to the terms architecture, energy, accessibility and physical environment.

As a matter of fact, when mapping the occurrence of design qualified by the terms ‘participatory design’, ‘collaboratory design’, ‘universal design’, ‘inclusive design’, ‘design thinking’ and ‘design process’ on the base of 91 papers collection, the following secondary map emerge (fig. 5).



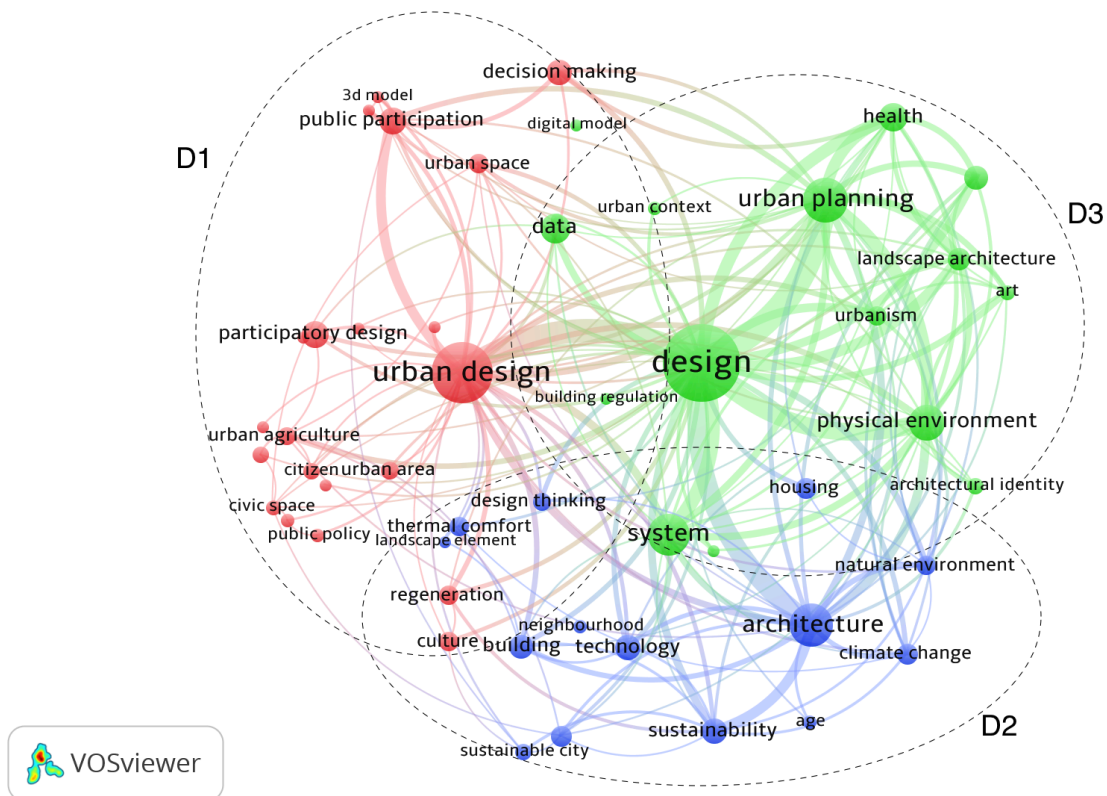


Fig. 5. Secondary term map of manuscripts on participatory design.

Here participatory design and public participation are associated with urban design (D1) rather than the allied discipline of architecture (D2), which is closer in proximity to the terms building technology, climate, sustainability and housing. Even so a weak similarity is apparent between the terms urban design and public participation. In addition, the secondary term map displays a composite cluster for design (D3) comprising physical environment, landscape architecture, and urban planning, where the term health is shown remote from urban design and architecture.

### 3. A qualitative analysis of term maps results

In order to explore the qualitative aspects of the relationship between urban studies and participatory processes, it is necessary to step into the planning theory debate which has been characterised in the past decades by the denounce of the consequences of widespread neoliberal governmentality (Lefebvre 1974, Sennett 1970; Barry, Osborne & Rose; Lemke 2000). These include the removal from public view of a number of challenging issues, such as the definition of shared rules for space planning, the complex management of the commons and non-commodified services, the difficult maintenance of an adequate quality of life in the urban context. At the stake is thus not only the physical transformation of urban space, but also the very possibility and capability for city dwellers' to collectively and democratically commit with urban space shaping (Merrifield 1996, Amin and Thrift 2002), by tackling with issues of ownership, distribution and use (Castells 1983, Harvey 1990, Soja 1989). It is evident that the very dispossession of urban space from the citizens' decision in the neoliberal city, rather than simply cutting out the public by extending the market model to the spatial planning sphere - fuelled by financial deregulation and the cutbacks in urban expenditures require cities to find new sources of revenue (Hackworth 2000) - strongly contributed to the weakening and complication of the notion of public participation. As a consequence, while the city space - particularly the public space - underwent processes of privatisation (with subsequent wallification, mallification, commodification, sanitisation and surveillance) (Sorkin, 1992; Sennett, 1992, Harvey, 1989), at the same time it also attracted the general interest of scholars, practitioners and urban dwellers as the new object of socio-environmental claims. How far this interest - mainly detected by cultural geographer and urban sociologists - translated into urban studies and, more was, consequently,

able to impact on the practice of everyday creation of the material form of the city is in question here. The last 30 years have witnessed a burgeoning interest in participatory planning that attempts to incorporate the voices of all affected stakeholders into decision-making (Forester, 1999; Healey, 1997; Reardon, 1999) by relying on a large spam of participatory methods (Ledwith, Springett, 2010) facilitated or delivered by participation-experts or practitioners.

Yet the bibliometric analysis of over 14,883 scientific articles identified only 127 single country case studies assessing the effectiveness of direct participatory practices on urban space shaping. Amongst the others, Warner and Rukus (2014) provided practical advice on conflicting priorities of citizens and other vested interest by reporting on a survey for the *American Planning Association* aimed at exploring planners' attitudes toward planning communities to meet the needs of families with young children. The results confirm the recommendations by UNICEF (2004) who argue that attention to physical design and participation are the two most important features of family-friendly cities; and that actual planning efforts and public participation make the real difference aside from family-friendly branding the city. Again, Eshuis and Edwards (2015) show that there are no opportunities for citizens to participate neither in the development of the vision of the city itself, and this is a prime example of neoliberalism influencing urban governance and sidelining participatory processes towards undemocratic corporate organisations. In a similar vein, Picken (2013) notes that much of the literature concerned with engaging the public in urban design is focused on ways of widening access to the planning process (Al-Kodmany, 1999; Clavel, 1989; Collinge 2005; Erickson, 2000; Kaplan and Kaplan, 1989). However, as proposed, the success of these interventions always depends on an already-interested public. Despite the noble objectives of participatory planning, interventions run the risk of misreading the public, who, as proposed by Picken (2013), is often 'rationally ignorant' or more kindly, 'rationally indifferent' to what urban planners and designers do; so that appeals to citizenry seem increasingly less likely to meet with success (Bridges, 1997; Fahrmeir, 2007; Lister, 1997; Turner, 1990). Public indifference can be partly due to the disappointment of participatory processes failure, which often did not meet the expectation in terms of inclusiveness, plurality and impacts on re-distribution of benefits and costs, social cohesion or justice (Martinez, Rosende, 2011).

As a matter of fact, citizens' engagement in planning, design (definition of priorities, data collection, data analysis/discussion/elaboration, data sharing, data disclosure) and policy-making (priority setting, framing policies, implementation measures, assessment) (Reason, Bradbury, 2001) is an extremely complex task. An in-deep evaluation of some manuscripts considered in the term maps makes it possible to appreciate this complexity. Even though referred cases span the globe, the majority of them detail processes used to facilitate direct participation in shaping the form and functioning of the city in Denmark and The Netherlands. For instance, de Wilde et al (2010) investigated how capital of community groups (in terms of bonding and bridging) influenced the success of the initiatives and how these benefit from active stimulation by local institutions. The researchers agree with Lowndes and Wilson (2001) that 'institutional design in local governance has a critical role to play in facilitating the creation and mobilization of social capital among traditionally excluded section of the citizenry' (p.1964). The importance of local governance structures appears again in the study by Denters and Klok (2010) which provided a valuable insight on enabling residents to participate in the redevelopment of their neighbourhood. It describes the character of the so-called 'process architecture' which envisages the inclusion of multiple participatory arenas by showing how a broad initial consensus on the desirability of citizen participation was translated into a set of (largely informal) rules backed up by a firm and enduring commitment of the various parties to the participatory process. Particularly this demonstrate how Fiorina (1999) concerns about limited and selective participation (lack of representativeness of the views expressed by the activists) is not justified when municipality heavily invest in the participatory infrastructure and communication. The 'process architecture' envisaged three panels of experts formed to discuss the social, economic, and physical dimensions of redevelopment project; and it determines the rules for eligibility to participate in the various arenas. Specifically position rules comprised 'participants', 'process facilitators' and 'town planners'; while, 'boundary rules' specified eligibility for these positions, such as people who lived in the neighbourhoods and people living in adjoining streets and neighbourhoods. A publicly appointed process facilitator ensured the outcomes truly represented the opinions of the participants. Lastly the town planner's main responsibility was to take the lead in drafting the provisional redevelopment plan with providing cues (in the form of series of photographs and accompanying short texts) for reflection and subsequent discussion

on a predetermined list of topics about the future of the neighbourhood. Participants to the process were then given the right to vote on the acceptability of the draft plan before it was to be submitted to the municipal council for final approval. In a similar vein, Mathers et al (2015) highlighted the importance for institutional support when assessing the capacity of community groups to manage large outdoor green urban spaces. Evidences from the case study suggest that without continuing local authority support, smaller community groups may find it difficult to adapt and may disappear due to lack of internal capacity and external support. To secure long-term community commitment there needs to be sustainability in the cross-sector partnership, and recognition by the local authority of the contribution communities make. As the move towards greater community responsibility continues, underpinned by limited resources, the role played by the public sector may change, potentially from one of implementer to one of facilitator. Geurtz and van de Wijdeven (2010), for instance, reported on shortcomings of participatory processes by showing how long-term projects place a heavy burden on all parties which can exceed their capability to reach the common goal, as residents need to assure significant and permanent commitment; professionals need to be prepared to change their perspective on the new developments; and politicians need to be prepared to relinquish some of their financial decision-making power. To the credit of Crewe (2001), Grey et al (2015) proposed a set of recommendations to increase designers' predisposition to work with citizens – the so called principles of *Universal Design*, referring to the need of creating opportunities for recording, publicizing and making public the work of designers performed through citizens' participation. Moore and Elliott (2016) made pertinent observations on similar challenges urban designers faced when participating in community led planning project for the redevelopment of West Prairie in the U.S. In this case, the desire to implement participatory design was noticeably complicated by the need to process mass quantities of data. In particular, the planners struggled to capture contextualised nature of qualitative data during the participatory design process involving hundreds of attendees. The case study showed that planners often begin with the desire to listen to citizens but than data collection often failed to capture the rich co-created knowledge elicited by traditional participatory design methods. Furthermore, traditionally few public participation discussions consider data collection or the ways that the activities planned during public participatory events elicit particular kinds of data. Instead, scholarship has focused on the need for evaluating public participation and the demand for empirical evidence that public participation improves policy decisions (Rowe, Hurlick-Jones, Walls, Poortinga, & Pidgeon, 2008). As Grabill (2003) reminds planning is “always situated, multimodal in its research methodologies, and deeply rhetorical” creating a contested discursive space that requires skilled communicators.

Interestingly though from the perspective of urban design the survey of published articles in public participation generally stopped short of showing how public engagement translated itself into the design of city infrastructures. As such, Moore and Elliott highlighted the fact that the listening rhetoric required an active and infrastructural approach that incorporates listening into the data collection process. This observation is not new with numerous technical communication scholars having expressed an interest in participatory design (Johnson, 1998; Mara, 2006; Spinuzzi, 2002, 2005). Yet the urban-planning process often involves conveying to and discussing with multiple publics complex, environment-altering information—as such, the process offers perhaps an obvious, if understudied, site for technical communicators to work in and research.

Given the pervasive nature of digital technology and the internet, particularly in social media and community-based online exchange platforms, it was a major surprise for the internet have minimal connection with urban governance, urban planning, urban design and urban development in the bibliometric survey. Worryingly the emerging field of Smart Cities with an emphasis on deployment of information technologies in urban environments does not figure to any significant degree in academic literature on urban governance, planning and design. When technology did appear in terms of urban governance it provides rudimentary modes of public participation (Laatikainen et al loc cit) or applies within an institutional environment (Lin loc cit). The limited number of studies generally involved the use of Geographical Information Systems (GIS) or Public Participation GIS (PPGIS). Particularly, these have been understood for providing information in a more structured way and with greater transparency of workflow (Lin 2013); however also critiques have been raised such as that the notion that GIS and spatial data usage will guarantee better decision-making process reflects a technocratic planning culture, being GIS developments to date serve more at a level of informing citizens rather than actively engaging them in

decision making processes, and public participation in urban planning is still very limited (Laatikainen et al 2015; Bugs 2010). Clearly digital technology is in its infancy with respect to urban governance and design. However, opportunities obviously exist to develop digital platforms to democratise urban governance further (whether through direct participatory democracy or representative democracy) and provide a bridge between top-down, and bottom-up democratic processes. Likewise, digital platforms provide additional means for collecting data to develop evidence based urban design and in particular, quantify urban design determinants to improve livelihood and liveability. Nevertheless, despite these major challenges there are an increasing number of initiatives and models being developed internationally to form a bridge between top-down and bottom-up planning (OECD 2001a, OECD 2001b, Murray et al 2009, Campbell 2011, EC-EIP 2013, Pissouris 2014, Campbell and Cowan 2015, Grey et al 2016). While these engagement platforms go a long way towards bringing people together, many stakeholders may still be overwhelmed by the complexity of the city and its associated social, environmental and economic processes.

In general, the bibliometric analysis has revealed a significant divide between the traditional fields of social sciences, built environment disciplines and information technologies. Each appear to be ploughing their own furrow with little overlap and no common understanding or framework to translate aspirations for greater citizen participation for urban governance into improved planning, design and construction of city infrastructures to promote greater livelihood and liveability. Consequently, it can be argued quite readily that an ambitious research agenda is needed to address these shortcomings.

#### **4. Drafting the framework for evidence-based urban studies**

When addressing the key question about whether public participation processes, aside from being explored in urban governance studies, are also adequately and appropriately adopted in the real life by urban designers and planners, the analysis revealed numerous concerns about the role played by neoliberalism in the governance of city that appear unresolved and poorly researched. This covered for example the outsourcing key services such as maintenance of open green spaces to community groups (Mathers et al loc cit) or wholesale redevelopment using private-public partnerships (Zhang et al 2016). Likewise, questions exist about the legitimacy of branding as a sales or marketing tool for regeneration of disadvantaged or semi-derelict neighbourhoods (Eshuis and Edwards 2015). On the positive side, arguments were made for the adoption of consumerism to engage public in urban governance by presenting urban design as a functional art form rather than a landscape production activity (Picken 2013). In each case, the legitimacy of the alternative approaches and in particular the adoption of neoliberalism in the practice of governing cities appears untested and doctrinaire.

Of concern, the literature review found a virtual absence of discussion about desired values and qualities for urban environments, while there are concerns that urban planning and design as disciplines and professions are not sufficient by themselves to effectively tackle the challenges facing cities. In the last few decades in response to the value and importance being placed on citizen involvement, public participation is being encouraged to deal with local issues. However, there is little agreement within the practitioners' community about how best to achieve this public participation in practice, despite attempts to discover a *lingua franca* (Erickson, 2000) that would service a more inclusive planning and design process supported. The aspirations have arguably not lived up to the intentions since the design process and design solutions has leant more towards the subjective preferences and potential of the designer, rather than the subjective use of its end users. A deeper understanding of the urban planning and design process and these two approaches becomes necessary to build any new knowledge to address existing issues and challenges.

As suggested by Nisha and Nelson (2014) daily practice of planning and design and scientific research occupy 'two very different worlds' where design is more intuition-led rather evidence-based compared to planning (Siddall and Dyer 2011, Grey et al 2015). In addition, Gehl's (2010) argument that urban design by itself is not sufficient to effectively tackle the challenge of regeneration calls for practitioners to break out of the grid of aesthetic neatness and genuinely engage with factors that constitute long-term socio-economic sustainability like inclusion and social justice by integrating public participation into urban decision making processes and in so doing use scientific information to engage in evidence based planning and design.

The present analysis suggests that a systems approach would need to integrate the processes and results from direct participatory processes into decision making for urban planning and design. This would need to assimilate the sociological, political and cultural perspective of urban governance with the tradition and culture of urban designers engaged in the daily construction of city infrastructures. By its very nature, such an endeavour would trigger subjective values for citizens and communities to be explicitly linked to the planning and design of physical infrastructures that are intrinsically part of city neighbourhoods. This alternative approach would require a change from traditional intuitive design towards an evidence based design method. For instance Nisha and Nelson (2012) propose a framework for *Evidence Based Design Methods* (EBDM) building upon the core principles of participation developed by the *International Association of Public Participation* (IAP2, 2007, 2012). The EBDM has a five-dimensional framework that supports three steps of the decision-making process perceived as scenarios of the desirable, probable and the possible. In the last decade, analogous evidenced based design have been proposed by several research practitioners based on principles of Universal Design (Grey et al 2015), principles of Conceive-Design-Implement-Operate (CDIO) for manufacturing design (Brodeur and Crawley 2009) and service design championed by the likes of IDEO and D.School (Semi et al 2009).

Having critically reviewed the bibliometric analysis of scientific literature on urban governance, planning and design, three research strands (notably urban planning, public participation, urban design) appear has warranting future investigation according to the suggestions included in Table 1.

	<b>Urban Governance</b>	<b>Public Participation</b>	<b>Urban Design</b>
<b>1</b>	Develop and trial frameworks (organisational structure and rules of engagement) to bridge top-down and bottom-up public engagement	Develop protocols and techniques to upscale traditional participatory design methods to be suitable for 100,s of participants	Develop a cross generational framework for urban planning and design
<b>2</b>	Identify desired values and qualities for urban environments that can be translated into guidelines for urban planning and design.	Develop of qualitative data analytical tools to capture and analysis mass quantities of contextual quality data	Integrate public participation with decision making for urban planning design
<b>3</b>	Determine the social and cultural determinants influencing successful public participation models	Develop GIS and PPGIS tools coupled with web 2.0 applications to aid traditional public participation	Develop methodology for co-creation of design briefs by citizens
<b>4</b>	Investigate legitimacy of branding and consumerism business models to increase public engagement in urban development projects	Develop hybrid financial models for long term multi-annual projects	Develop robust EBDM design processes based on users' needs
<b>5</b>	Develop indicators of social and institutional capacity for local governance comparable to indicators for environmental or economic performance	Record and publicize workable solutions that have come about through citizen participation	Audit state-of-the-art citizen participation neighbourhood projects using post occupancy evaluation methods

Table 1. Research roadmap for collaborative urbanism

Despite the research strands and individual topics might seem self-explanatory; however, there are certain key topics worth highlighting of critical importance. There are clear benefits in adopting evidence based design methods (EBDM) that allows the effects of physical determinants of city fabric on citizens and communities to be better understood and acted upon to create city neighbourhoods that reflect the shared common values and qualities. This requires concerted efforts to carry our post occupancy evaluations for urban design projects to create a body of knowledge for EBDM. However, evidence based design methods challenge the traditional intuitive approach towards design and places more emphasis on social inclusion and justice. Particularly, in relation to design, challenges are faced with the introduction of evidence-based

design culture and methodologies (Nisha and Nelson 2012; Crewe 2001) and need to understand and respond to different social and cultural conditions that aid or inhibit citizen participation. Moreover, citizen participation generates mass quantities of data and information that needs to be captured and analyzed without losing the context (Moore and Elliott 2016). This can involve using digital tools such as GIS to support traditional methods such as *charrettes* or improve efficiency by geo-coding data (Tanaka et al 2008; Lin 2013).

In terms of urban governance, there is an overwhelming need to bridge top-down and bottom-up participation process to address the aspirations for greater citizen engagement in urban governance, planning and design. Nevertheless, this brings about questions about the legitimacy of direct democracy as well as the creation of adequate structures that connect direct and participatory democracy with representative democracy (Geurtz and van de Wijdeven 2010), likewise the social capacity and motivation of communities to engage with direct democracy (Picken 2013; Eshuis and Edwards 2015; De Wilde et al 2015). This involves avoiding the temptation for designers to consider end users as tokenistic for the ultimate construction of artistic visions of their design world; and advancing in technology to up-scale traditional participatory design methods and to capture and analyse large quantities of qualitative data from public consultation without de-contextualising the information. As such, there is a practical need to disseminate lessons learnt from successful governance processes, and critically to understand the social and cultural determinants influencing those citizen participation models compared with processes used in other countries and jurisdictions. In turn, there is a need to identify the physical urban determinants along with social and cultural determinants that influence people's lives. Underlying all of these actions is the need to express clearly the shared common values and qualities for urban communities that act as a central guide for future decision making for urban planning and design of cities as places where people want to live and work.

## 5. Conclusions

On the base of the analysis the present paper suggests that one of the main obstacles facing increased public participation in urban design was shown to be the practicality of up scaling public participatory design methods from tens to hundreds of citizens and in particular the task of capturing large volumes of qualitative data without losing the context. Given the emergence of digital data as a major driving force for Big Data and Smart City initiatives, this shortcoming in qualitative data analysis would appear to be a major opportunity for innovative research. This would be especially so, if qualitative data analysis could be integrated into evidence based design decision making at the project brief stage and subsequent design stages.

Furthermore the bibliometric study revealed a range of other social and technical issues which have been drawn together in a common research roadmap to help support long term development of collaborative urbanism between city-dwellers and the urban design professions. For continece the roadmap has been sub-divided into the three themes of Urban Governance, Public Participation and Urban Design. There are overlaps between the three themes but each is shown to have five major challenges worthy of future research.

It is recognised however that there is likely to be a body of unpublished grey literature on the subject of participatory urban design that is not included in the bibliometric analysis, which by its very nature examined peer review scientific literature. Nevertheless a critical study of participatory urban design needs to be based on the firm foundations provided by objective scientific literature in order to scrutinise the scope and extent of such an important aspect of urban design.

At the same time, the authors are under no illusion that urban developments involve many stakeholders beyond the confines of urban design professionals. Certainly private developers play a key role through privately funded projects as well as politicians and government officials who can significantly influence design decisions about the public realm and public infrastructure. To change the status quo, there needs to be a greater scientific reporting of successful case studies that demonstrate the increase benefits gained by increasing public participation through drawing on the communal knowledge and intelligence rather than relying on professional expertise alone.

In drawing conclusions from the bibliometric study, it would appear that this research made little progress since the 1960s when Jane Jacobs (1961) published her seminal work on urban design and rather bravely challenged the then accepted wisdom about urban renewal. Her main bone of contention was the virtual absence of objective research into what made urban places successful which she termed pseudo-science and the lack of meaningful engagement with city-dwellers. As voiced by leading urban planner Jan Gehl (2010), urban designers seem to be trapped in a grid of aesthetic decision making. Likewise a similar commentary on evidenced-based design by Nisha and Nelson (2012) highlighted a clash of two cultures when looking for engagement between the world of objective scientific research and urban design that was more than often intuition led. At the same time, the bibliometric analysis has unquestionably revealed a disconnect between research into urban governance by the social sciences and actual design decision making by the urban planning and architectural professions.

The research presented herein raises serious doubts about whether there is sufficient cross fertilisation of knowledge and research between urban governance and urban design to support the increased democratic aspiration of city-dwellers for greater bottom up participation in urban design decision making to reflect their needs and priorities. As such, the study challenges the traditional hierarchy that has placed the power to shape the form and function of the city into the hands of the urban design professions that are more guided by intuition-led design than evidenced based design founded on objective scientific research. To avoid the long term risk of either being marginalised or being seen as opponents of increased democracy in urban design, these professions need to develop new tools and techniques to up-scale participatory design process and so become facilitators rather than remote experts in the eyes of city-dwellers

### Acknowledgments

This work was supported by the COST Action TU1204 “People friendly cities in a data rich world”.

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