Smart urbanism and smart citizenship: The neoliberal logic of 'citizen-focused' smart cities in Europe

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Abstract

This paper examines the neoliberal ideals that underpin participation and citizenship in the smart city and their replication mechanisms at European level. We examine self-proclaimed 'citizen-focus' projects funded by or aligned to the European Innovation Partnership for Smart Cities and Communities (EIP-SCC) by way of analysing policy documents and interviews with key stakeholders of smart city initiatives at European level and the Smart City Expo World Congress in Barcelona (SCEWC 2017). We suggest that smart cities as currently conceived enact a blueprint of neoliberal urbanism and promote a form of neoliberal citizenship. Supra-national institutions like the EIP-SCC act at a multi-scalar level, connecting diverse forms of neoliberal urbanism while promoting policy agendas and projects that perform neoliberal citizenship in the spaces of the everyday. Despite attempts to recast the smart city as 'citizen-focused', smart urbanism remains rooted in pragmatic, instrumental and paternalistic discourses and practices rather than those of social rights, political citizenship, and the common good. In our view, if smart cities are to become truly 'citizen-focused' an alternative conception of smart citizenship needs to be deployed, one that enables an effective shift of power and is rooted in rights, entitlements, community, participation, commons, and ideals beyond the market.

Key words: citizenship, smart cities, smart citizens, neoliberalism, European Union

Introduction

Although smart city initiatives and technologies are implemented at the urban/local scale, their circulation and diffusion are strongly shaped by institutions operating at a wider scale (regional authorities, national states, supra-national bodies). In this paper we explore how the smart city policies, programmes and initiatives of the European Commission (EC) actively (re)produce a neoliberal conception of citizenship and participation through mechanisms of funding allocation, the application of scaling and replication techniques, and mobile policy formation (Lombardi and Vanolo, 2015). In particular, we show how under the European Commission initiative for the smart city (European Innovation Partnership for Smart Cities and Communities, EIP-SCC) active forms of marketization have being taking place, with vectorial assemblages of neoliberal governance able to form and move swiftly through diverse cities across Europe and at a multiple scales, promoting a model of participation that is rooted in pragmatic, instrumental and paternalistic discourses and practices. This configuration presents neoliberalism as a more or less coherent ideology, rationality, policy agenda, and structural process that operates at the urban, neighbourhood and individual scales, and at the scale of intra-city collaboration at European and national levels (Brenner and Theodore, 2002; Brenner, Peck and Theodore, 2010; Rossi, 2017). The multi-scalar perspective on neoliberal governance we adopt is made more relevant by the current phase of austerity politics that forces cities, deprived of autonomous spending capacity, to compete against each other in order to attract supra-national investments (Peck, 2012).

Wendy Brown (2016, page 3) notes that, "[n]eoliberalism construes subjects as market actors everywhere, but in which roles – Entrepreneur? Investor? Consumer? Worker?" In their recent evaluation of the smart city participation in Dublin, Cardullo and Kitchin (2018) identify sixteen 'smart citizen' roles, showing that most of these are rooted in what Arnstein (1969) terms 'tokenism' and 'non-participation'. They suggest the 'citizen' occupies a largely passive role, with companies and city administrations performing forms of civic paternalism (deciding what's best for citizens) and stewardship (delivering on behalf of citizens). As other scholars have started to highlight with regards to a variety of smart city contexts (e.g., Gabrys, 2014; Foth, Brynskov and Ojala, 2015; McLaren and Agyeman, 2015; Vanolo, 2016; Wiig, 2016; Cowley, Joss and Dayot, 2017; March and Ribera-Fumaz, 2017; Datta, 2018), in practice, citizen participation is often synonymous with 'choice' and the market, with the predominant citizen roles being: 'consumer' or 'user', selecting which services to acquire from the marketplace of providers; 'resident', if they can afford the exclusive access offered by a 'smart district'; or 'data product', creating data through their use of smart city technologies that

companies can then incorporate into products and extract value from (Cardullo and Kitchin, 2018). 'Choice' reflects an ideal of neoliberal citizenship which promotes individual autonomy and freedom within defined constraints (as dictated by a particular set of rationalities related to capital accumulation, competitiveness, productivity, safety, security, etc.) that reproduce market-led provision of services, rather than citizenship being defined through rights and entitlements delivered by the state. This ideal is further embedded in the everyday practices of 'smart citizens' as the design and functioning of computational devices have shifted 'users' of personal computers to 'consumers' of locational, real-time, cloud- and platform-based economies on the Internet (see Fuller, 2017).

In the following sections, we examine how citizens and citizenship are framed and operationalised through the discourse and programmes of a supranational endeavour, the EIP-SCC. The EIP-SCC, founded in 2011, is an initiative of the European Commission "bringing together cities, industry, SMEs, banks, research and other smart city actors" and aims "to boost the development of smart technologies in cities".[1] It intends to "improve citizens quality of life" by way of focusing on "the intersection of Energy, ICT and Transport". It is divided in six clusters[2] ('citizen focus'; 'business models, finance and procurement'; 'integrated infrastructure and processes'; 'integrated planning, policy and regulations'; 'sustainable districts and built environment'; and 'sustainable urban mobility') and a 'Marketplace'. Each cluster is composed of projects and commitments intended as "measurable and concrete smart city engagements/actions from public and private partners". According to its reports, there were 370 Commitments with over 4000 partners from 31 countries in June 2017. The Marketplace aims at providing the platform (a "network of networks") through which cities and stakeholders can collaborate. The enterprise received initial funding of €18 million, which increased exponentially to €365 million only two years later, making it central to the policy goals of replication, emulation and translation.

As Kitchin *et al.* (2017a) suggest, the EIP-SCC is a supra-national epistemic community and advocacy coalition for sharing and scaling up the smart city vision by funding new technocrat posts, seeding and demonstrating the potential of the smart city vision, and fostering social learning. Given that cities "cannot be detached from the wider extra-local fields of policymaking, modelling and evaluation" operating across places and scales (Peck, Theodore and Brenner, 2013, page 1096), the EIP-SCC seeks to corral and shape such fields to promote a technologically-led neoliberal model of urban growth. Indeed, the 'Marketplace', aims to

[1] https://archive.eu-smartcities.eu/faqs#SMP_Innovation_Partnership
[2] http://archive.eu-smartcities.eu/clusters

extend entrepreneurial urbanism and smart city policy through mimetic adaptation, scaling and replication of extra-local directives by funding initiatives across EU consortia that can develop working 'models' and 'best practices' which can be extended and redeployed in other cities. Its programme of 'Lighthouse Cities', for example, funds public-private applied research in a small consortia of cities, with the ideas and initiatives developed then transferred to 'Follower Cities' to determine their wider applicability, adoption barriers, and how these might be ameliorated.

Part of the EIP-SCC mission is to consider modes of governance and the roles and functions expected of smart citizens. In the reminder of the paper, we examine the ideological underpinnings of the delivery, replication, and participation of most EIP-SCC 'citizen-focus' projects – those that claim to explicitly consider citizen roles rather than simply treat them as consumers or recipients of smart city initiatives. We do so through a discourse analysis of policy documents, secondary sources, and a dozen interviews with stakeholders in a small sample of its flagship projects conducted in two European countries in October and November 2017. Moreover, we reflect on our participant observation of the 2017 Smart City Expo World Congress (SCEWC), held in Barcelona. The latter is a professional, institutional and social meeting point, "a leading platform of ideas, networking, experiences and international business deals", which in 2017 attracted over 18,000 visitors, with 675 exhibitors, from over 700 cities.[3] During the Expo, we conducted 20 short and targeted interviews with city officers and corporate exhibitors, asking questions around the different institutional arrangements and scales in the delivery of smart city projects, the time-line according to which projects are prepared, funded, and institutionalized, and the actual existing spaces for citizen feedback and control within such projects. Before examining this material, we explore how the drive to create smart cities is the latest technologically-led version of entrepreneurial urbanism and neoliberal citizenship.

The neoliberal smart city and smart citizenship

Neoliberal urbanism can be summarised as a model of urban growth based on marketization, that is, the further "subordination of place and territory to speculative strategies of profit-making at the expense of use values, social needs and public goods" (Peck, Theodore and Brenner 2013, page 1092). In a neoliberal framework, the market arranges services, infrastructure, and resources (including housing and public space) that hither-to-fore have been provided by the state. Such a shift in the ownership of what were public assets (privatisation) and provisioning of services (marketisation) has been driven by arguments concerning

[3] http://www.smartcityexpo.com/en/

efficiency, competitiveness, and value-for-money that pave the way to strong austerity policies (Peck 2012). At the same time, financial capital, increasingly central to innovation-led growth, has been strengthened through market re-regulation which protects short-term and risk-averse returns (Lazonick and Mazzucato, 2013), with cities being not just the sites of production and experimentation of technologies, but the ultimate target market (Rossi, 2017).

Indeed, while visiting the Smart City Expo World Congress (SCEWC, Barcelona 2017) and talking to many private-sector representatives, engineers, and CEOs, it appeared clear to us that private companies are ultimately, if not exclusively, relying on public money to expand their smart initiatives. Mayors and city officials were seen overwhelmingly as customers, the smart interlocutors who are willing to invest in a problem-solving technology. Two complementary processes work to enable such a shift. First, cities struggling with tight budgets become increasingly reliant on competitive funding from supra-national bodies in order to implement technologies and services – although the neoliberal discourse downplays this sizeable public investment in critical infrastructures and skills (see Mazzucato, 2011). Second, austerity is driving city administrations towards outsourcing and procurement of smart solutions that are purported as necessary to cities own competitiveness (best practices *among* themselves) and as energy/labour-saving (best practices *within* themselves) – although savings and efficiencies can only be realised after significant start-up investment and on-going service contracts which, after pilot funding runs out, are bound to be sought within the market constraints of competitiveness and profitability.

Smart cities, then, have emerged as the latest, tech-led phase of the entrepreneurial city (Hollands, 2008; Shelton, Zook and Wiig, 2015), through which private interests seek to capture public assets and services by offering technological solutions to urban problems (e.g., congestion, emergency response, utility and service delivery). Dublin in Ireland illustrates this phasing, adopting ideas of entrepreneurial planning in the 1990s, the creative city discourse in the 2000s, and finally the smart city in the 2010s (MacLaran and Kelly, 2014; Coletta, Heaphy and Kitchin, 2017). While setting appropriate goals for cities via systems of urban benchmarking, the neoliberal smart city aims to attract foreign direct investment, offering areas of the city as testbeds to pilot new technologies, fostering innovative indigenous start-up sectors or digital hubs, and attracting mobile creative elites. Intra-city competition fits well with a speculative approach to housing, privatisation of space, and attraction of more affluent buyers, all characteristics of neoliberal urbanism which conceives urban land via exchange value rather than use value (e.g., Kitchin *et al*., 2012). Thus, there are concerns as to the extent to which smart city practices in regeneration programmes, such as Living Labs and hackathons, might

act rather as a magnet for the in-flow and retention of 'creative classes' and as gateways for gentrification (Cardullo, Kitchin and Di Feliciantonio 2018). In other words, the latest hype around smart technologies has reinforced an already winning neoliberal discourse on city growth. Ultimately, we concur with Brenner and Schmid (2015, pages 156–157) when they suggest the dominant smart city discourse merges different layers in a meta-narrative around global urbanism: urban triumphalism (contemporary cities represent the latest expressions of a progressive historical development of human society, technology and governance), technoscientific urbanism (information technology corporations aggressively marketing a technical 'fix' for urban messiness), and urban sustainability (cities resemble "technologically controlled islands of eco-rationality" dislodged from the broader territorial formations in which they are embedded).

To this, we would add smart urbanism purports a form of urban citizenship rooted in civic paternalism and stewardship, individual autonomy and freedom of 'choice', and personal responsibilities and obligations that are framed within 'commonsensical' constraints that promote market-led provision of services and infrastructures, rather than being rooted in civil, social and political rights and within notions of the 'common good'. In the neoliberal smart city, in fact, 'choice' is extended in space and time thanks to the proliferation of interconnected and location-aware devices. However, such devices are, in practice, powered by corporate ecosystems such as Google-Android, Apple-iPhone or Amazon-Echo, made operational through contracts with private network providers, and exploited by incredibly vast and transnational platform economies (again: Google, Apple, Amazon, etc.). Apparently free from legal interfaces and physical market boundaries, the entrepreneurial smart citizen is in constant search for affirmation and improvement (see also Ong 2006; Brown 2016). At the same time, smart citizens are disciplined, nudged and controlled within new forms of governmentality – what Vanolo (2014) terms 'smartmentality' – enacted through technologies such as traffic management systems, control rooms, smart grids and meters, that seek to modulate behaviour and produce neoliberal subjects (Kitchin, Coletta and McArdle, 2017b). Smart technologies, in the forms of networked bodily and locational sensors and real-time big data streams, concur to the establishment of a neoliberal subject within the constraints of individual responsibility – for instance, by charting bodily progress, counting steps, or measuring diets, and then by analysing own data and, eventually, recalibrating self-behaviour (see Davies, 2015). Han (2017) calls it "smartpolitics", arguing that while a politics of disciplining, punishing and perfecting the body was central to Foucault's notion of biopower, now neoliberalism has tapped into and is exploiting the psychic realm: "instead of forbidding and depriving, [neoliberalism] works

through pleasing and fulfilling". This chimes with the notion that software is "seductive" because it promises rewards for use, but at the same time it conditions through automation and forms of control, especially when the technology used is not optional and 'black-boxed' (Kitchin and Dodge, 2011). With the coupling of personal and environmental sensor data with the affordance of digital networking technologies, smartness can lead to a "gamification effect" which constitutes notions of 'good' or 'bad' citizen/user through disciplinary dispositives of ordering or ranking (Vanolo, 2017; see also Gabrys, 2014). According to Han (2017), the neoliberal subject is not a "labourer" any more, but a "project".

In addition to the above mechanisms of subjectification, there are concerns that increased reliance on big data analytics, city-sensing, and social-media interactions, activated within a framework of technological solutionism, might privilege on-time and all-encompassing swaths of data and algorithm-led planning decisions over political discussion and agonist processes of governance (e.g., Kitchin, 2014; Vanolo, 2014). For critics, in fact, the dominant smart city discourse has been justifying a "largely depoliticized ideological rubric" (Brenner and Schmid, 2015, page 158), merging techno-scientific solutionism and ecological preoccupations as "consensually agreed metaphors" (Swyngedouw, 2011, 2016) or "stage-managed consensus" (MacLeod, 2011). Even when smart city projects herald more effective forms of active citizenship and citizen empowerment – e.g., Living Labs, citizen-science and open source software – they often do so by co-opting citizen contribution into the wider economic landscape of efficiency, environmental imperatives and a business-driven city (Perng, Kitchin and Mac Donncha, 2017; Perng, 2018). In other words, rather than fostering subversive ideals of experimentation, city hacking or beta-version infrastructures, smart innovation appears more an exercise of replication via short-term and risk-averse finance (see Lazonick and Mazzucato, 2013) and via well-routed 'models' and 'best practices' over unanimous goals, whether the ecological futures of the planet or the imperatives of growth. Wendy Brown (2016, page 4) sums up well the paradox in which the neoliberal subject is embedded: "As neoliberal citizenship sets loose the individual to take care of itself, it also discursively binds the individual to the well-being of the whole".

In the reminder of the paper, we consider the formation of the neoliberal subject and citizenship by examining the ideological underpinnings of delivery, replication, and participation of most 'citizen-focus' projects within the EIP-SCC. We ask: how are citizens being conceived within the smart city, and who is the 'citizen-focused' smart city being built for? In so doing, we chart how 'the smart city' works as a multi-scalar and heterogeneous

assemblage of neoliberal governance, the latest vector for local policies fostering top-down ideals of marketization via urban growth, privatisation of public services and austerity.

The neoliberal smart city in the European Union

Recent policy documents that conceptualise 'the smart city' put a lot of emphasis on shifting power to citizens, apparently addressing concerns around effective participation and sharing of smart city benefits. For instance, the H2020 'Call for Smart and Sustainable Cities' expects funded projects to enhance "citizen ownership of the solutions" through "co-design, co-development and co-implementation of visionary urban planning" (European Commission, 2016, page 116). The 'Co-Creating Smart Cities' report recommends "material or non-material rewards… to show users how important their collaboration in the projects is" (Citizen City Initiative EIP-SCC 2016, page 7). However, a closer analysis of almost 100 Commitments which have set their primary area as 'citizen-focus' reveals quite a different status of play. It would be impossible in this paper to evaluate these many projects individually, but we have reasonable room for mapping patterns in relation to two critical points, c*itizen participation* and *marketization*. We divide the latter in three interrelated aspects: *technological solutionism, nudging behaviour* and *scaling and replication*.

Citizen participation

The first point we observe is that these 'citizen-focus' projects score overwhelmingly in the lower categories on the 'scaffold of smart citizen participation' (Cardullo and Kitchin 2018), with their initiatives realistically offering forms of tokenism (informing and, more rarely, consultation with feedback) or non-participation. In far too many cases, stakeholders of 'citizen-focus' projects offer a view of citizen participation limited to the free deployment of a smart meter, or to incentives for choosing energy efficient providers, or to parking issues relating to the "how" and the "where" of already decided deliverables for electric cars. In other words, the initiatives consist primarily of forms of stewardship and civic paternalism. Such a situation arises because the focus, objectives and solutions were set *before* problems and suggestions from citizens could be taken into account, an issue we observed across projects. Staff noted that creating a smart city initiative that actively involves citizens in its formulation, governance and operation is difficult in practice because of structural issues in producing an application. As of 2017, EIP-SCC partners in commitments were distributed: public authorities 36%, business 26%, academic/research institutions 16%, others 14%, and NGOs 6%, with private individuals providing only 2% of all initiatives (Invitation for Commitments, 2015).

In part, this is because there has been little sustained grassroots attempts to create community-led smart cities, with communities tending to organize their activities and activism around addressing social and environmental issues through political and policy solutions rather than technological ones. It is also because putting together a large, multimillion euro bid is time-consuming and a complex task, carrying high financial or staffing overheads to facilitate a citizen-led bid. What this means is that in most cases, the only entities that can apply are government agencies, companies or universities. Moreover, given the complexities of building a consortium of multiple stakeholders across several locations, adding 'non-expert' citizens into the mix is a significant additional overhead. Instead, the consortium makes a pitch for funding for a project that is designed to deliver certain outcomes (e.g., reduce energy or increase sustainable transport) and only when it has the funding in hand does it seek to engage with local communities.

> "You can't do the engagement before the project because obviously you don't have the funding. And what a lot of people don't realise is the type of engagement I am talking about is not like a quick consultation, a day or a week or a one event, it is a long deep conversation relationship building that takes place over months… So the engagement part is where we shouldn't have set deliverables because it is about engaging the community and understanding the issues." [SC1]

Any engagement that occurs after funding, even if designed to be citizen-centric, has then to meet pre-determined milestones and fulfil the deliverables of the contract, meaning citizens have limited scope to reframe the initiative around their concerns and desires. In a public meeting we attended at one UK Lighthouse project, for instance, citizens questioned the already established targets for implementing electric cars as a substitute for traditional more polluting cars and instead argued for measures to reduce the overall number of cars in their city and for an increase in green areas. More than one project manager complained to us about the lack of flexibility initiatives have in changing goals and project outlines or objectives:

> "There is too much translation between these big projects with all their deliverables and real people to make the connections, it is just really, really hard to do that in any way that reflects the real concerns of people, I think." [SC2]

As one project leader of a small 'citizen engagement' part in a much larger 'citizen-focus' project suggests, "what would make a huge difference is if funders had the confidence in an

approach to allow responsiveness to community, to not have set goals". [SC5] Instead, project objectives are vetted through "a whole series of spreadsheets" with the predominance of quantitative indicators and benchmarks that appear at odd with the uncertainty of the innovation process (it is a risky endeavour, otherwise it would not be innovation), and with its cumulative and collective character (change takes time and it involves many different stakeholders and interests) (see Lazonick and Mazzucato, 2013).

The EIP-SCC claims their Commitments "move away from a traditional consultative approach towards a disruptive, non-conventional and pragmatic one… so citizens' voices are not only heard, but are instrumental in solution design" (EU Action Cluster, 2015, page 24). There is little evidence to support this assertion. In the smart city vision fostered by the EIP-SCC citizens are encouraged, at best, to help provide solutions to practical issues which would respond to local and contextual situations – these are forms of placation, such as producing an app during a hackathon, or feeding back on a development plan. They are not encouraged to formulate or lead initiatives or propose communitarian projects – such as sharing initiatives, or urban forms of co-ownership of the common good (e.g., co-ops or shared infrastructures) – or to draw an alternative to the fundamental political rationalities shaping an issue, or to re-imagine a political debate. In this sense, "citizen-focused" is often just a buzzword to draw funding.

In our view, the paradox of fostering increased choice with less meaningful participation for citizens is due to the contradictory coming together of forms of technocratic and market-driven governance with poorly understood and practised notions of conviviality, commoning, civic deliberation, resource sharing, trust building, and other face-to-face forms of confrontation and living that make *polis* and communities work. While claiming to increase meaningful forms of direct participation, neoliberal governance works within structuring bureaucratic and ideological path dependencies and often hinges on computational forms of participation which are set already within circumscribed software environments and solutions (Gabrys, 2014; Kitchin, Coletta and McArdle, 2017b). This is often recognized by their own architects, as another project leader told us:

> "I am starting to think really there is too wide a gap between how these projects are working and what the concerns and issues that real people are facing in their everyday lives". [SC9]

As Wendy Brown (2016, page 7) notes: 'In public life, governance displaces liberal democratic questions of justice with technical formulations of problems, and questions of right with questions of effectiveness; even questions of legality with those of efficacy'.

Marketization of service provision

If the leading ethos of smart city intervention at European level, as set and operationalized by the EIP-SCC, is not really citizen empowerment or their control on the direction of urban change, we need to ask what are the real motivations and goals for setting up such a smart city programme for "communities"? As suggested above, a politics of austerity (combined with EU law) pressures cities and other public institutions to privatize and outsource public provisions under the 'smart city' agenda. In the H2020 call for smart cities this is recognised explicitly: one of the main forms of impact for initiatives seeking funding is to attract significant private investment in the delivery of public services. So we learn that a "good impact" would be to show a reduction of "the technical and financial risks in order to give confidence to investors for investing in large scale replication" (European Commission, 2016, page 111), so that eventually "private capital can take over further investments at low technical and financial risks" (page 108). In other words, there is an offer, or more likely an obligation, for the socialisation of risks in exchange for the privatisation of services and, eventually, profits. At times, the slippage between citizens, users, and consumers is evident: the H2020-SCC call suggests as a meaningful impact that "the active participation of *consumers* must be demonstrated" (page 107, our emphasis). In contrast, we find only one mention of "citizens" in the impact section, with the goal of making "local energy system more secure, more stable and cheaper for the citizens and public authorities" (page 111). But what kind of 'citizen' is implied here? The installation of smart meters in their own home, or the incorporation of renewable energy source, hardly gives citizens/consumers an "active participation" or a say in the running of the electricity company or grid. Rather, the citizen is a consumer in a marketplace of privatised utility provision and the product (as data). S/he is useful to the extent to which s/he can produce revenue and valuable data for the company and for the deliverable of the Commitment itself.

It is in this climate of increased marketization of citizens into consumers, users, and data-products and of provision of 'efficient' services that we need to frame citizen participation and empowerment. In this context, in fact, even citizen engagement can become a "lucrative and expanding business", as the CEO of a city platform app declared to us [SC10]. We would concur that innovation-led growth shapes and creates new markets, for instance by setting goals and

the general direction for socio-economic change and by reinforcing the entrepreneurial role of the state (Mazzucato, 2011). However, the problem is that this intervention happens at different scales within a neoliberal framework that prioritizes consumption choice and individual autonomy and it is led by market-led solutions to urban issues. For example, the institutional response to smart innovation is based on an evaluative mechanism which is driven by metrics of efficiency and a rationale of technocratic and post-political governance. In the following sub-sections, we discuss further three aspects of marketization and neoliberal governance under the aegis of 'citizen-centric' smart urbanism.

Technological solutionism

The smart city essentially takes a technological solutionist approach to solving urban issues (Kitchin 2014). That is, there is a presumption that all aspects of city functioning and life can be mediated or treated or optimized through technical solutions (Morozov, 2013). All that is required to solve issues such as congestion, energy consumption, emergency management of events, sub-optimal behaviour and decision-making are ubiquitous computing, suitable data-streams, and software-solutions. Unsurprisingly, we found a large number of city 'interfaces' working through apps, dashboards, and generally real-time flow of data (public or not) aimed at 'solving' urban issues. For instance, Commitment 148 promises a mobile application that integrates and presents all city services via a smartphone app aimed at "improving [citizens] quality of life and generating wealth" (ported in conjunction with a "Geomarketing tool able to offer promotions and events to users who are really close to their stores").[4] The Green Network promises to produce a "quantum energy savings, improve urban rent, quality of life and attractiveness of districts" and improve "local and regional long term employment and growth" by refurbishing city districts with the "latest materials and technologies"[5]. Such an approach is underpinned by an instrumental rationality that largely divorces an issue from its wider framing, context and interdependencies, and the role of politics, governance, culture, and capital in shaping urban relations.

Moreover, the operationalisation of these solutions are evaluated on a narrow range of measures. The H2020 €25 million initiative Triangulum, for instance, claims "it will demonstrate and test our approaches making them measurable, traceable and thus bankable"[6]

[4] https://archive.eu-smartcities.eu/commitment/148
[5] http://ec.europa.eu/eip/smartcities/files/bexampleofcommitmentsfromsherpagroup_en.pdf
[6] http://triangulum-project.eu/index.php/project/mission-statement/

in a rush for "reducing good smart cities to portable units of analysis" (Engelbert and van Zoonen, in press). As a project leader on a Lighthouse initiative lamented:

> "Project leaders and the council are all ... like 'oh this is really important', but then all the meetings come back to: 'What are our deliverables? What are our measurable outputs? How do we achieve these measurable outputs?' Everything becomes about a spreadsheet at the end of the day." [SC2]

Somewhat disconcertingly then, funded initiatives are cognizant of the ways in which the administration of their projects further deepens the instrumental rationality at play.

A key aspect of the narrative driving technological solutionism is that government is behind the technology curve with respect to state-of-the-art ideas and systems for managing cities, and that such solutions can only be delivered by the market as public sector does not have sufficient knowledge, skills, resources or capacity to deliver or maintain them (Kitchin *et al.*, 2017a). Instead, they need to draw on the competencies held within industry (such as large global consultancies and the producers of software and hardware solutions) that possess sufficient expertise to guide city administrators and can deliver better city services through public-private partnerships, leasing, deregulation and market competition, or outright privatization (Shelton *et al.*, 2015). The place of the public sector in this scenario is to challenge companies to offer solutions to a set of problems, to make resources available, facilitate stakeholder engagement, and manage contracts.

Technological solutions on their own are not, however, going to solve the deep rooted structural problems in cities as they do not address their root causes. Rather they only enable the more efficient management of the manifestations of those problems. For example, a technological solutionist approach to congestion is to produce an efficient traffic management system that seeks to optimize flow, or produce an app that directs drivers in real-time as to what would be the quickest route given present traffic conditions. These solutions, however, do not address the deep structural issues underpinning congestion, which are infrastructural capacity and excessive demand, where the optimal and sustainable solution is to shift car use to walking, cycling and public transport, not short-term optimization that produces other unintentional effects such as rat-runs through residential neighbourhoods. As such, whilst smart city technologies are promoted as the panacea for tackling urban problems, they largely paper over the cracks rather than fixing them, unless coupled with a range of political/social, public policy,

and public investment solutions, and citizen-centred deliberative democracy - not simply citizen-engagement conducted after the solution has already been decided (Kitchin, 2014).

Nudging behaviours

Parallel to this emphasis on technological solutionism, we observe the increasing trend of envisioning citizens as 'learners', with the aim of educating them as to how to best use resources or adopt a certain behaviour. The European Commission has set the key objective for smart cities as "transition towards a low carbon and resource efficient economy" – where urban EU populations are said to consuming "70% of our energy" (European Commission 2016, p. 105). As this narrative suggests, the implementation of smart cities is a shared and urgent paradigm for our planet since it becomes evermore urbanised. This led to a cottage industry of apps which seek to educate and change behaviour, steering and nudging people towards an efficient model of urban growth and with a commitment at improving "*their* quality of city life". Increasingly, public engagement and participation take the form of "gamification" (see Vanolo, 2017). For instance, Clicks and Links[7] is a company who promotes "behavioural change through gaming and virtual reality" within CITY-ZEN,[8] a project that aims to engage and educate citizens to energy-efficient infrastructures. On a similar vein, Commitment 6939 wants to deliver an "empowering game" aimed at 8-14 year old children to support behavioural change leading to achieve energy reduction in social housing. Commitment 7422 offers a "Cooperative Game on energy efficiency and use of renewable energy" between neighbourhoods within a metropolitan region and between different EU cities. Commitment 7788 too advocates the use of smart platforms and gaming to foster "citizens behavioural change" for energy saving purposes and, in addition, offers the possibility for service providers "to gather a quick picture of [citizens] current sentiment".

While one city official said she was seeing the "already changing behaviour" of her fellow citizens recruited in a smart meters pilot for reducing electricity consumption [SC8], some interviewees expressed deep concerns around the suitability of smart meters as indicators for a change of behaviour:

> "We have talked quite a lot about it [change of behaviour] and how we measure that. We need to look at the quantitative data that we might get from smart meters but we want to understand the everyday lives of some people we are working with" [SC6].

[7] http://clicksandlinks.com/dvteam/city-zen/
[8] http://www.cityzen-smartcity.eu/home/about-city-zen/calendar/

More focussed case studies it was argued will need to be carried out after projects have been delivered to get a true insight into how people understand and act with respect to energy consumption. At the moment, there is no evidence in the cases we analysed that a change of behaviour has actually affected the community in question in any meaningful way, and for the common good. Rather, the framework deployed is clearly rooted in technological solutionism and in a notion of individual citizenship which is instrumental to private provision of public services.

Scaling and replication

Scaling and replication are two crucial and interconnected issues at the heart of the smart city strategy at European level. Scaling seeks to bring forth 'best' solutions and translate successful pilots into deliverables by taking test cases and scaling them through urban experimentation, using prototype pilot studies and *in-situ* trialling to produce market solutions that can be deployed elsewhere. In order to create confidence and a climate favourable to risk-taking investments, scaling aims "to test and validate the business model" [SC8], so that when funding for pilots ends initiatives are vetted with respect to their sustainability with regards to the city and to "the industrial partners and the industrial stakeholders that are also involved in a project, so they can see how they can replicate this in other areas and do business" [SC8]. That means that new service provisions are evaluated through efficiency criteria which, in the neoliberal austerity framework, translates necessarily into savings (doing more with less) of both physical and human resources and in the introduction of payment schemes in the medium term (this was the case for a major project involving rolling-out of smart meters and LED lighting).

Replication is the process of translating scaled technologies and policies in other locales. While scaling seeks to demonstrate local application, replication seeks to demonstrate generalisation and mobility; that smart city initiatives proven in one place can be deployed with similar results elsewhere. It is through this process that transferable technologies, models or 'best practice' and their circulation are established (McCann and Ward, 2011). In the case of EIP-SCC this occurs through the Marketplace and through Lighthouse projects in which Lighthouse cities work together to pilot and scale initiatives before Follower cities seek to replicate their work. Here, the aim is to also create a feedback loop that can inform the initial deployment, as well as create a case for wider deployment. But replication presents a circular rationale. The Lighthouse status is "itself the product of discursive attribution" through which applicant cities have been awarded, and thus certified by the EC, as being 'outstanding' smart

cities (Engelbert and van Zoonen, in press). At the same time, Commitments are projects which endorse an *already specific* version of the smart city: for instance, Commitment 7388 advances a "device aimed at providing the community [with] a reinforcement in a smart perspective."[9] Commitment 7283, 'The Educating City', wants to develop "interoperable platforms and devices … to provide support to the objectives set up by EIP's Strategic Implementation Plan regarding citizens' involvement and their awareness."[10]

The circular discourse between smartness as the 'fix' to city problems and its spinning mechanism is here evident. But as we have been told repeatedly, "certain private and public partners have had to change their offering in order for it to be replicable after the funding has finished" [SC8]. In other words, the initiative produced technologies or policies that were only partially transferable. This is because neoliberalism comes in a variety of means, shaped by national and local political economies, political ideology, state policies, institutional cultures, market practices, legal frameworks, and public sentiment (Brenner, Peck and Theodore, 2010). Neoliberalism is a "mutable, inconsistent, and variegate process" (Springer 2012, page 135), it does not operate in all places at all times in a unified, universal manner, but has varying stages, topographies and topologies (O'Callaghan et al., 2015). Thus, the way in which funding provisions and practices are set suggests little manoeuvrability with the messiness of city living, with project managers sometimes resolving to "promising practices" and improvisation: "So, the project as a whole can run because you said to the funders, in order to get your funding, 'these are the things that we are going to achieve'; but sometimes you don't know that." [SC1] as one project leader admits. With respect to citizen participation and citizenship, while citizens might be stakeholders in the initial urban experimentation, and perhaps in replication studies, it is unlikely they are consulted once the initiative reaches the stage of market product. Instead, the product is made openly available to the market in the case of apps, or procured or adopted by city technocrats on behalf of citizens in the case of infrastructure and policy. Indeed, as Kitchin *et al.* (2017a) notes, in many cases neither citizens or politicians are involved in smart city deployments – such as smart lighting, parking, and sensor networks, which are considered operational matters and often fall outside of planning and development, with decisions being made by city administrators. In this sense, the initiatives are only citizen-focused at particular stages, but not throughout the life cycle of development and deployment.

[9] https://archive.eu-smartcities.eu/commitment/7388
[10] https://archive.eu-smartcities.eu/commitment/7283

Towards a different kind of smart city

During our fieldwork we met many young and enthusiast officers, developers, and community engagement advocates who clearly believed and supported the smart city vision, and especially the notion of a 'citizen-focused' one, and without doubt are conducting a great job trying to slot digital and networked technologies into the everyday life of cities. For us, one problem is that they work forcibly within a neoliberal framework that underpins their initiatives: through the framework of the EC funding schemes and the process by which projects are conceived, evaluated and delivered, neoliberal ideals are transmitted in detail and modelled on the dogmas of efficiency (saving scarce energy), sustainability (changing policy orientation in the long term), and freedom of choice (although instrumental to market imperatives). Our analysis has highlighted the extent to which EIP-SCC supports and is inspired by a neoliberal vision of a 'citizen-focused' smart city, and promotes active forms of neoliberal citizenship and governance through their discourse, configuration and deployment. Such visions, practices and technologies are framed as commonsensical and apolitical yet, as we have illustrated, are deeply ideological.

We found the role of the EIP-SCC being akin to a mechanism of adjustments of opportunities and a platform which allocates funding, displays pre-packaged solutions for various stakeholders, and favours exchanges within already determined boundaries of cooperation. As Springer (2016) suggests, the assumed decentralising tendency of neoliberalism in eroding the state is a myth which both proponents and adversaries claim. For Davies (2017) too, "neoliberalism has always looked to the state to reshape society around its ideals". In other words, we maintain that smart city initiatives driven and supported by the EC funding regime work to create new markets for technology industry and providers, laying the ground for a climate of confidence and less risky private investments. We individuated three specific forms of governance through which this process of marketization takes place: technical solutionism, nudging behaviour, and scaling/replication. Thus, we would argue that such supra-national strategy for 'citizen-focused' smart cities acts as a smokescreen to a much more deliberate neoliberal agenda for cities while circumscribing a particular role for their citizens.

On the one hand, in fact, the policy horizon foreclosed by initiatives like the EIP-SCC 'citizen-focus' cluster seems to reload a matrix of socio-economic relations which sits comfortably with neoliberalism, as both an ideology and a policy agenda. The EIP-SCC original focus on an overall energy and transport industry-led solutionism via computer-operated and networked technologies brings forth a very specific and pre-packaged vision of the future city. At the same time, its policy agenda adopts this ideology and translates it into a programme: this includes privatisation/outsourcing of services, further splintering of infrastructural provisions,

and a general sense that the market, rather than the state, can allocate common resources more efficiently.

On the other hand, the forms of participation envisioned in the 'citizen-centric' smart city are very often instrumental rather than empowering in a political sense, that is, the main objectives and aims of a project have already been decided elsewhere, reinstated at the moment of bidding for funding within the application constraints, and finally reinforced with projects outcomes computed in the forms of "spreadsheets" and "technical deliverables". Parallel to the top-down deployment of resources and services, the EIP-SCC Commitments support overwhelmingly a notion of citizenship which is paternalistic and stewardship-like, modelling *from below* a specific form of post-political participation (e.g., Swyngedouw, 2011). We would argue this is due to a salient transformation in the way in which citizens and the state are supposed to interact through de-centred and self-disciplining forms of governmentality (Peck, 2012). The intense monitoring smart citizens/learners are subject to in the spaces of everyday life, in fact, "shifts the governmental logic from surveillance and discipline to capture and control … through the use of systems that are distributed, ubiquitous and increasingly automated, automatic and autonomous in nature" (Kitchin *et al.*, 2017b: 3). It is as if the smart city has been so successfully framed as "post-political" that being a smart citizen is simply understood as living in and seeking to implement a smart city planned elsewhere.

For us, the limited forms of citizen engagement and citizen power enacted within smart city initiatives means that we need to re-imagine what it means to be a 'smart citizen', for instance, asking: If cities are to be used as testbeds – "living laboratories" (H2020-SCC, 2016, page 113) – for super-connected, technologically mediated smart districts, how can we ensure that they provide a common resource and benefit all citizens? How can environmental resilience and smart technologies enable the reduction of "social exclusion, inequalities, marginalisation, poverty and degraded urban environments" while enhancing health, quality of life, well-being and security of citizens, "particularly among the less privileged social classes" (H2020-SCC, 2016, page 112)? In our view, how citizens are expected, and expect themselves, to participate should be grounded in a much more politically active discourse of rights and urban commons. In other words, how can we re-imagine the driving ethos for smart cities, one rooted in rights, entitlements, community, participation, and ideals beyond the market?

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