WHOSE RIGHT TO THE SMART CITY?
Conference and Workshops
Plymouth University, UK
Sunday 10th- Monday 11th September 2017
https://whosesmartcity.net/conference/

The conference critically addresses the smart city agenda, and investigate the role of Information and Communication Technologies (ICTs) in marginalised communities at a range of global contexts. Taking the right to the city as a framework, the symposium investigates the question 'Whose right to the (Smart) City'? It addresses a gap in current knowledge exchange and seeks to redress the balance of focus from the existing highly urbanised, first-world contexts to concentrate on more marginalised urban communities and people-centred urban change in relation to ICTs.

The conference will examine how and why cities and people are shaping technologies to suit their needs and the role of civic inclusiveness in this process, and will draw on knowledge and perspectives from marginalised city contexts at a range of geographical levels including developing world countries.

We welcome contributions from academics, city governance, NGO's, community groups and industry experts.

The conference is part of the AHRC Network: Whose Right to the Smart City 2016-2018.
www.whosesmartcity.net

The conference is co-located with **Data Ache:** The 21st International Conference on the Digital Research in the Humanities and Arts (DRHA). The full programme is available here.

TOPICS
-   Smart citizenship
-   Urban governance and open data
-   ICTS and marginalization
-   Critical reflections on smart urbanism
-   Citizen methodologies for mapping and data visualisation
-   Case studies and best practice for citizen centred smart cities

Programme

Venue: Room 206/207, 1st Floor, Roland Levinsky Building, Plymouth University, PL4 8AA

Sunday 10th September 2017

13.00-14.00	Introduction
14:00-17.00	Open data workshop
18:30-19.30	Wine Reception (& Private View of DATA ACHE exhibition), Radiant Gallery
20.00	Conference Dinner

Monday 11th September 2017

9.00-9.30 Conference Opening
Coffee and registration

9.30-10.30 Conference Session *Smart Citizenship*
Richard Heeks, Satyarupa Shekhar
Urban Data Justice: Inequality, Exclusion and Datafication in the Global South
Flavia Neves Maia
Smart Urbanism as a Politics of Visibility: Crowdsourced Mappings of Favelas in Rio de Janeiro, Brazil
Yu-Shan Tseng
The role of citizens and the digital played out in the ICT-fused public participation projects
William Webster, Charles Leleux
Citizen Engagement in the Smart Sustainable City
Oliver Zanetti
A mode of civic inclusiveness through smart: implicit activism by blind and partially sighted people

10.30-11.00 coffee

11.00-12.30 Workshop: Arianna Mazzeo, Director Masterlab Service Design for place and community building.
DESIGN and the Smart Citizens. The Pathway of Communities
Here we are. Where Community talk, speak out and remain in Light!

12.30-13.30 Keynote: Ayona Datta
Whose urban futures? Seeing the smart city from India.

13.30-14.30 Lunch

14.30-15.00 Presentation of outcomes from the Network

15.00-16.00 Conference Session: *Engagement in the Smart City*
Oliver Dawkins
Opening Urban Mirror Worlds: Possibilities for Participation in Digital Urban Dataspaces
Hrishikesh Ballal, Ana Clara Mourão Moura
Towards social Geodesign: A case study in Faenza, Italy
Rafael Pineiro
Making It Up As We Go Along: The Iterative Nature Of Collaborative Platforms
Richard Timmerman, Stephen Marshall, Thanasis Kourniotis
Planning in real-time: exploring the use of interactive design software in promoting social inclusivity and ownership among local residents in the redesign of a London Housing Estate
Sara Heitlinger, Mhairi Weir
Connected Seeds and Sensors: Co-design of Internet of Things for Sustainable Urban Agricultural Communities

16.30-17.00 coffee

17.00-18.00 Keynote 2: Tim Davies
Constructing participatory public data infrastructures: open data standards and the turn to transparency
Venue: Lecture Theatre 1

18:00- Conference close

Keynotes

Ayona Datta, Kings College London
Whose urban futures? Seeing the smart city from India

Bio: My broad research interests are in the critical geographies of smart urbanism, gender citizenships and urban futures in the global north and south. My earlier research examined the connections between transnational urbanism, migrant citizenship, and translocal geographies of belonging. This was particularly related to the resultant transformations in gender relations and citizenship struggles that occupy social, political and environmental spaces of action. My more recent research seeks to advance theoretical and empirical work on postcolonial urbanism through the examination of smart cities as experiments in urban innovation and digital citizenships

Tim Davies, Open Data Services Cooperative
Constructing participatory public data infrastructures: open data standards and the turn to transparency

Bio: Tim is a co-founder and member of Open Data Services Co-operative, working to secure civic impacts from open data. In recent years, he has co-ordinated a global research network on open data in developing countries for the World Wide Web Foundation, contributed to the civil society network shaping the UK's Open Government Partnership National Action Plan, supported facilitation and write-up of the International Open Data Conference, and written lots about the open data field whilst studying for a PhD in Web Science. Tim is an affiliate of the Berkman Centre for Internet and Society, and lives in Stroud, United Kingdom.

WHOSE RIGHT TO THE SMART CITY?
Paper Abstracts

Richard Heeks[1], Satyarupa Shekhar[2]
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University of Manchester, UK, [2]Citizen consumer and civic Action Group (CAG), Chennai, India
Urban Data Justice: Inequality, Exclusion and Datafication in the Global South

Flavia Neves Maia [1], Taneha Bacchin [2], Arjan Van Timmeren [2]
[1] Federal University of Rio de Janeiro, Brazil, [2] Delft University of Technology, The Netherlands
Smart Urbanism as a Politics of Visibility: Crowdsourced Mappings of Favelas in Rio de Janeiro, Brazil

Yu-Shan Tseng
Department of Human Geography, Durham University, UK
The role of citizens and the digital played out in the ICT-fused public participation projects

William Webster, Charles Leleux
Centre for Research into Information, Surveillance and Privacy University of Stirling
Citizen Engagement in the Smart Sustainable City

Oliver Zanetti
School of Politics, Philosophy, Economics, Development and Geography, The Open University,
A mode of civic inclusiveness through smart: implicit activism by blind and partially sighted people

Oliver Dawkins
The Bartlett Centre for Advanced Spatial Analysis (CASA), University College London (UCL
Opening Urban Mirror Worlds: Possibilities for Participation in Digital Urban Dataspaces

Ana Clara Mourão Moura[1], Chiara Cocco [2], Hrishikesh Ballal [3]
[1]Federal University of Minas Gerais, Brazil , [2]Civil Engineering and Architecture at the University of Cagliari, Italy
, [3]Geodesign Hub Pvt. Ltd
Towards social Geodesign: A case study in Faenza, Italy

Rafael Pineiro
Federal University of Minas Gerais, Brazil
Making It Up As We Go Along: The Iterative Nature Of Collaborative Platforms

Richard Timmerman [1], Stephen Marshall [2], Thanasis Kourniotis [3]
[1,2] Bartlett School of Planning, University College London, [3] Bartlett School of Planning and The Centre for
Urban Sustainability and Resilience, UCL
Planning in real-time: exploring the use of interactive design software in promoting social inclusivity and
ownership among local residents in the redesign of a London Housing Estate

Sara Heitlinger, Mhairi Weir
Connected Seeds and Sensors: Co-design of Internet of Things for Sustainable Urban Agricultural Communities

WHOSE RIGHT TO THE SMART CITY?
Workshops
More detailed information on the workshops will be available at the event

Sunday 14.00-17.00
Open Data Workshop

The aims of the workshop are to think about how nuances of how data can be open and accessible in the smart city in three levels
- Providing data (citizenship)
- Processing (autonomy)
- Making use (engagement)

The outcomes of the workshop should be to understand the socio-political implications of how data is part of the smart city.
Tools:
Rhino, Grasshopper, Mosquito, Openstreetmap, Ushahidi

Organizer: Rafael Pineiro
Federal University of Minas Gerais, Brazil

Monday 11.00-12.30
Workshop: DESIGN and the Smart Citizens. The Pathway of Communities
Here we are. Where Community talk, speak out and remain in Light!

The workshop format is interactive and open format that aim to co-create a dialogue about rights and space of citizens in the smart city to co-design a new sense of place. New "dispositifs" of democracy trough conversations and dialogue. The other aim is create a new public in co-production of services as the base of the public policies and the common goods.

Organiser: Arianna Mazzeo
Professor Design for Social Digital Innovation
Director Masterlab Service Design for place and community building.
Leader Desis Lab Elisava- Hub Design for Social, Digital Innovation and Sustainable Research
www.desisnetwork.org
www.elisava.net

Urban Data Justice: Inequality, Exclusion and Datafication in the Global South

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Smart city trends include the datafication of urban decision making, leading towards creation of a "data twin" through which the city is increasingly planned and experienced (Taylor & Broeders 2015, Navin 2017). But questions arise around the implications of this trend for those already marginalised within the physical city (Shaw & Graham 2017). Will they become further excluded: absent or mis-represented from the city's data twin? Or can they be positively incorporated into datafication? Such questions are particularly sharp for those living in cities of the global South where gaps between elites and marginalised groups, and between rhetoric and reality of smart cities can be most pronounced.

We investigate these issues through the lens of "data justice": the specification and pursuit of ethical standards for data-related resources, processes and structures (Heeks & Renken 2017). Data justice provides a means to understand not merely the content and uses of data, but also – aligning itself with critical data studies – the broader context within which data is used. Specifically, this paper reports the application of Taylor's (2017) data justice framework, as shown below.
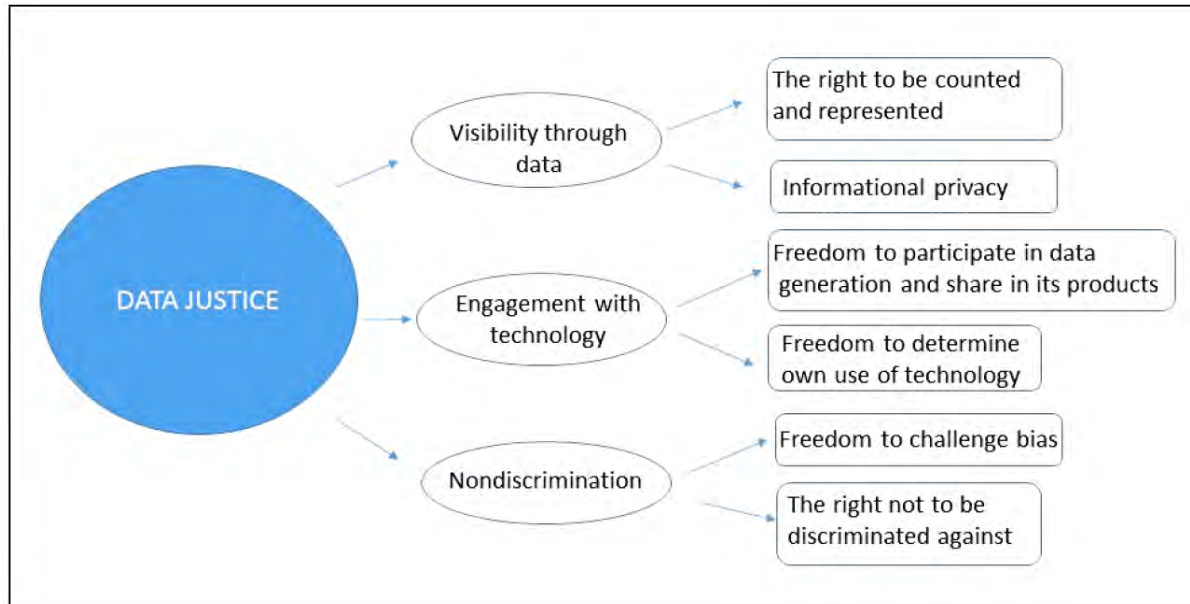
It begins by charting some of the data injustices suffered in cities of the global South by marginalised groups such as slum-dwellers:

- Visibility: they are largely invisible in the growing datasets of the "smart city" or, where not, their privacy is not respected.

- Engagement: they are not free to directly make use of data (e.g. that gathered as "data fumes" by their increasing digital activity) about themselves and their communities; nor are they able to know about or control or benefit from the uses of that data.
- Discrimination: there are biases within urban datasets (relating to both presence and absence) that discriminate against these groups, but they are unable to challenge those discriminations.
- (Dis)empowerment: they are subject to relative disempowerment or amplification of power asymmetries as datafication spreads.

The paper then investigates to what extent pro-data-justice interventions can address these sources of injustice, based on interviews and other evidence gathered from initiatives such as Map Kibera (Hagen 2011) and Transparent Chennai (Padmanaban et al 2013):

- We find that visibility is a "double-edged sword". Urban data interventions can make marginalised communities, their problems and their assets more visible both to the communities themselves, and to external stakeholders including local government decision-makers. This can have pragmatic and interpretive consequences: improving provision of urban services to low-income areas but also changing the urban imaginary of how communities see themselves and are seen. Yet that visibility is not always welcome: there are benefits to being hidden from the gaze of the state within smart cities; for example, in being less vulnerable to eviction. Visibility also frames urban decision-making, throwing some issues into the spotlight and others into shadow, and creating path dependencies – dissemination of data about poor conditions in resettlement tenement blocks has led to government improvements in those tenements; but it has also legitimised and reinforced evictions, making improvements to existing slums let alone granting of land title much less likely.
- Engagement with data has been more limited than visibility. Taking the stages of the "information value chain" – generation of data, processing of data, data-related decision-making, data-related actions – we see there is sometimes involvement of the community in data generation; for example, use of community members in open street mapping or in household surveys. But, beyond this, the locus of data-intensive capabilities generally lies outside marginalised urban communities. For example, and in contrast to urban participatory budgeting initiatives, there has been little participation of community members in data-intensive decision-making processes by government. And we see little evidence to date of the "small data" approach that feeds the new data back into the communities to help improve their own daily decisions and longer-term plans.
- Discrimination in urban datasets is addressed through the greater visibility for marginalised communities but this may knock-on into greater transparency of decision-making processes in city governments. We are yet to see signs of algorithmic decision-making or use of data by the private sector, which might raise further issues around discrimination.
- Data is a critical resource in the smart city. Data-generating initiatives of advocacy organisations that involve slum communities will cause some shift in the urban landscape of power, and some incremental but substantive empowerment. But the fact of the data itself seems rather less important than how it is used, and by whom. In turn, these data practices sit within a wider context that is the focus of structural data justice. Contexts including absent rights to land, unaccountable slum clearance Boards, and urban development plans skewed to the interests of business and urban elites severely limit the impact that data initiatives can have.

The paper concludes by identifying future research and practice priorities. These should include action research projects that directly seek to deliver urban data justice: that make visible data that will benefit marginalised communities while holding private that which will not; that enable these communities to engage across the whole information value chain so that they can use the data gathered and are beneficiaries from the uses undertaken by others; and that they can recognise and challenge errors and biases with these and other datasets that increasingly guide the emergence of the smart city.

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Smart Urbanism as Politics of Visibility:

Digital Mappings of Favelas in Rio, Brazil

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Abstract

Seeing and being seen is at the core of the 'smart city' imaginary. A basic idea within 'smart' discourses and practices is that uses of digital technologies – e.g. to produce, share, store, mine and display big data — are linked to new ways of seeing, and thus, experiencing the city. Digital visibility is assumed to be part of the contemporary urban condition, either in top-down/dominant or in bottom-up/alternative modes of Smart Urbanism (SU). This study destabilise the common link between digital visibility and the right to the city, increasingly present in narratives around digital mapping of 'marginalised' communities. It also helps to denaturalise the notion that digital visibility is a value-free, necessary and desirable process, by which spaces can be known better and more fully.

In Rio de Janeiro, Brazil, over the last ten years, a dozen of *favelas'* mappings have been undertaken by NGOs, communities, governments and tech companies. Favelas' digital data, previously scarce or disconnected, have been opened online. Mappings are often presented by different agents as a shortcut for citizen empowerment, social inclusion, urban integration and economic growth, whilst digital visibility is showcased as 'the right to exist in the city' (Interviews, 2016). Rio's case is part of a broader phenomenon of informal areas' mappings, which comprises different realities such as Kenya and India. This 'digitisation of slums' across the Global South is already said to hold *the seeds for an alternative SU, although not in a straightforward manner* (McFarlane & Söderström, *forthcoming*).

Our analysis critically unpacks the production of *favelas* digital visibility by exploring the notion of visibility as a dimension of the social at large, unrestricted to visual domains. (Brighenti, 2007; 2010). In this sense, visibility comprises both the **visual** — what is given to be seen — and the **invisible** — the ways in which this happens. Here, digital visibility is approached as a social process in itself, and the exercise of power is understood as the exercise in activating selective (in)visibilities (Brighenti, 2007; Foucault, 1975).

We analyse the unfolding of digital (in)visibilities, underpinned by digital mappings, and relate it to broader politics of the production of Rio's urban space. We offer a brief overview of different community-led initiatives and present a contrasting trend, defined by a greater involvement of tech companies such as Google and Microsoft. We focus on the projects "On the Map" and "Beyond the Map", by Google and the NGO Afroreggae, in the years that precede the World Cup 2014 and the Olympics 2016. From 2011 to 2017, three moments of favelas cartographic representation by Google — "digital eviction" (2011), "on the map" (2014) and "beyond the map" (2016) — are highlighted and compared with other dynamics of favelas urban in/exclusion, such as housing eviction, gentrification and violence.

On the Map, is a project that involves favelas residents in mapping alleys and points of economical and touristic interest using smartphones with GPS and cameras. It is promoted as "an initiative that more than inserting communities in the digital world and the city maps, […] [is] promoting citizenship, local business growth and access to public services" (Afroreggae, 2013). *On the Map* promises to help favelas go from "data free areas" to "data full zones", and, by so, to reverse "huge social and economic loss", supposedly reinforced by cartographic invisibility (Afroreggae, 2014). Beyond the Map, in turn, brings Street View to some favelas. It consists of eight virtual reality (VR) videos, that allows an immersion on alleys and public spaces. Favelas are portrayed through stories of residents — "people who will inspire you and make you look at the favelas in a whole different way" (Google, 2016). Similarly, Beyond the Map mobilises a narrative around a historic 'invisibility' and 'exclusion' of favelas, as well as a dichotomy formal *vs.* informal, by contrasting "the Marvelous City […] the Rio everyone knows – Ipanema and Copacabana", with "the other, the world of the favelas" (Google, 2016). The project focus on touristic, 'pacificed' favelas, while the narratives reinforce economical growth as the main outcome. An overlapping of spatial patterns of mapped favelas, with spatial patterns of Housing eviction, Olympic clusters, Pacifying Police Units (PPU) and planned urban growth expose some convergent tendencies: favelas that are visibilised are often inserted on or near of the wealthiest, touristic areas. Among them, there are some of the favelas with the large amount of housing eviction prior to megaevents.

Google's visibilisation defines and contains favelas within some parameters, erasing conflicts and disagreements and highlighting one of its dimensions – the economic one. The message is clear: favelas can consume and be consumed. In this regard, digital visibility, intertwined with economical insertion, is positioned as the new nature of urban inclusion. "Invisibility is discursively constructed, so that it can be overcome via a digital presence" (Luque-Ayala and Maia, forthcoming). However, favelas have never been inexistent, excluded, nor at the margins of the urban, but often existent and included under conditions that has been often out of favelas' residents control or interests (Perlman, 1975; 2005).

Favelas were not invisible nor marginal before the 'digitisation'. However, historically, favelas have been perceived as being *in* the city, but not being *from* the city (Gonçalves, 2013). It means that, while informality is a product of the way urban spaces have been conceived, as well as an essential piece of the political, social, cultural and economical urban functioning, favelas are often seen as the '*image noire*' of Rio (Jauregui, 2004), a space that is out of reach, out of control and out of the urban. This way of seeing reflects the brazilian ambiguous ways of dealing with favelas, that mixes tolerance with threatens to removal of the urban landscape. Often, the complex insertion of favelas in the urban is simplified to the point of these spaces and its residents being depicted as invisible, excluded, or at the margins of the system. However, reflecting upon urban poverty and politics in Rio's favelas along almost fifty years of empirical research, Perlman concludes that marginality, in this case, is a "myth". Moreover, since its origins, at the beginning of the 20th century, favelas were, already, highly visible materially, symbolically, discursively and ideologically — for many decades, favelas have been part of Rio, as part of its' growth processes (Silva, 2005). And favelas visibility only increases as the urban expands.

The ambiguous ways of thinking, representing and acting over favelas' urban condition were never accidental, but wittingly created at the core of political decisions (Gonçalves, 2013). This is not exclusive to Rio. "The making of the world class cities is about displacing, marginalising, making invisible the poor" (GlobalPOV, 2013) — be it materially, through massive housing eviction, be it discursively, by representing their territories as blank spots in city maps, as pointed out by Roy. In this sense, putting digital visibility to work as a spatial device for inclusion of lower classes is not a simple process. The production of digital visibilities of 'marginalized' communities

is in permanent tension with the very process of pushing these communities towards the invisible, which is typical of capitalist modes of urbanisation.

Google's case not only illustrates the many disputes around the image of the city in the context of megaevents, but also — and more importantly — invite to a reflection about a re-positioning of informality in the urban as its digital presence increases. In Rio, while some digital mappings contest the perversity of the neoliberal production of the city, for example, by denouncing violence against favelas' residents prior and during megaevents; others are more aligned with the dominant, capitalist urbanism rationality, aiming to erase favelas contradictions, and producing an image of a city that is safe for international investments and tourism. In this context, digital visibility, as other forms of ambiguous and partial urban inclusions, risks to be a highly asymmetrical process.

This analysis lead us to conclude that the exercise of 'the right to the smart city' on unequal social economical scenarios works in no simple or predictable manner, but in a complex interplay of political forces, in which digital visibilities are but one vector. This reading inquiries if not only digital visibility comes with a different mode of visual perception of urban domains of governance (McNeil, 2016) but if **digital visibility itself would represent a novel a way of governing the urban**. It also raises a wider question whether smart urbanism might be read as a politics of visibility.

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Remaking a Smart City through participatory democracy and cyborg ontologies in a comparative context

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Introduction

My PhD project focuses on emerging forms of open-source software-enabled (OSS-enabled) participatory democracy in the Spanish-Taiwanese comparative context. OSS-enabled participatory democracy claims to articulate a "new" way of making a city Smart. This could open up recent discussions around the Smart City (SC). I will take the cyborg ontologies as an analytical framework for understanding potentialities and limitations surrounding the involvement of OSS in the process of participatory democracy. Also, the comparative context can help to reveal the connection between participatory democracy and digital technology (here principally referring to the use of OSS) in Madrid and Taipei.

In the following paragraphs, my argument is unfolded around three different but relevant concepts: participatory democracy and the SC, cyborg ontologies and participatory democracy, the global north (Madrid) and the global east (Taipei) in a comparative context.

Smart City and emerging OSS-enabled participatory democracy in Madrid-Taipei

The notion of SC provides an overarching framework encompassing the permeation of ICT technologies into everyday urban life. It is argued that the SC is capable of monitoring and tracking the urban environment and human behaviour, as well as providing ICT-based solutions to solve various urban problems (Batty et al. 2012; Allwinkle & Cruickshank 2011). However the dominant idea of what constitutes a 'Smart City' has been widely criticised for relying on a technocratic approach which excludes the input of normal citizens (Greenfield 2013; Townsend 2013). For example, citizens' voices are excluded from the process of building ICT infrastructures, and less privileged citizens are evicted from the Smart City if they are not valuable enough (see the example of Songdo City) (Greenfield 2013).

Drawing on what Robinson (2015; 2016) calls the 'generative' comparison, I have selected Madrid and Taipei as sites of research. Both share the process of renewing participatory democracy with the use of OSS after the OSS-enabled social movement (15M, Indignados in 2011 and the 'sunflower movement' in Taipei in 2014). The government-led OSS-enabled platforms, VTaiwan and Decide Madrid, both allow citizens to propose projects and debate over urban issues to different degrees. For example, Decide Madrid allows citizens to comment, debate and discuss various urban/community issues, such as public plaza (Madrid Decide 2017), whilst VTaiwan uses "pol.is" to visualise different voices and to analyse citizens' opinions in order to reach a consensus effectively (g0v 2017). Both political institutions (Madrid Municipal Government and Taiwan Central Government) share a strong commitment to the idea of open government and OSS-enabled public participation, especially as Madrid Municipal Government has claimed itself as the "anti-IBM-smart city" (Paul 2015).

The comparative approach might offer new insights into what is a "Smart" City or what is an "alternative Smart City" (Luque-Ayala et al. 2014, p.87; Marvin et al. 2016), as well as the possibility and limitation brought by the practice of OSS-enabled participatory democracy in the cities. In particular, I wish to explore which "cyborg" connections are materialised in the process of OSS-enabled public-participation, and how this will further redefine participatory democracy in the cities studied.

Participatory democracy

By drawing on a couple of works around the concept of participatory democracy (including the right to the city) in the city, this section will provide an initial conception for a different possibility of power relationships in the right to participatory democracy for making a SC. In Lefebvre's the right to the city (1996), empowering "citadins" (urban inhabitants) to participate in decision-making related to urban space is considered a missing element in the ICT solution-based SC discussion (Townsend 2013; Greenfield 2013; Datta 2015). The theory has indicated "a model of rearticulating expressions of insurgent citizenship and ongoing struggles over the production and reproduction of urban life" (Corsín Jiménez 2014, p.357).

Echoing Purcell (2002), I am not suggesting that Lefebvre's version of urban democracy is the only formula to make a more democratic city, as some significant problems remain unclear or unsolved. The very question does not lie in "whose" right to the city - as this seems unanswerable and varies based on the context - but "how" the right to the city is enacted in a specific urban context, given the inherently self-enclosed nature of right-claiming in the cities (Jeffrey et al. 2012).

Lefebvre's (1996) preference refers to "whose" right to the city - that is, defining urban inhabitants as "working-class" subjects who possess the right to the city, and then assuming that these urban inhabitants/working-class can be treated equally (as if there are no conflicts between them). This preference has ignored the nature of how the right to the city is played out. Jeffrey at el. (2012) state that seeking for rights in urban areas is actually a constant process of dynamic and confrontational relationships amongst urban inhabitants. Conflicts between citizens or social groups reveal themselves in the process of appropriating civic rights (see more in Miraftab & Wills (2005)). Once one group successfully appropriates a set of rights, others might be prevented from accessing the same rights (see more in Roy (2009) and Harvey (2003)). This reflects on the confrontation between different groups of interests in the production of urban space

Additionally, most articulations of "the right to the city" have omitted the fact that the digital has to be part of urban everyday life, and consequently the question of to what degree the possibility of the digital has enabled claims to the "right to the city." It remains somewhat unclear how the "right to the city" can emerge in relation to digitally-integrated urban spaces without falling into the trap of technological determinism, which remains the leading cause of making the "right to the city" happen (Engin & Evelyn 2015, pp.40–41). This brings two key questions forward. Firstly, we need to reconsider the nature of urban spatiality, which has been conditioned and expanded by the digital. To what degree does urban-digital spatiality come to influence right-claiming in the city/participatory democracy in cities? Secondly, if we take the contested nature of rights-claims as part and parcel of urban participatory democracy, how are conflicts among citizens of different interests either managed or left to remain as antagonisms and exclusions within the urban commoning?

The use of Cyborg ontologies for generating political possibilities in the city

I propose that the concept of cyborg has the generative capacity to transform understandings of participatory democracy in cities, which is presently involved with digital technologies (ie OSS). Cyborg ontologies allow us to see emerging OSS-enabled participatory democracy as a set of social-technical connections and interdependencies between OSS and right-claiming actions, which potentially generate political possibilities and implications in the cities. Also, It might enrich and widen the concept of ICT based solutionism SC.

Haraway's work (2013) emphasises the connection between machine/human and physical/virtual, where the possibility of new politics might come into being. Other scholars

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have extended the concept of cyborg into "cyborg urbanisation" through refocussing its ontological account as an analytical framework to not only capture the hybrid connection between urban infrastructures (technologies), body and space, within the spatial topics such as "digital space" and "public space" in the cities (Gandy 2005; Corsín Jiménez 2014). Also, cyborg urbanisation is an approach that 'opens up a new arena for thinking and acting on the city' (Swyngedouw 1996, p.80)

Liberating digital space from the independent category, Cohan (2007) and Kitchin & Dodge (2011) highlight the fusion of digital and physical space, which is co-constituted in the process of mutual interaction between each domain - from digital actions (such as coding and tweeting) to everyday life activities. Engin & Evelyn (2015) illustrate how digital space is connected to physical space and produces changes in everyday life; in reality, it is intertwined and rooted in physical space (ibid: 32) where most actual movements happen. Also see more in Cohen (2007), who sees cyberspace a co-constituted space.

Swyngedouw (1996) has used the cyborg concept to capture the interaction between a hybridised socio-ecological process which supports the production of urban space. Gandy (2005) emphasises the cyborg concept on its material ontology to explore and articulate various ways in which body and technologies and urban space interconnect with each other. For example, he has redefined the public space in the city through cyborg ontology as a way to explain the materialisation of the political and technological relation between citizens and urban infrastructures in the public space. In other words, the cyborg public realm "rematerialises" the urban public sphere because "the underlying materiality" of the cyborg public space has foregrounded the connection between urban infrastructure and the human body (Gandy 2005, p.28; Corsín Jiménez 2014).

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Citizen Engagement in the Smart Sustainable City

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Introduction

Public policy and academic discourses differ about what constitutes either a Smart city (Nam and Pardo, 2011) or a sustainable one (Haughton and Hunter, 2004). Certain assumptions are made within these discourses regarding the positive impact of technology (Hollands, 2008), and benefits to the environment (Mitchell and Casalegno, 2009). A Smart city, in its multitude of functioning roles, is not necessarily a sustainable city too, however the terms are increasingly being fused together in the concept of the Smart Sustainable City (SSC) (Kramers, Höjer, Lövehagen, and Wangel 2014). This paper has a particular focus on the participatory role of the citizen in the SSC, where this involves the use of new Information and Communication Technologies (ICTs). Conventional eGovernment (eGov) measures have tended to focus on the transactional aspects of delivering services, rather than engaging citizens in participatory activities (Meijer, 2011), while the traditional discourse on sustainability has focused more on environmentalism rather than societal sustainability (Robinson, 2004). Sustainability, in the context of the SSC, is a much wider concept, where the goals include: improving the quality of citizens' lives by engaging them in participatory governance; co-creating sustainability values; developing relationships, trust, and sustainable mechanisms for continuing engagement. The impact of technology is assessed in the transformation of engagement practices and participatory opportunities which it offers to citizens, delivery of services, and of sustainable solutions which it provides for the future (Batty et al 2012). Technology is central to the increasingly influential role of the citizen in engaging in co-production of public services, and participating in SSC governance (Meijer and Bolivar, 2016). To assist citizens, policy-makers and practitioners engaged in SSC governance, a new 'model of understanding' is presented based upon how each of their respective inputs can lead to reciprocally beneficial outcomes.

Methodology

The research presented derives from a collaborative transnational research project on SSCs, involving partners from the United Kingdom (UK), the Netherlands and Brazil, where each of the partners is examining citizen engagement involving ICTs within their respective case study cities. The UK case study city has a disproportionate number of disadvantaged communities compared to the overall city population, which presents particular engagement challenges. Comparative research will be undertaken of participation within disadvantaged communities across the three case study cities. The paper emanates from a systematic literature review assessing what is already known about Smart city governance, SSCs, and models of citizen-centric engagement using new ICTs. The literature review examined more than 150 articles, books and 'grey' material, over 80% of which had been published during the period 2010 to 2016.
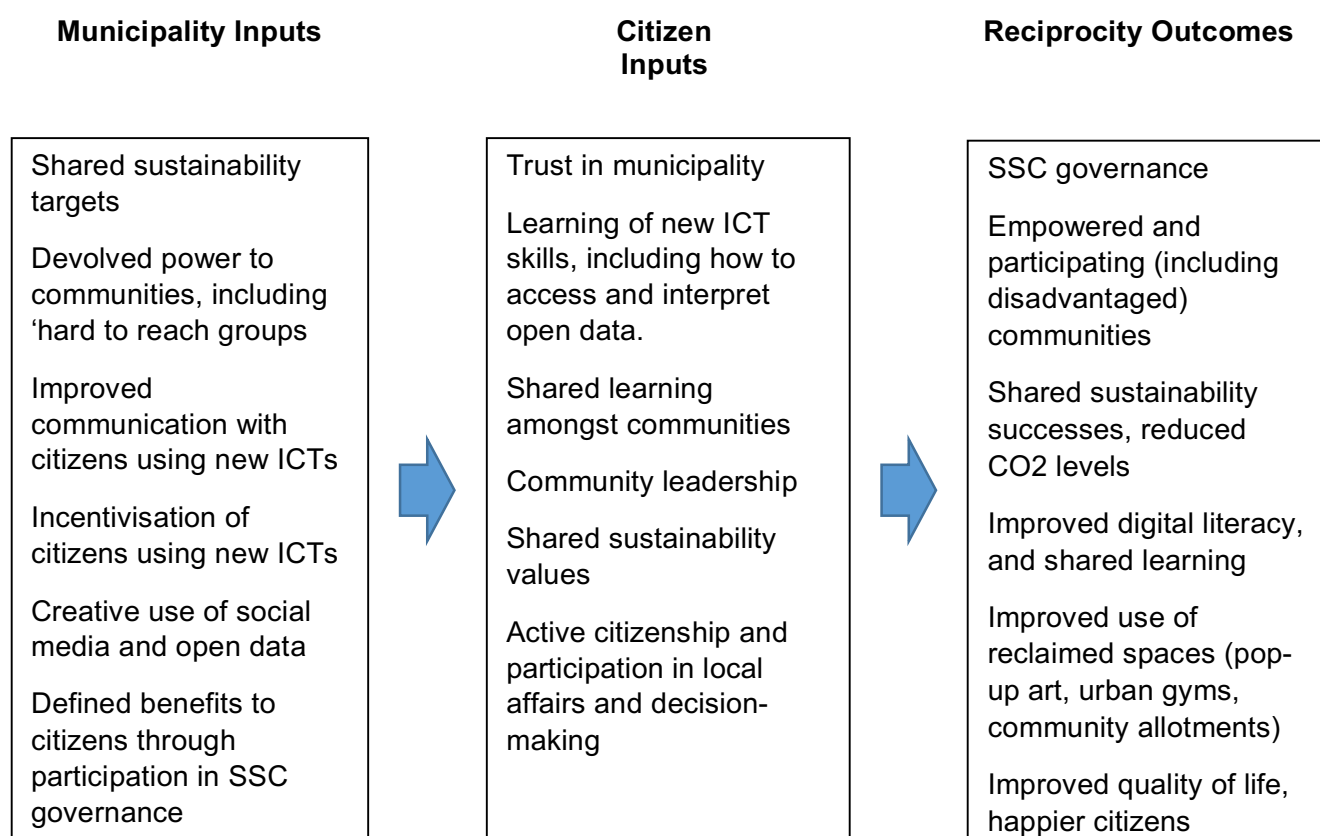
Background to the Smart Sustainable City

The report of the World Commission on Environment and Development (Brundtland, 1987), raised awareness amongst policy-makers and practitioners of their societal responsibilities to ensure that the needs of the present day would not compromise the needs of future generations. Elkington (1994) introduced the 'triple bottom line' (TBL), (social, economic and environmental sustainability) to accounting for sustainability, and TBL was further developed as a method for including corporate social responsibility as a method for companies to account for their impact on sustainability (Henriques & Richardson, 2013). The sustainable development discourse has been continued at a supra-national level by major organisations such as the World Bank (Kahn, 2014), and the United Nations working with the International Telecommunications Union providing specific commentary on the SSC (United Nations, 2015). Perhaps the SSC emerged as a natural entity in its own right due to the co-existing discourse on sustainable cities and Smart cities (Höjer and Wangel, 2015), although its evolution might be more nuanced due to the divergence of the challenges facing cities on various fronts. Cities can find themselves under strain due to rapidly rising population growth, growing urbanization, lack of space for new housing, and the competing needs to meet environmental targets e.g. reducing CO_2 emissions, improving air quality, reducing traffic congestion, and using energy more efficiently. Increasingly, Smart solutions through new ICTs are being sought to meet these pressures on technological, societal and sustainability fronts. Hara, Nagao, Hannoe & Nakamura (2016) use key performance indicators and new methodologies to assess SSCs having regard to the quality of life of its citizens. In this paper, we see one of the main challenges of the SCC being given to policy-makers to create sustainable procedures for citizens to engage in co-production, using new ICTs.

Opportunities for Citizen Engagement in the Smart Sustainable City

Citizen participation in the SSC is essential if sustainable outcomes are to be achieved (Gabrys, 2014), however those citizens living in more affluent areas and are better educated than those living in poorer areas, are more likely to engage (Hastings, Bailey, Bramley, Croudace and Watkins, 2014). Co-production literature also identifies that citizens are more inclined to engage when they are given the opportunity to address issues which are particular to their own neighbourhood (Alford, 2009). Normative assumptions therefore about the benefits to all of living in an SSC are unlikely to be true. Simply by prefixing the word 'Smart' to a city and its various components, e.g. people, economy, environment, mobility, living (Lee, Phaal and Lee, 2013), will not mean equality of opportunities and access for every citizen (Shelton, Zook and Wiig, 2015). The new model of understanding *'SSC Reciprocity Outcomes'* presents some of the essential requirements to achieve meaningful citizen co-production and co-creation of value in the SSC using ICTs. Success will depend on the ability to incentivise citizens to engage and participate, and for municipalities to devolve some aspects of their decision-making apparatus to a more decentralised and citizen-centric model, where there will be benefits and rewards for both parties. Some of the methods and concepts presented within the model may not in fact mirror what occurs 'on the ground' and would benefit from being tested empirically. The model is therefore a mechanism which provides an opportunity to 'unpick' SSC governance, and to help us better understand the co-evolution of new technologies and citizen engagement.

Figure 1: Smart Sustainable Cities: Reciprocity Outcomes

Municipality Inputs	Citizen Inputs	Reciprocity Outcomes
Shared sustainability targets Devolved power to communities, including 'hard to reach groups Improved communication with citizens using new ICTs Incentivisation of citizens using new ICTs Creative use of social media and open data Defined benefits to citizens through participation in SSC governance	Trust in municipality Learning of new ICT skills, including how to access and interpret open data. Shared learning amongst communities Community leadership Shared sustainability values Active citizenship and participation in local affairs and decision-making	SSC governance Empowered and participating (including disadvantaged) communities Shared sustainability successes, reduced CO_2 levels Improved digital literacy, and shared learning Improved use of reclaimed spaces (pop-up art, urban gyms, community allotments) Improved quality of life, happier citizens

Concluding Comments

The SCC offers substantive change in citizen-state relations, it points to new relations being formed around the use of new technologies with an aspiration that local governance and services will be enhanced at the same time as facilitating more sustainable futures. There are sizeable challenges for citizens and policy-makers if widespread citizen engagement in the SSC is to be realised, particularly in connecting with 'hard to reach' groups. Academic literature shows that engagement works better when citizens are incentivised to participate, and when redistribution of power takes place to communities (Alford and Yates, 2015). There are encouraging signs though that through new ICTs, local governments and citizens are becoming closer in how they communicate with each other, share information and participate in SSC governance. New mechanisms of engagement and participation are helping this transformation, such as hackathons, living labs, maker spaces, gamified public services, use of 'open data' and crowdsourcing. Transition has also been assisted by greater awareness by the citizen of sustainability initiatives, and the normalisation of their behaviour through use of the Internet and social media; use of technologies for transactional activities such as online shopping; online banking; use of Smartphones, online questionnaires, and in a Smart city context the use of a city app for example to access Council services.

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A mode of civic inclusiveness through smart: implicit activism by blind and partially sighted people

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Smart Cities in the Making

What is the place of the citizen in the smart city? Though many of smart's proponents from government and industry claim city dwellers to be at the centre of these tech-based urban initiatives, some academic responses have argued that citizens are at best engaged only partially (Cardullo and Kitchin, 2017; Cowley et al., 2017) while others have argued that smart generates disenfranchisement amongst particular groups of urban citizens, often the poor and lower skilled, with its benefits instead being conferred to neoliberal capital (Greenfield, 2013; McFarlane and Söderström, 2017; Shaw and Graham, 2017; Söderström et al., 2014; Vanolo, 2014, 2016; Wiig, 2016). However, what tends to be missing from these analyses are close readings of the workings of smart citizenship in a way which delves into "the messy realities of established cities" (Kitchin, 2015: 133; see also Shelton et al., 2014). This paper begins to occupy that space using interviews and ethnographic fieldwork to generate new understandings of the workings of smart citizenship as it plays out in the smart city.

This paper makes two key points. First, it argues that although the emergence of smart city technologies do facilitate novel and potentially useful modes of citizen participation and engagement, such as through sensor activation and data provision (Gabrys, 2014) or by making consumer or prosumer choice easier (McLean et al., 2016), in many other ways smart is substantially less exceptional than many of its proponents might suggest. Rather than seeking a new conceptual vocabulary for the ways citizens engage in smart, a move which implicitly positions smart as a paradigmatic shift in the functioning of cities, productive engagements with the technology and its impact on citizens may better imagine it simply as a digital intervention coming into play in an already complex urban milieu. In this way, existing thinking on urban sociability and citizenship claims have a lot to offer in generating understandings of smart (see Cardullo and Kitchin, 2017). Second, this paper prompts a way of thinking about smart which endeavours to avoid the polarisation between what have been called bottom up and top down smart citizen interventions, which have tended to favour the former while critiquing the latter (see, for example, McFarlane and Söderström, 2017; Rossi, 2016; Sadoway and Shekhar, 2014). While sympathetic to the politics driving these critiques, the paper pushes for a more nuanced approach which investigates how, in contemporary urban settings, citizens and big corporations are routinely entangled in ways generally regarded as unproblematic by both

parties. Indeed, a progressive politics of smart may still be able to function in such a setting.

The paper illustrates these arguments with reference to empirical work undertaken in Milton Keynes (MK). MK, like around one third of cities in the UK (Cowley et al., 2017), has initiatives in place to integrate smart technologies into the urban fabric. Driven by a number of different actors in the city, the case study behind this paper emerges from a university led programme called MK:Smart, a core aim of which was to generate citizen engagement with smart city technologies (Gooch, n.d.). Specifically, this paper draws on efforts by a small number of MK citizens to instigate a Bluetooth beacon based navigation system to assist blind and partially sighted people navigate one of the city's shopping centres, that shopping centre being a key public space in central MK. The use of such technology predates the era of smart. Indeed experimental efforts to employ digital technology to facilitate navigation for blind and partially sighted people around urban spaces have existed for some years now (Hine et al., 2000; Jacobson and Kitchin, 1997; Kitchin et al., 1998; Worth, 2013). Moves towards smart alongside recent technological advances have made implementation of this technology more possible – although, as our research has also show, it remains fallible. There is a clear utility and potential to this technology, though, with sight deficiency a clear line of social difference and exclusion in cities which smart has the potential to disrupt. Some 360,000 people in the United Kingdom are blind or partially sighted meaning they live with "severe and irreversible sight loss". Almost half of that number feel 'moderately' or 'completely' cut off from people and things around them as a result (RNIB, 2017).

The efforts to bring about a Bluetooth navigation system in the shopping centre have been led by a volunteer campaigner with the RNIB who had previously been involved in several campaigns related to blind and partially sighted people in the city. Contrary to the commonly assumed demographics of those participating in smart and driving it forward (white, relatively young, and male), Lavi (a pseudonym), is of Indian origin, is in her 70s, and is female. She also claims little technical expertise, though she is very open to the possibilities of new technologies. Lavi's acts of smart citizen engagement thus emerge not from her digital activities, such as being a citizen sensor or a hackathon participant, but instead from her identification of a problem requiring resolution. Though the rights claims she makes hinge on the digital, they are not digital rights claims in the way framed, for instance, by Isin and Ruppert (2015). Instead Lavi has assembled a series of alliances with others from her local RNIB network, independent software developers, the national RNIB network, and the shopping centre itself. In other words, what is novel about this case study is that it is an example of a smart city advocate who is herself avowedly not smart.

Not confrontational, Lavi's approach may be understood as akin to a mode of implicit activism (Horton and Kraftl, 2009). Most notably, Lavi's efforts cannot be neatly aligned with the "broader philosophical position[s]" (Horton and Kraftl, 2009: 22) often deployed in the critical social sciences to conceptualise citizen engagements in smart. Most significantly, a bifurcated top down and

bottom up reading of this case does not capture what we find here with sufficient accuracy. While Lavi's position at first glance appears to be one of a bottom up campaigner, the specificities of this case show this to be a problematic assertion. Her position as a relative novice in the field of digital tech require her to work with skilled actors from the mainstream tech industry, with whom as an experienced campaigner and self-assured professional she engages with comfortably. Moreover, her ultimate aim is not one of critique of quasi-public space, something found frequently in critical geography, but one of facilitating engagement with that space to make its use wider. There are echoes of right to the city type arguments here (see Mitchell, 2003), but Lavi is also calling for a right to consume.

To conclude, the aim of this paper is to enliven the way smart citizen engagement is conceptualised, following calls for research on smart to investigate the messiness of "actually existing" smart cities (Shelton et al., 2014; see also Kitchin, 2015). The paper calls for a reading of smart citizen engagements which reflect the complexity of urban citizenship more broadly, as well as the politics of smart itself. Over time, urban spaces increasingly interface with the digital, the idea of smart cities will become increasingly less extraordinary. In such a landscape, this kind of analysis can only grow in relevance.

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Opening Urban Mirror Worlds: Possibilities for Participation in Digital Urban Dataspaces

Extended Abstract

Developments in dynamic urban mapping over the past 20 years have closely followed the emergence of the 'real-time city', a concept enabled in practice through successive innovations in mobile telephony, ubiquitous computing, location based services, and urban sensing via the Internet of Things (Graham, 1997; Townsend, 2000; Calbrese & Ratti, 2006; Kloeckl et al, 2012; Kitchin, 2014). More recently a new form of 'three-dimensional urbanism' has been posited, implicated with the increased privatisation and 'interiorisation' of urban space (Picon, 2015), but also recognising growing contestation and concern over the 'vertical' dimension of cities (Graham, 2016). The combined demand these trends generate for the creation of dynamic, three-dimensional, data-driven maps has motivated a renewed interest in 'Mirror Worlds': computer generated models in which 'the *whole city* shows up on your screen, in a single dense, live, pulsing, swarming, moving, changing picture' (Gelernter, 1991 p. 30). While affording users the ability to 'dive deeper' its value for Gelernter comes from 'topsight', the ability to see the 'big picture' or 'image of the whole' (ibid.).

In his critical appraisal of the smart city Townsend (2013) considers Gelernter's concept in relation to the form of the urban control room. Taking IBM's *Centro De Operacoes* in Rio De Janeiro as his example, Townsend argues that while the control centre succeeds in offering an objectified view of what is happening at any given time, it fails to tell us why it is happening. This, he argues is because it lacks the subjective dimension provided by the situated experience of people on the ground. Townsend elaborates this by way of 'A Tale of Two Models' (p.90), juxtaposing the top-down efforts of Rio's city officials with those of boys in the cities' Pereirão favela whose *Projeto Morrinho* involved the construction of their own representation of the city from cinder blocks, mud and LEGO as a stage on which to reenact tales of their everyday lives. Similarly Shannon Mattern has criticised the 'data-fication' of urban interaction (Mattern, 2013a), advocating for the importance of a multisensory and subjectively informed 'deep mapping' of the city as a response to top-down urbanism (Mattern, 2013b).

In this paper we challenge Townsend's equation of the control room with Gelernter's concept by considering putative examples of existing mirror worlds. In doing so we identify that different mirror world solutions seek to address a varied range of quite different needs, demands and expectations. This raises questions about technically informed narratives of convergence which can be particularly convenient for hardware, software and service providers seeking to establish early monopolies. While sympathetic to Townsend and Gelernter's own criticisms and concerns over mirror worlds, we query the usefulness of the dichotomy created by Townsend's tale of two models, too easily implying an alignment of the analogue with bottom-up autonomy, and the digital with the imposition of top-down control.

While many mirror-world-like platforms and applications are aimed at professional users in the fields of architecture, engineering, urban planning and operations management, this paper explores the ways in which such systems might be collectively used and even created by individuals for their communities in the pursuit for their own ends. Investigating the space between

Townsend's two models we consider emerging trends in three-dimensional content creation and mapping that could in time enable them to achieve this. We then consider how these efforts might be integrated with reference to work undertaken at The Bartlett Centre for Advanced Spatial Analysis (CASA), developing an interactive urban data visualisation platform called ViLo (Figure 1).

Figure 1 - ViLo: The Virtual London Platform by CASA

ViLo builds on earlier research at CASA regarding the creation of a three-dimensional model of London's built environment (Batty & Hudson-Smith, 2005). In its new incarnation spatial data about the cities built environment and its infrastructure has been supplemented with dynamic data visualisations of various urban events as they occur, in real-time. Buses, tubes and trains can be seen moving across the city. More abstract visualisations indicate the location and availability of different services at a glance such as availability of bikes at local bike-share stations. Sensors transmitting data via the Internet of Things can also be accessed to show different phenomena ranging from variations in local microclimate to the presence or particular wildlife species at specific locations. The public's volunteered interactions with social media can also be accessed to provide human context. Each dataset contributes in its own way to an overall view of the city.

Originally intended as a tool for urban planners, this putative mirror world has much of the functionality required for Mattern's deep mapping (2013b). Users can view the model from any angle of their choosing. They can zoom in and out to see the model at a range of scales. Images, video and other documents can be uploaded, and new features will enable real-time collaboration. In a similar way to the control room in Townsend's example, this is made possible because the model has access to an underlying 'dataspace'; an abstraction in data management referring to the range of heterogeneous data sets available for integration into an organisation or institution's systems and processes (Thompson, 1993; Franklin et al., 2005). However, in distinction to the predominantly closed dataspace of the control room, can instead be operated entirely on publicly accessible and open data. This data can be held locally in separate files or a database, or it can be accessed remotely from its original sources in different web services using an application programming interface (API).
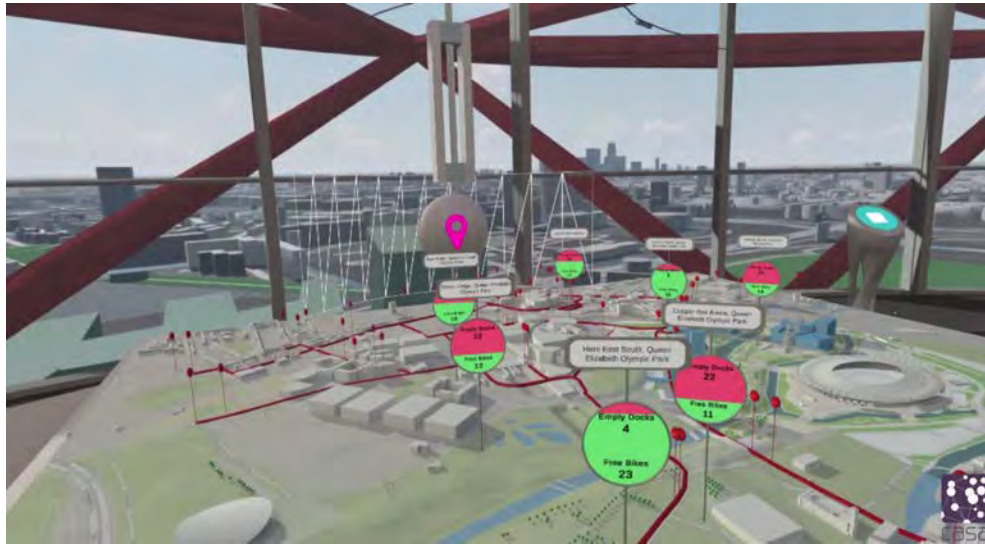
Figure 2 - ViLo: The Virtual London Platform by CASA in VR

ViLo has been built with gaming technology that is free to use for non-commercial projects. This provides a great deal of flexibility, enabling non-specialists to access the underlying software and data architecture if they have sufficient programming knowledge to adapt it, but also in terms of the types of interaction the system can enable, and the contexts in which it can be used. Integrated with virtual reality ViLo can enable rich multisensory experiences with a heightened sense of presence that engage not only the visual, but also the aural, and to some degree the haptic, registers of user experience with the aid of new hardware peripherals. New virtual reality software like Google's Tilt Brush for painting, and Blocks for 3D modeling, are already demonstrating the great potential virtual reality provides for engaging creative applications that enable users to create their own content. Combined with computer networking applications such as these provide a good indication of virtual realities potential for enabling collaboration at a distance by removing the requirement for the colocation of participants through telepresence.

In distinction to the centrally located, highly specialised, and closed environment of the urban control room, applications such as ViLo can be distributed to users and run on their own devices. On a tablet ViLo can be used when out and about to obtain useful information about the surrounding environment. However, enabling its use with augmented reality on the same device enables new opportunities for the discovery of and interaction with data and other digitally mediated aspects of the city. In particular augmented reality spatially references data in relation to the user's actual position in the city. Spatial relationships that seem abstract on a two-dimensional map become relatable with regard to the scale and orientation of the human body. And digital artefacts like data visualisations can be intuitively incorporated into their user's own spatial and sensory field of reference, their augmented field of view (Figure 3).

Figure 3 - ViLo: The Virtual London Platform by CASA on an iPad with ARKit

Townsend's tale of two cities powerfully highlights the constraints imposed by a very real digital divide experienced by inhabitants of cities across the world. It also demonstrates the enduring value of traditional and analogue means of participation and engagement. However, in creating such a strongly dualistic opposition between the analogue and the digital, and aligning this with the opposition between autonomy and control, Townsend's narrative tends to undervalue a wide range of opportunities for engagement and participation that can only be enabled and negotiated digitally.

> 'One has to get away from the idea of agency and structure as a dualism, as two opposing conditions. […] Spatial agency implies that action to engage transformatively with structure is possible, but will only be effective if one is alert to the constraints and opportunities that the structure presents' (Awan et al., 2011 p. 31).

Within the context of smart cities, spatial agency necessarily implies an engagement with the digital and data-driven aspects of the city. Whether considered mirror worlds or not, in the near future more open and accessible systems like ViLo could provide the principle means for individuals to access and interact with urban data and the digital infrastructure of their cities. Far from imposing top-down control, with a little support and instruction such systems could be pieced together from free-to-use and open source software by their users. In this way ViLo and systems like it point the way and contribute to the opening of a space of digital agency and participation between Townsend's two models. Capable of incorporating user generated content and providing rich multisensory experiences, they also provide the ability to view the city at different scales bestowing on their users the benefit of abstraction implied by Gelernter's 'topsight' or the view of the whole.

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Towards social Geodesign: A case study in Faenza, Italy

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Hrishikesh Ballal

Introduction

The advent of the age of web-based tools opens numerous possibilities for sharing opinion and decision-making in participatory planning. Co-creation in urban and landscape design is not new, but it can be improved with modern web-based platforms that allow the involvement of a larger number of participants in different parts of the process. Participants can learn from fast experiments and develop a nuanced understanding. Such an integrated process allows a bottom-to-top planning accommodating cultural and social values, it is fast and enables the development and presentation of many alternative proposals. Geodesign methodology presents a framework based on models (Steinitz, 2012), this framework fully encapsulates the geodesign process from representation of territorial context to supporting the creation of design policies and projects, including the analysis of possible impacts resulted from collaborative decision-making process.

This paper details an experiment with bachelor students from the University of Bologna, Italy. They were invited to a participatory workshop to explore the different phases of an integrated planning process using the town of Faenza, Italy as a study area. As Millennials, they are very familiar with technology and comfortable with digital tools and social media, a trait that can be effectively leveraged in design planning studies.

The main portion of the workshop was developed using Geodesignhub (Ballal, 2015), a collaborative web-based Planning Support System (PSS), with the goal to make students co-create ideas for the future of Faenza, in the face of its main vulnerabilities and attractiveness. In addition to it, other web-based tools were used to get opinions from a larger number of people, before and after the workshop.

In the pre-workshop phase, a WebGIS was used to create mental maps about the main characteristics of the area; Google Forms and a word cloud generator helped identifying genius loci of the place and sharing main ideas about designs, while the mapping web-application Crowdmap allowed to collect geographic information generated by users (Volunteer Geographic Information – VGI).

Furthermore, a web-platform (Survey Monkey) was used to implement the Delphi technique to share values about impacts in decision-making. Co-constructing a matrix of impacts, the students arrived at a maximization of consensus about preferences and values.

During the workshop itself, they used all web based applications to analyze the area and to co-create design alternatives. After the workshop, social media platforms were used to present the proposals constructed by the students to a broader number of people, using Facebook to promote the dissemination and providing a link to the voting process, engaging experts and non-experts. This study has significant implications on co-creation, co-development and negotiation using new generation of planning support tools and involving a wide range of people.

Geodesign Method

The pressure to manage the landuse of a territory given the demands on it necessitates the capability to construct proposals for alterative futures. Although different social groups will probably have different values and ideas for the place, at the end it`s important to arrive to a consensus to make a credible plan for a common future.

A bottom-up participatory process changes the role of the urban planner: from one where the planner is managing the "approved way" to one where the planner will act as a decoder of and orchestrator of collective values. These tasks demand new methods that support to opinion making and to decision making. Geodesign can provide a systematic methodological framework to deal with it. Modern geodesign tools provide an exciting opportunity to involve a broad spectrum of potential participants, from professionals to local people, in an accessible and accountable participatory process that informs the planning outcomes.

The "Steinitz framework" of geodesign (Steinitz, 2012) is based on the application of models that compose two big components: the stage of "assessment", where you collect data and transform it into information, and to use the information as knowledge to support the discussions. This first stage is divided into the models "representation", "process" and "evaluation". (Figure 01)
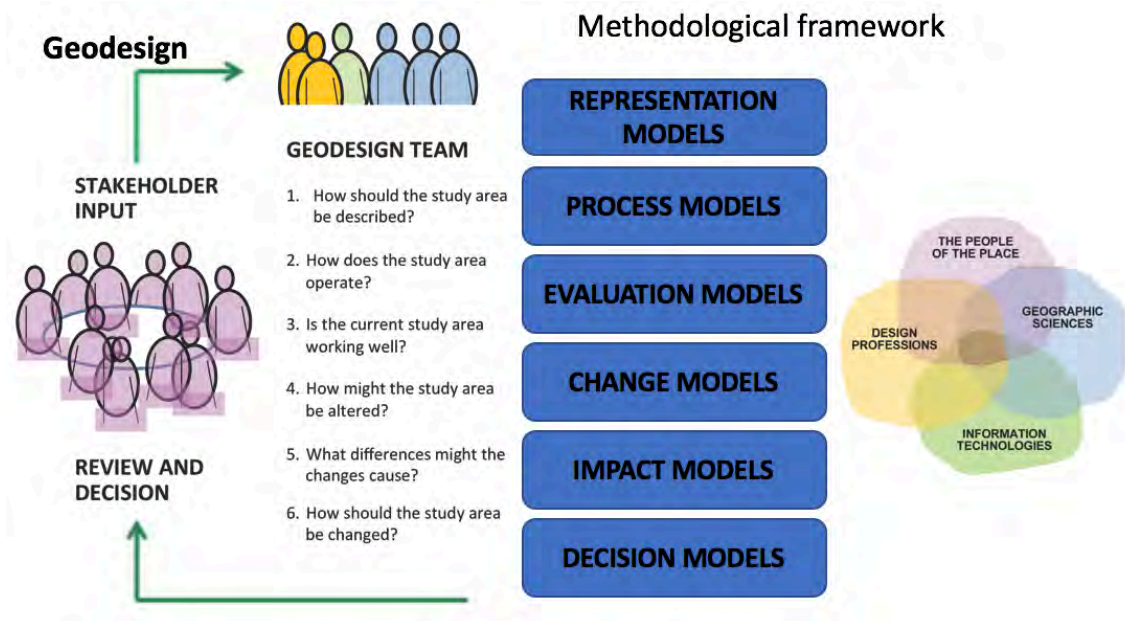

Figure 01 – Geodesign framework: representation, process, evaluation, change, impact and decision models.

This output of this stage is a series of maps that decompose the design problem in to systems and these maps. (Figure 02).
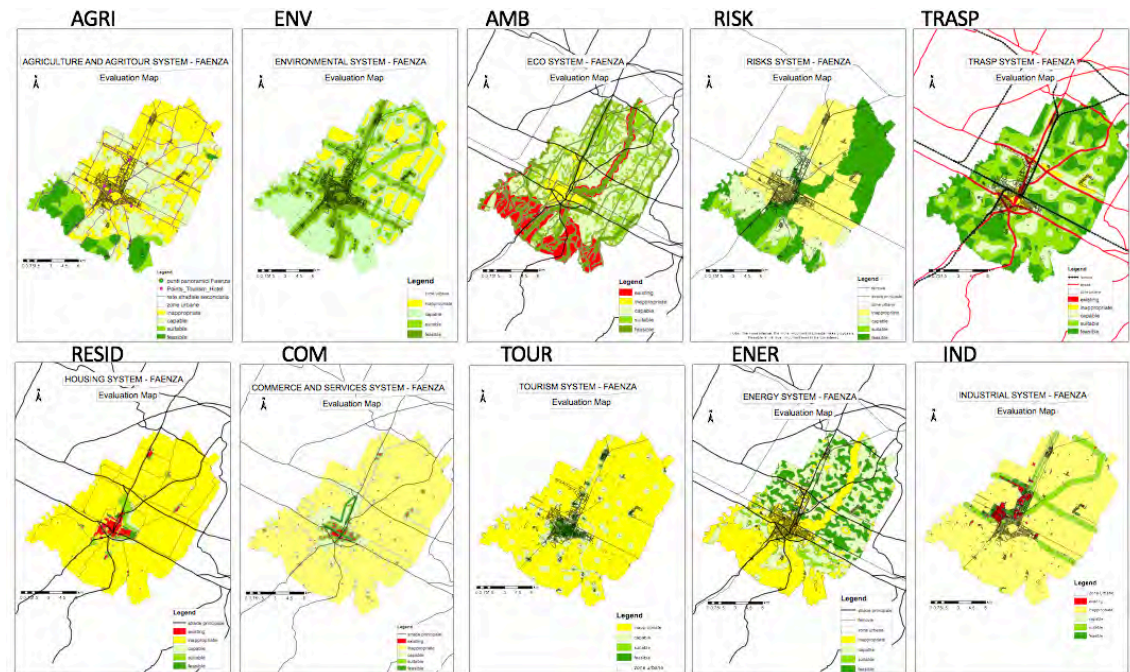
Figure 02 – The main characteristics of vulnerabilities and attractiveness, composed in systems to be used as reference to construct proposals to the place. Case study of Faenza, Italia. UNIBO Workshop, May 2017.

The participants use these maps, their knowledge and training to develop "interventions" and assess their impact. This is the second stage of the framework models of "change", "impact" and "decision". This collaborative, consensual design building happens till the point they reach an agreed design. (Figure 03).
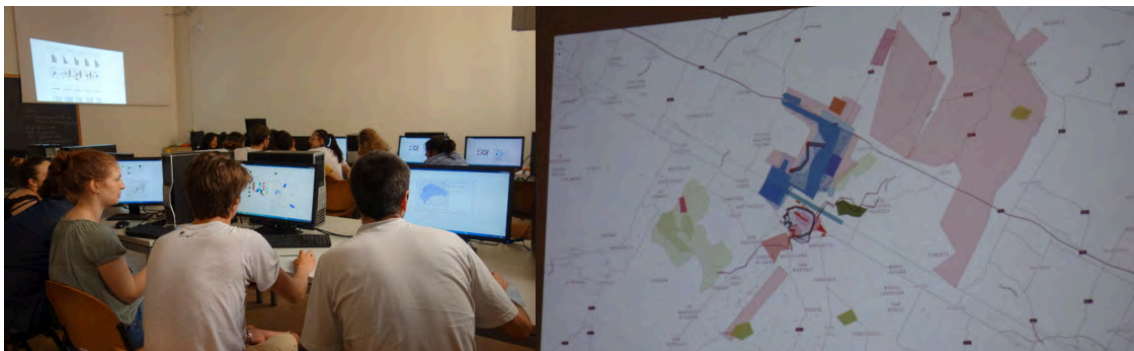

Figure 03 – The co-creation of designs and the consensual design. Case study of Faenza, Italia. UNIBO Workshop, May 2017.

Faenza case study – Emilia Romagna, Italy

The authors have worked together on a number of projects where Geodesignhub and this design workflow was utilized. We conducted a workshop in Faenza, a typical medium size city from Emilia Romagna, Italy. The participants were graduate students from Civil Engineering department in the University of Bologna[i]. We could call these young students "Millennials", and we took it as an opportunity to utilize modern social media tools to see if we could push the boundaries in terms of the interest, comprehension, visualization and interaction in geodesign.

The primary motivation for this experiment was that in our previous studies, we repeatedly got feedback from the participants that they wanted to have a say in the construction of the base data. To address this,

we used a VGI (Volunteered Geographic Information) and a WebGIS (web based Geographic Information System) that could be used by the students directly.

We chose to use Crowdmap as a collaborative VGI platform. The basic idea was to use the posts from the participants to define and create the main systems in the workshop (Figure 04). However, we observed that the platform was not that user friendly and the students didn't know the territory enough to collaborate. We conclude that local knowledge of a place is necessary to use this platform.

Figure 04. VGI – Volunteered Geographic Information. Case study of Faenza, UNIBO.

The WebGIS was proposed with the idea to present the main characteristics of the place according to groups of thematic maps (Fig. 05). We used Apache and Mapserver to construct it, and the app was available in the server from the laboratory. In this software, the participants could understand the possibilities e.g. in "agriculture" analyzing the maps about land use and existing agriculture areas, types of vegetation, existing facilities and roads. They could understand about environmental needs and fragilities analyzing the thematic maps of rivers, air pollution, soil pollution and noise pollution. The idea was to make them understand the main characteristics that were considered in the construction of systems of evaluation maps (Figure 02).
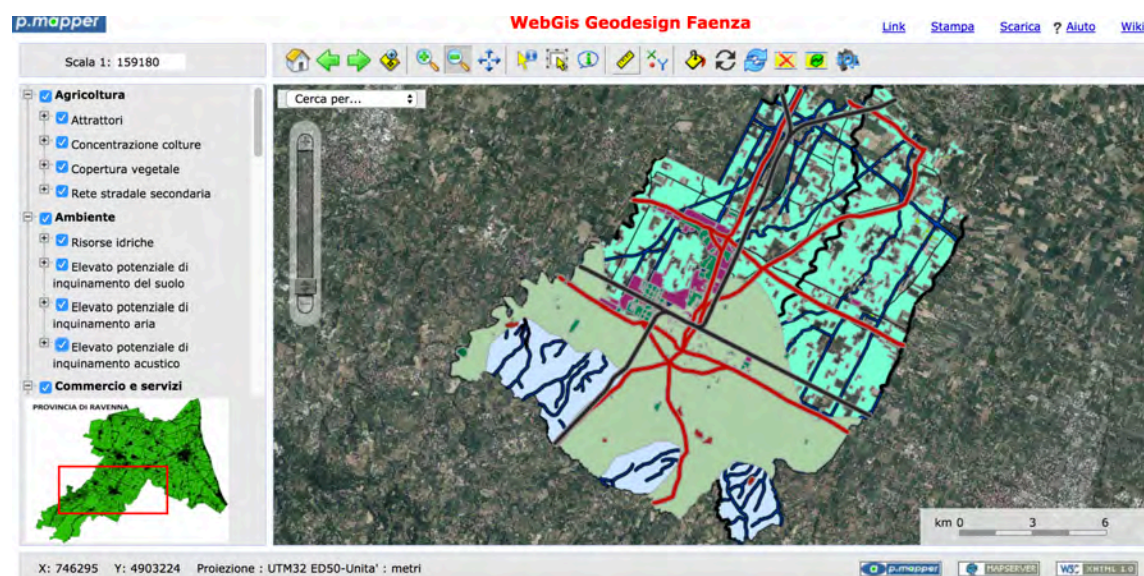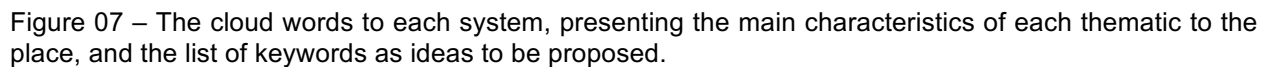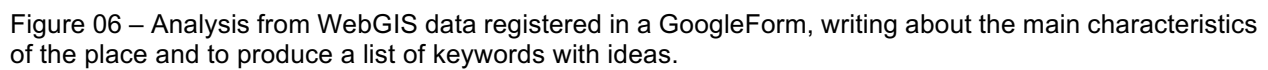

Figure 05 – WebGIS of Faenza case study – the main characteristics of the place organized in thematic maps, according to main systems.

We asked them to use the WebGIS to analyze the data, and use Google Forms to write a paragraph to capture their understanding of the system: its potentials, restrictions, main characteristics (Figure 06). In addition to the paragraph, they were asked to generate 5 ideas, as keywords, to improve that system. With all the paragraphs, we produced graphics of cloud words to each system, and the list of ideas to each system was used during the workshop while they were creating projects and policies to the place (Figure 07).

Figure 06 – Analysis from WebGIS data registered in a GoogleForm, writing about the main characteristics of the place and to produce a list of keywords with ideas.

Figure 07 – The cloud words to each system, presenting the main characteristics of each thematic to the place, and the list of keywords as ideas to be proposed.

Once this understanding of assessments was developed, we then generated a table of impacts collaboratively. Impacts define the consequences of proposing projects for one system in places that are of interest for another system. For example, the impact of proposing projects of "housing" in areas that are adequate to "agriculture", and are of interest to "commerce", that are important to be protected because of "risks". These impact tables are used by Geodesignhub to demonstrate the impacts (positive or negative) of an intervention on that system and also on all the other systems. (Figure 08).

Figure 08 – The definition of systems impacts table (from violet – most positive, to orange – most negative). The use of classification during the meeting, analyzing the impact of each project or of a combination of projects.

We used the Deplhi questionnaire method to develop impacts collaboratively. The participants were presented in a scale from most positive to most negative, as shown below and each participant was asked to vote on the impacts using a web based software, and the results were computed to calculate the average and the majority value. This result was presented to the participants, that could vote again, comparing the general opinion with their own opinion. (Figure 09).
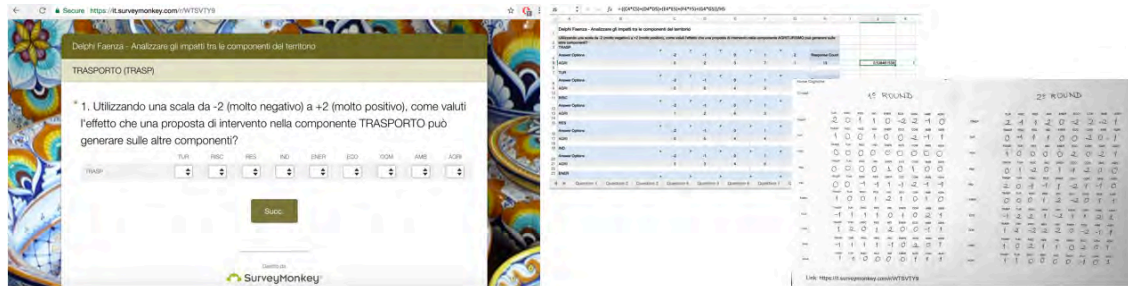
Figure 09 – Delphi method using Survey Monkey software to share decision about the impact of projects from one system to the other systems.

The "intervention" stage of the workflow or the "Change Models", are developed using Geodesignhub. Geodesignhub is a web based platform which accepts the evaluation maps, impact tables and allows the participants to co-create designs that are plans of alternative futures to the place. In Geodesignhub the participants create diagrams, that are projects and policies to the place, the "change" model in the framework. These proposed changes are analyzed according to possible impacts, that is the "impact" model, and in a process of combining proposals they construct together designs that are the "decision" model. (Figure 03). Once a consensus design was built, we used the inbuilt voting app in Geodesignhub to share the built design to a wider group of people who could not come to the workshop. (Figure 10).
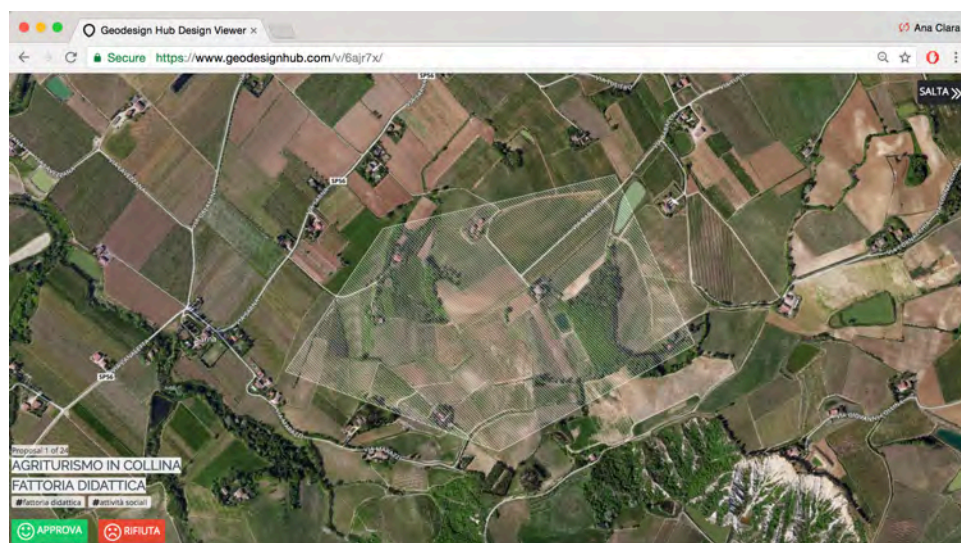

Figure 10 – The process of voting – the user sees each diagram in an image base, and votes if he approves or disapproves the proposal.

We used our Facebook page to host the photos and used emails, Whatsapp and mainly Facebook sharing to disseminate the design by internet and encourage people to vote. In addition, we used Facebook ads to target the voting to a profile of users based on age and geography (Figure 11). We received 587 on the design through this method.
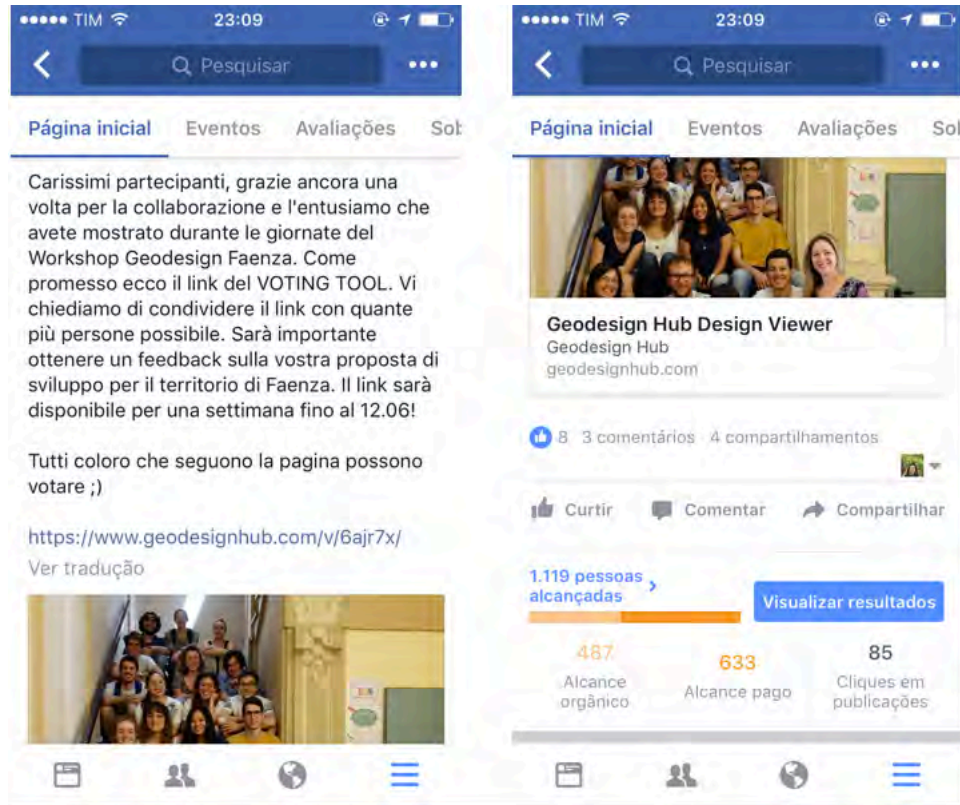

Figure 11 – The widespread of voting system, using Facebook.

Results

With this experiment, we tried to incorporate different collaborative tools in planning and design using the geodesign method as the glue that holds the process together. In this case study, data was transformed into information and information promoted knowledge, this resonated with the participants and they participated enthusiastically in all the steps. The Millennial students did not have any difficulty to use the technology to follow all the steps. However, training was needed for them understand the meaning and the objective of each stage in the framework. They felt quite involved and were responsive and collaborative during the all the process. In our experience, having conducted numerous such workshops, we found that the participants were more objective in proposing ideas, in sharing ideas and in arriving to a final design.

They could understand and accept the evaluation systems, and generally all the information constructed before the use of Geodesignhub. In other case studies, when these data were presented to the users, they sometimes didn't agree with the data presented because they were not able to understand the meaning of the systems and the logic to construct them. This experiment opens up exciting possibilities to engage young people, possibilities for digital democracy and engaging larger people with planning.

Acknowledgements

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Making It Up As We Go Along: The Iterative Nature Of Collaborative Platforms

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Abstract

Dealing with the complexity of modern cities is likely the biggest challenge of any urban planning effort. The traditional way of managing this complexity is through restriction (1). But the potential for creating solutions to problems emerging from complexity (or its restriction) grow in the same pace. The problem urban planning faces is, therefore, not one of creating solutions (which presupposes a certain degree of heteronomy (2)), but the interfaces that can mediate the relationship between different individuals and institutions in complex processes. Planning is, in this sense, "the art of linking knowledge to action in a recursive process of social learning" (3). Participatory platforms in urban planning (such as participatory budget initiatives) are, however, often subject to one of two criticisms: that they do not generate enough engagement to become legitimate substitutes of traditional processes based on representative democracy, or that, when they do, the natural restrictions to participating in them (such as the requirement of specific knowledge or tools) make them as restrictive and hierarchical as the processes that they intend to open up. Meanwhile, the advent of the internet and the widespread adoption of digital technologies have created the need for the development of collaborative platforms (operating systems, protocols, crowd mapping and so on) as a way to deal with complexity, while also providing the means through which such platforms could be developed (4). This article analyses some of the most successful digital collaborative platforms that have emerged in the last two decades to identify similarities and find the lessons that participatory planning processes might draw from them. It concludes by proposing that the iterative nature of participatory processes should be accepted and incorporated by them; that is, that the natural way towards autonomy is a ladder, not a static goal, as aptly illustrated by Sherry Arnstein (5). This is presented as a way of avoiding the inherent paradox (6) that, since the way platforms are designed influences the use people make of it (7), no collaborative process can ever be truly horizontal. There will be relevant iterations in the path towards autonomy as long as any given effort furthers the openness of previous systems and leaves way for further opening of itself, as the participatory demands and capabilities of people evolve on top of it.

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Planning in real-time: exploring the use of interactive design software in promoting social inclusivity and ownership among local residents in the redesign of a London Housing Estate

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Abstract

Urban planning, as a modern technical profession, has always involved some sort of representational and manipulative technology, whether it be the paper plan, or the GIS. In both these cases, the system of representation and manipulation of urban form leads to the question of who is empowered to do the planning. In the case of the plan on paper, who holds the pen? In the case of GIS, who is operating the software, or instructing the specialist software operator? And how do these relate to local citizens and local democracy?

Urban planning did not develop in a civic vacuum, but within a whole system involving different kinds of participation by citizens through political representation and direct engagement. The question becomes: in the age of the internet, and near-ubiquitous internet access in European cities, how might the planning system change to make best use of the technologies available for design and manipulation of urban form online, linked to user participation?

This paper reports on the application of a linked urban design and crowdsourcing software platform to a housing estate in London. This involves adapting a recently created 'Incubators' software platform to the regeneration of a site featuring a series of public spaces (courts and courtyards) enclosed by a set of private and social housing blocks.

The paper firstly briefly outlines the Incubators system at its current stage of development, and then introduces the site, including the physical regeneration of the area, and issues relating to local resident inclusion and management. We report on the most recent developments and challenges of devising a system to suit different kinds of stakeholders, giving them access to a system that manifests a shared vision and empowers their sense of plan ownership.

From the perspective of interface ergonomics and accessibility, the paper considers the demographic receptivity of online platforms, and uses collected data to provide a baseline forecast concerning the practicality of a tool like Incubators across a broad age and ethno-cultural demographic at the case study location.

A key challenge is the implementation of this system in 'real-time' – not simply gathering ideas from the public prior to a formal professional planning stage. Rather, the redevelopment of the first parts of the housing estate are happening at the same time as the public inputs to redesign of the later parts. As such, the housing estate can to some extent serve as a microcosm for planning more generally, where there is not a single fixed end product, but different phases of spatial reorganisation overlapping in time.

The paper concludes with reflections on implications for 'planning' as we know it, and how a system such as Incubators could provide pointers for ways of reinventing the planning system for the internet age, and in a way that boosts social and political inclusivity.

Connected Seeds and Sensors: Co-design of Internet of Things for Sustainable Urban Agricultural Communities

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Introduction

In this talk we will present recent research from the *Connected Seeds and Sensors* project, funded through EPSRC's *Internet of Things – Research in the Wild* stream. The research explores co-design of digital and networked technologies with urban agricultural communities to support more sustainable food practices in the city. Through the development of a Connected Seeds Library, the project seeks to expand the design space of sustainable smart cities and Internet of Things (IoT) technologies beyond managerial, utilitarian and efficiency-based narratives, by incorporating playful interactions, personal stories, and co-creation with urban food growing communities.

We describe the process of co-designing a digitally-enhanced seed library that tells the stories of the seeds and the people who grew them. The Connected Seeds Library is intended as a community urban resource, that celebrates the cultural diversity of food-growers and seed-savers in east London, to increase the skill and knowledge of growing "exotic" crops (i.e. not typically grown in the UK) – in a local climate. Such crops are in particular demand in this region due to large scale immigration and ethnic diversity.

The research aims to empower communities by connecting them to their heritage through stories around food. The intended outcomes are a reduction in reliance on shop-bought produce thereby helping urban growers save money, as well as contribute to a healthy diet of freshly grown local vegetables. In addition to contributing to biodiversity, it is our hope that the library will inspire people to grow their own food, thereby reducing the CO_2 emissions of food that must travel large distances from the site of production to the shop shelf.

We will discuss how the research proposal was developed collaboratively with Spitalfields City Farm, by identifying opportunities for digital and networked technologies to help collect and share the rich local knowledge of food-growing and seed-saving around east London. We will also describe the process of community engagement and co-design of the library, including how we worked with 15 Seed Guardians over a whole growing season to document the growing process and tell their stories.

We will reflect on some of the challenges and opportunities of community-based IoT and sustainable smart cities, including meaning-making of different types of data and technical challenges.

The talk will conclude with a proposal for Community-Based Sustainable Smart Cities, including key principles and strategies for designing with culturally diverse, often geographically disparate urban communities, beyond top-down utilitarian narratives of sustainability. This vision proposes an understanding of sustainability, in which the wellbeing of the environment and the community are mutually constituted, and not reducible to quantifiable measurable metrics such as energy conservation.

Workshop
DESIGN and the Smart Citizens. The Pathway of Communities
Here we are. Where Community talk, speak out and remain in Light!

Professor Arianna Mazzeo
Professor Design for Social Digital Innovation
Director Masterlab Service Design for place and community building.
Leader Desis Lab Elisava- Hub Design for Social, Digital Innovation and Sustainable Research
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Context
The metropolis, as Frank Lloyd argue in his book *When Democracy Builds, "it is so far from human scale that is not anymore a place where we can have high life standards"*.We import the american vertical model of skyscrapers, design the city as a consumerist space of negative freedom, conceive it as the lack of forces which prevent an individual from doing whatever they want, toward neoliberal pleasures and needs.
In his discourse on 1956 on urbanism and society, Adrian Olivetti said "*In the city of man, the street, the factory, the house are the most substantial and visible elements of a civilisation in evolution*" complained that Italy's cities had been expanding "*incoherently for uniquely selfish goals, materialistic, speculative, without a real plan coming from a general vision of life*". At the opposite is model of Ivrea and Matera community, is based on new factories were designed with in-built space for cafeterias, playgrounds, rooms for debates and film screenings, and libraries with tens of thousands of books and magazines. Outside, an extended network of social services was constructed including nursery schools, Ivrea's first hospital, and in Matera the first mountaintop retreats for workers' children. Following this argument, Jane Jacobs, in *The Life and Death of Great American Cities*, argue, "*Streets in cities serve many purposes besides carrying vehicles, and city sidewalks – the pedestrian parts of the streets – serve many purposes besides carrying pedestrians.*" They are intended and designed as an efficient way to get people around on foot.All those projects require the active and collaborative participation of citizens, for that we should talk about *a city building strategy* that works only when participatory and collaborative form of dialogue are implemented. Here is when "expert design" bring creative ways of visioning and making those visions a little more "real". At the same time "diffuse design" happen where the design process is more of a grassroots movement and less of a top-down distribution of ideas. This process of co-design of the city informed the transition design framework, which relies heavily on individuals shaping change within small, local, open, and connected (SLOC) communities.We have the power as citizens in designing the *politics* of everyday life, but not alone. We need expert design to support, link and transform the space we live in a place of knowledge production. Not only do we have the ability to *resist* within our participatory and collaborative democracy (where existent), to speak out and we also need to be able to *propose* new futures and ways of living. The resiliency of true democracy in that it sustains a diversity of options and opinions making city a platform for opportunities for all through design.

Workshop
The workshop format is interactive and open format that aim to co-create a dialogue about rights and space of citizens in the smart city to co-design a new sense of place. New "*dispositifs*" of democracy trough conversations and dialogue.
The other aim is create a new public in co-production of services as the base of the public policies and the common goods.

Roadmap

To co-design the city as smart citizens and be change agent we understand that:

1) the politics of everyday life can regenerate democracy and vice versa and

2) we need to make meaningful things happen *as a form of proactive* resistance and vice versa through dialogues and conversations
3) the city social forms, as such, can not be designed / built directly. What can we can do through design is to create the conditions for their existence to become possible and a real collaborative eco-system of rights to be and act as smart citizens.
4) Contemporary design now has effective operational and cultural tools that allow it to intervene in the construction process of the smart city, bringing a remarkable and original contribution. And this ability will not be still recognized but is already existing in the nature of "expert design" as cultural transformative mind-set to think, act and reflect with people about new and more resilient ways of living.

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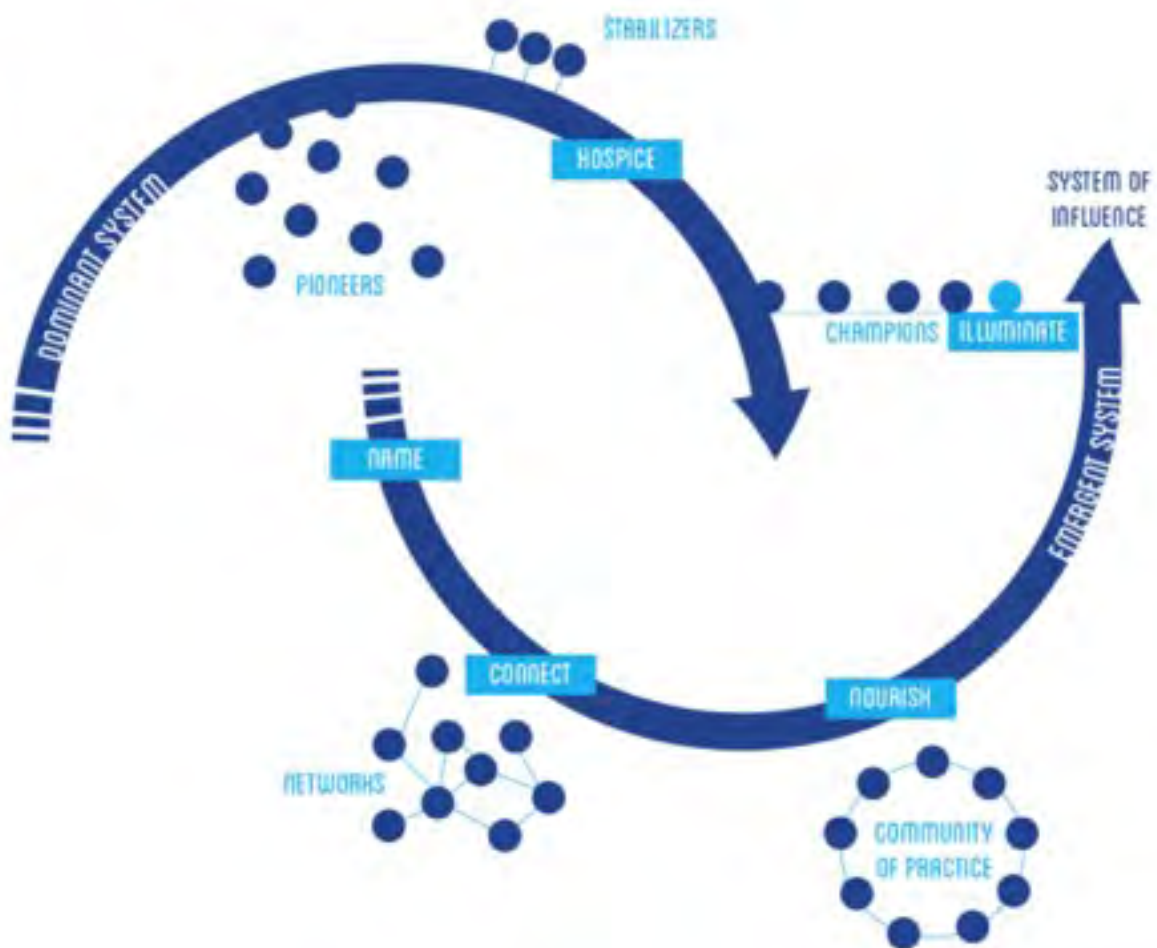
Workshop for SMART CITIZENS
What we can design our rights to be agent of change and smart citizens?

To enable the design process we co-create on the base of the following ideas:
Idea 1: Rethink public space. Building trust, service for smart citizens
Co-creation/crowdsourcing/co-development actions.
Idea 2: Bring the needs outside. Co-design with the community
new physical-digital work environments and eco-system for quality of life and protection of the environment. This central role of users is transforming the traditional city planning model from top-down to bottom-up approach.
Idea 3: Make your communication opportunities to learn. Design for Democracy. Enabling citizens to directly report non-emergency problems to the public administration and requests about local issues as access to rights and equal opportunities.
Idea 4: Create Job Opportunities for All. Job Creation is one of the more important challenge we need to face. The practice of participatory design can shape our present and future worlds in fair and inclusive ways.

We act trough interventions and performance to foster highly interactive engagements of a new participatory era for citizens to speak out. When Design perform for a cultural paradigm shift. "*Here we are. Where Community talk, speak out and remain in Light!" is the research through design performance I run with the students, teachers, practitioners, phds and creative of Elisava Design School and Engineering for the TIME project (Innovation in Teaching Methods&Experiments) as research line of Desislab Elisava, to open up academia into the everyday, the public space and the city as transformative place of a new education mind-set.*
Situated actions, new encounters, performance where the main characters are citizens with their voice and actions for a better now.

What if the city is a transformative open- source lab?
What if our open class is the place where we grow up and learn with the community?
What if our creativity is the platform to foster social innovation? What if we share the right to live the city as smart citizens?
We can shape our present and future worlds in fair and inclusive ways.

Researching through Design and Performance allow all the citizens of a community to act and transform in their own local environment. Starting with your own local context, you can be also change agent and conceiving, developing and connecting *new possibilities* for democracy and wellbeing. In every possible arena where design has a voice, you are the CHANGE AGENT.

Situated actions bridges a number of existing symbolic systems performing very well in temporally demanding tasks embedded in complex environments as our city, public spaces and neighbour, thoroughly symbolic (and representational) relationship, and, have the power to the extent this storytelling as open-ended included the uncertain, unknown immaterial territories and explore it, as extension to complex tasks and creativity process, to transform, amplify actions in which the design community, with all its richness and diversity, is already taking a stand.

Speak out! Stand up for new inclusive ways of living.

Facilitator
Arianna Mazzeo
Leader DESISLAB-DESISNETWORK (Design for social Innovation and sustainability; www.desisnetwork.org) in Elisava Design School Barcelona, Spain(www.elisava.net)

I believe in design and collaboration, open to co-create services and opportunities for all and connect people to life. A transformative pathway toward new cultural circular mind-sets. I'm working and collaborate with critical minds as Ezio Manzini, John Thackara, Irini Papadimitriou,Liz Sanders, Francesca Bria and many more that help me to be humble and open to overcome stereotypes and prejudices. We want to reach and be accessible for the many, delivering co-production of public services in an equal and reciprocal relationship between professionals, people using services, their families and their neighbours.

Involved in European and International Open Innovation Projects, I coordinate the first European Open Design School based on the open culture values, collaboration and digital fabrication, new emerging business models for open innovation research.The challenge is helping professionals, private and public institutions, cultural and creative hubs, policy makers, administrations, foundations, associations and creative industries as well informal groups and start-ups to innovate through service design. This long and open process brings me to work in Cameroon, Mexico, Turkey, Armenia, South Africa for social innovation programs, co.design within the local community and the govern, in order to re-design education through new open educational resources(OER) and policies.

Specialist in ethnography process, my focus is on the co-creation of public/private services. For example co- designing with policymakers scenarios to develop their strategy for their Social Innovation Policy Agenda as well with start-ups performative design think-thank with cooperatives and companies in co-production such as IBM, Gsma Mobile World Congress, and other International organisations (UNIFEM, UNESCO,EESC-European Economic and Social Committee,Frank Nigro' Architects Associated, New York, Open Design School, Victoria and Albert Museum, Xschool, Makers, Fablabs).

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