

Ordinary Smart Cities

How Calculated Users, Professional Citizens,
Technology Companies and City Administrations
Engage in a More-than-digital Politics

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Abstract: The ‘smart city’ is likely one of the most unbearable current policy discourses and frameworks not just due to its technological determinism. Hence we are interested in exploring alternative narratives on ‘smart cities’ by proposing two main ‘moves’ from conventional perspectives. The first one involves considering a wider range of actors and logics than those usually considered in descriptions of smart cities. This does not just imply paying attention to grassroots organizations and private tech companies that develop data-driven urban services outside the conventional smart city programs run by municipalities, but also taking seriously the various non-digital logics and concerns that articulate or collide with smart city projects. The second move directly derives from the first one, as it proposes to go from a narrow focus on smart governmentality to a broader understanding on the (cosmo)-politics of smart urbanism. We examine these moves in the light of two quite different instances of smart urbanism: a service for urban exploration offered by the tech company Foursquare and a smart city project implemented by the municipality of Munich. Following the political trajectories of these two cases of smart urbanism, we underline the more-than-governmental and more-than-digital logics that intervene in the making of ‘ordinary’ smart cities.

Keywords: smart urbanism; (cosmo)politics; users; post-demographics; citizens.

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I. Decentering the Smart City

For both science and technology studies (STS) and urban studies scholars the ‘smart city’ is likely one of the most unbearable current policy discourses and frameworks. The technological determinism infusing the celebration and critique of ‘smart’ device infrastructures is almost as naïve and problematic as the knowledge claims of the so called ‘new urban science’. What makes these issues unbearable is a combination of their ubiquity (the fact that we are constantly forced to relate to them) and their simplicity (the fact that these are not very good problems to think with). It seems that we could continue to write many articles and books taking apart the idea of the smart city without arriving at new and interesting propositions. So it cannot be overstated that there is an imperative need to turn our attention to what Shelton and colleagues have suitably called “the actually existing smart cities” (2015). As these authors argue, “the assemblage of actors, ideologies and technologies associated with smart city interventions bears little resemblance to the marketing rhetoric and planning documents of emblematic, greenfield smart cities, such as Masdar in the United Arab Emirates, Songdo in South Korea, and Living PlanIT Valley in Portugal” (2015, 14). The challenge then is to ground the smart city in the historical and geographical context in which it is being implemented and thereby to provincialize it (Datta, 2015), to counteract the figure of the “smart city as a kind of universal, rational and depoliticized project that largely plays out according to the terms of profit-maximizing, multinational technology companies.” (Shelton et al. 2015, 14).

But how to do this? In this lecture, we would like to propose two analytical moves for rendering the smart city into a more generative research problem: firstly, decoupling the problem of smart city from the problem of data-driven cities and, secondly, expanding the focus from governmental-ity issues to a broader exploration of the (cosmo)-politics of the smart city. Let us briefly explain these two moves.

Firstly, uncoupling the analysis of the smart city urban development from the capacity of big data analytics to govern urban life is crucial, for some of the most interesting data-related developments and reconfigurations are not occurring under the smart city projects and strategies run by cities. Shelton et al. observe that “it is important to note that the smart city as it has largely been envisioned and critiqued bears little resemblance to the reality of how urban planning and governance is changing in the era of big data” (2015, 15). Accordingly, in order to understand what the smart city of the future might look like, we might need to look at actors, collectives and companies that are not necessarily part of the “new inter-organizational partnerships and alliances, built around the development and implementation of data-driven governance projects” (Shelton et al. 2015, 16). Tironi and Sánchez Criado (2016, 97) point for example to the importance of looking at “digitally -mediated sensing practices developed in grassroots projects that have emerged alongside, but also intersecting and opposing,

smart city projects” and the extent to which “‘alternative’ projects may provide concerned parties with instruments to slow down, avoid the pitfalls of either praise or criticism, and learn how to build more interesting relations to what the ongoing digitalization of the urban might bring” (2016, 98). By the same token, we need to also consider corporate products and services such as Pokemon Go and Foursquare, a case we will discuss in detail, as they enable new ways of relating to and discovering the built environment, albeit by no means integrated in any smart city initiative whatsoever.

By the same coin we need to challenge the idea that the data-driven city would be a good descriptor of the new modes of urbanization that are currently being unfolded around the notion of the smart city. As Shelton et al. have pointed out: “while data is both the driving force behind smart city initiatives, as well as the means by which these initiatives are implemented, the ultimate goal of the policies is fostering economic development, with success judged accordingly. Thus, [...] the smart city idea largely coalesces around strategies for economic growth in an era of austerity” (2015, 16). A good example of this is the Horizon 2020 Program for Smart Cities and Communities, whose explicit aim is not just to facilitate the implementation of smart technologies that lead to the reduction of carbon emissions but to invest in the development of business models for global smart city markets, thus attracting money and jobs to Europe. Discussing a current project funded under this scheme, it will become apparent that smart city projects are rarely shaping the strategies of urban development and they are pursued alongside many other urban development programs. Cities are indeed multiple objects, where different forms of governing, knowing, valuing and practicing the city interact and enter in conflict with each other. In that sense, it seems crucial to go beyond the figure of a data-driven city which would not reflect upon the ways in which smart city assemblages interact with other incommensurable ways of enacting and living the city, to a broader understanding of the politics of smart urbanization in order to encompass both the data-driven government of urban life and, perhaps most importantly, conflicts about the very production of data.

Secondly, we need to go from a focus on the power of smart technologies and on the smart city as a governmental data-driven apparatus to a broader understanding of the politics of the smart city. Most of the literature has been concerned with the types of urban citizens and populations constituted through data-driven and smart technologies. Contributions of leading authors have notably discussed the smart city along the lines of disciplinary and security technologies, rationalities and power formations. Whereas Vanolo (2013) reads smart urbanism as a disciplinary urban development paradigm, Klauser et al. (2014) discuss, under the notion of “governing through code”, how smart electricity projects seek to optimize a “relationally composed whole” (p. 873) not based on an *a priori* norm with which singular elements have to comply, but letting things happen within the limits of the acceptable. Klauser et al. thus address the flexible

and adaptive logics of data-driven and automated governmental securitization. The recent work of Gabrys (2016) places the smart city in a larger power formation involving what she calls planetary computerization and involving new forms of governmental action “performed through environments that are computationally programmed” (2016, 187). Drawing on Foucault’s late reflections on biopolitics and his interest in milieus and environments as objects of government, she frames the power logics of urban participatory sensing around the notions of ‘environmentality’ and ‘biopolitics 2.0’.

Despite the incontestable value of these works, we think that it is necessary to broaden the analytical scope to explore the cosmo-politics of smart cities, and not just to their governmentalities. As Rancière, Latour and Foucault would agree, the notion of politics describes a different relation to power than government. The latter, as Foucault has brilliantly argued, is about the conduct of conducts and relates to the historic formation of power concerned with the securitization of populations and the practices of the state. In Rancière’s terms (2009), government corresponds rather with the policing of institutionalized distributions of the sensible. Be that as it may, the important point here is that studying the smart city in terms of its governmental arrangement is at odds with an exploration of its politics in the Rancierian sense, namely the conflicts, controversies and disruptions entailing the possibility of a redistribution of the sensible or, as Bruno Latour would have it: a (cosmo)political practice aimed at the progressive composition of the cosmos we live by. Such redistributions and recompositions do not just occur through the sudden irruption of the ‘part that has no part’, but are actually unfolded in spatio-temporal trajectories enacting different ‘political modalities’ (Latour 2007), of which governmentality corresponds to only one.

Indeed, Latour proposes the redefinition of politics as cosmopolitics in order to grasp the (contested) composition of common worlds. Drawing on De Vries’s study of the history of maternal blood screening in the Netherlands, Latour charts the various meanings that the adjective ‘political’ can take in such contested processes, redefining who we are and how we live. He identifies five key stages and meanings of the political. Political-1 stands for the stage in which new associations between humans and nonhumans are made; a political moment typically detected by STS scholars studying technoscientific innovations. Political-2 stands for the moment in which the new association (or issue) formed in stage-1 has consequences that entangle a public of unanticipated actors around it (a moment that pragmatists, and Dewey in particular, have detected with their focus on the public and its problems). Political-3 corresponds to the moment in which the machinery of government tries to turn the issue into a clearly articulated question of common good (the political as framed by political scientists studying the question of sovereignty). The next interval on the trajectory of an issue is political-4, defined by Latour as the Habermasian moment, in

which the issue is debated in a deliberative assemblies. The final stage, political-5, is labelled as 'governmentality' and corresponds to the moment in which the issue has become naturalized to the point that it is taken for granted and appears as completely apolitical¹.

Latour's (cosmo)political framework is helpful to empirically follow the different types of issues unfolding around the smart/data-driven city and thus expand the narratives and stories we tell about it by including the various actors and non-digital logics with which smart and data-driven urban projects articulate or collide. In what follows, we will refer to Latour's framework when considering the political trajectories of two rather distinct case studies which are representative of actually existing smart cities. First, we will tell the story of the smartphone application Foursquare and reflect about its post-demographic mode of constituting individual users as crowds, where the power formation is not governmental but aims at the capitalization of user data. Secondly, we will look at the implementation of the project Smarter Together in Munich and, by focusing on the various negotiations surrounding the instalment of data infrastructures, we will demonstrate how such high-tech, computational projects are to a great extent shaped by and plagued by sovereignty concerns. We will conclude with a short summary and a final reflection about how these stories allow us to go beyond the analysis of data as a driving force of smart urbanism.

2. Foursquare: The Subtle Politics of Post-Demographic Data-Intensive Urban Services

The first case we examine in order to address the political trajectories of the 'data-driven city' is the case of Foursquare, a local search-and-discovery mobile application providing personalized recommendations on places to go to (bars, cafés, restaurants, etc.). By showing how a private tech company orchestrates the consumption of urban amenities, we depart from the common emphasis on the smart city as an urban development strategy led by city administrations and stress how cities are being transformed today in uncoordinated ways by multiple private corporations offering very specific smart urban services.

Launched in 2009, Foursquare began as a location-based game and social network but morphed, from 2011 on, into a local search application

¹ It is certainly rather strange that Latour equates governmentality with that which remains uncontested and appears as apolitical in a certain time and that he makes no reference whatsoever to populations, security, biopolitics or neoliberalism, the key conceptual markers of what Foucault describes as governmentality. Indeed, what Latour frames as political-5 corresponds rather to what Foucault more generally describes as a historical formation of power, be it based on sovereignty, discipline or governmentality.

allowing users to find bars, coffee shops and restaurants in their surroundings. The functioning of this search-and-discovery engine relies on the production of data by users. This data (mostly locational data) is used to profile users and make targeted recommendations. Until the big revision of the app in 2014, users generated locational data by ‘checking-in’ to places, i.e. by indicating on the app their presence in a specific venue. Since the 2014 revision, people are not required to check-in any more, as their presence is automatically detected by ‘Pilgrim’, a technology running in the background of the app, sensing where the user goes and stops and finding the corresponding venue in the huge database of places constituted throughout the years by the company. The changes which occurred in 2011 and 2014 are critical to understand the app’s main service (to provide users with personalized recommendations on nearby places) as well as to grasp the way in which it constitutes, knows, and eventually exploits its users. Certainly, Foursquare and its functioning through profiling are not ‘overtly’ political. Its political dimension lies with the ways in which it assembles different actors (users, data, software developers, algorithms, urban places) and constitutes ‘users’ through data and algorithmic calculations in data-driven and calculated ways. It involves the kind of new associations of humans and nonhumans that Latour describes as politics-1.

Notably, when Foursquare’s engineers first developed their recommendation tool in 2011, they interpreted locational data as a reflection of what the user liked in terms of food, ambiances, neighborhoods and types of places. In other words, the history of check-ins of a user was used to create a knowable ‘subject of tastes’, for whom targeted recommendations could be formulated. Although check-ins had not been conceived in the first place as indicators of tastes (they initially served the gaming purpose of collecting badges and mayorships), Foursquare’s engineers favored this specific understanding of the data; an understanding that assumed the existence of a univocal user whose production of locational data reflected her elective affinities. Check-ins were in reality equivocal, entailing fundamentally different types of attachments to places, practices of producing data and curating a ‘locational self’ on the platform. The digital histories of users were sometimes composed of fake check-ins, check-ins to bus stops and to other places hardly indicative of their tastes. It is reasonable to believe that the new version of Foursquare, launched in 2014, involved an attempt to fix the messiness and polysemy of check-ins by automatizing the production of location data through Pilgrim. At this point, users come to be constituted through the association between their own check-in practices, the decision of the developers to use check-ins as proxies for tastes but also by the types of amenities offered by the city or the neighborhoods in which the user spends her time. Foursquare is also ‘calculating’ each user by finding similar patterns between their digital history and those of other users. More precisely, Explore (Foursquare’s recommendation engine prior to the 2014 revision) operated by finding patterns in two types of networks: what the developers called the ‘place graph’ and the ‘social graph’.

The ‘place graph’ is about the ways in which places are connected together through the data produced by users. Patterns of locational data reveal different types of connections between places. For instance, by identifying the sequence in which users checked-in from one place to another, it is possible to spot ‘flow relations’ i.e. the tendency of one place to be visited after another. Relations of ‘co-visitation’ exist among places that are visited by the same sets of users. Relations of ‘category’ refer to the relations between places of same function or activity e.g. sushi restaurants or hair studios. The so-called ‘social graph’ (based on the origins of Foursquare as a social network) consists in analyzing how users are connected on the app via different kinds of interactions. At the time of Explore, they could ‘friend’ each other, ‘follow’ the accounts of specific brands or save or like the tips and comments left by other users on a certain venue. Another very powerful ‘social signal’ was the ‘co-location’ of users, or to put it differently, their tendency to visit the same physical places (Shaw 2013).

Calculating relations of ‘flow’, ‘co-visitation’, ‘category’, ‘friendship’ and ‘co-location’ are fundamental operations for Foursquare to provide relevant recommendations to each user. Importantly, a series of assumptions underpinned such calculations: ‘the places that your friends like are good predictions about the places you might like as well’, ‘the places visited by people with similar check-ins habits than you might also interest you’, ‘you went to a lot of sushi restaurants, you probably want to discover some new ones’ etc. The assumptions of the app developers on what constituted relevant recommendations were translated into specific calculations and shaping a ‘calculated user’. Based on these assumptions and calculations, Explore was creating highly personalized and dynamic maps. Personalized, because they were drawing on each user’s own digital history and were calculating those connections for each one of these ‘calculated users’. Dynamic, because Explore was not only adapting its recommendations to changing contexts of use (i.e. locations, time of the day) but also taking into consideration the ever-evolving nature of these calculated users, who were constantly posting new check-ins, writing new comments and ‘friending’ new users thereby creating or consolidating new relations in the place and social graphs (Klauser and Widmer, 2017).

The question we would like to pose here, in reference to Latour’s political-5, is: if Foursquare wields a certain form of power capable of constituting users and shaping their spatial and social relationships, to what kind of power formation does it amount?

Interestingly, neither disciplinary normalization nor governmental securitization, as they have been discussed for smart/data-driven cities, are useful to understand the power formation articulated by Foursquare. Indeed, even though individual subjects are the ones whose actions are targeted here, Foursquare is not a disciplinary device. It does not “regulate [...] everything and allow [...] nothing to escape” (Foucault 2007, 67) but builds upon a power of suggestion, sparking the desires and attachments of users by affording rewards and incentives as well as a personal service.

Foursquare works as an ‘attachment device’ (Cochoy 2017), whose action on the ‘field of possibilities’ of users (Foucault 1982, 790) cannot be described as ‘subjugation’ or ‘normalization’. On Foursquare there is no pre-given norm to which subjects are expected to conform, as in the case with its main competitor, the application Yelp, which is based on a calculation of users’ reliability and then defines these reliable users as the norm to follow. On Foursquare, recommendations are aimed to fit the user’s calculated tastes. Thus, not only has every user the opportunity to be a norm of their own, but the norm itself is constantly fluctuating as newly volunteered data is added to the system.

Notably, even though Klauser et al. (2015) rightly point to these fluid and flexible norms adapting to the ‘reality’ of data as characteristic of a governmental form of power, the case of Foursquare is different, for the app does not aim at governing a population or securing the conditions of its reproduction. This is not to say that populations are irrelevant. The functioning of the app is based on the crowd-sourcing of data and the calculation of similarities among ‘populations’ of users. In order for Foursquare to target the individual user it has to find statistically significant relations of co-location, co-visitation, flow, etc. in the mass of user-generated data. Indeed, when a user could not be algorithmically connected to a sub-population of like-minded people it became more complicated for Foursquare to govern this user as a ‘unique’ subject, bearer of her own norm. In that case, the user would receive less targeted content and more one-size-fits-all recommendations for places considered popular.

So what type of power formation does Foursquare articulate? Is it security in disguise, as the fluid, centrifugal and open aspects of these data-driven regulations seem to indicate? Or are these specific modes of shaping individuals and populations delineating a new apparatus of power? Rather than delineating a brand-new power apparatus, we would like to stress two key aspects of the data-driven power formations of services like Foursquare.

The first aspect to stress is the post-demographic form of such data-driven power formation; a feature that has been discussed in recent literature. As Ruppert observes, in data-intensive environments subjects are increasingly known “not so much in relation to pre-defined categories of identity [such as age, gender, place of residence, education etc.] but in relation to what people do, their interactions, transactions, performance, activities and movements” (2012, 119). Notably, her study of the governmental practices of child welfare agencies, as well as Mackenzie’s (2016) analysis of the individual targeting of electors during Obama’s re-election campaign, describe a new type of relationship between subject and population. In Ruppert’s example children potentially at risk are targeted through the joining-up of different databases. In the case studied by Mackenzie, every voter in the country was assigned a score, recalculated every week according to new events (such as Sarah Palin’s vice-presidential nomination or the

collapse of Lehman Brothers) and targeted accordingly by Obama's campaign crew (Issenberg 2012). In both examples, the fine-grained data obtained on people allow for the targeting of singularities (individuals identified as potential swing-voters or children at risk) instead of multiplicities (socio-demographic groups). Interestingly, both authors propose understanding the subjects constituted and targeted in such data environments as 'monads'. Ruppert (2012, 127) writes that joined up databases materialize the subject as "a monad made up of complex, unique, dynamic and always varying metrics", while Mackenzie (2016, 116) describes how electors are "distributed across varied populations of different kinds that intersect through them" and how, by attracting probability distributions, these individuals themselves become populations or crowds.

Such a description of a post-demographic form of power fits very well the case of Foursquare as a recommendation service not based on socio-demographic characteristics of individuals and groups, but on dynamic patterns, relations and regularities in the data. Foursquare performs each of its users as the relational effect of an ego-centric population but, as we have described above, the main difference is that it is not the government of a specific population, voters or children at risk, that is primarily at stake.

Thus we come to the second key aspect we would like to stress here. If it is not about governing users by post-demographic means, then what is what Foursquare does to its users? To approach this question, it is helpful to understand the business model of Foursquare. Notably, although the services offered by Foursquare have been around for some years now, the app never encountered the outstanding success of a Twitter, a Facebook or a Snapchat. The services provided by the company have always remained a niche and, facing competitors such as Yelp or Google Maps, Foursquare never became the 'killer app'. The difficulties encountered by the company became obvious when, during the funding round of 2016, its financial value was cut by half in comparison to what investors thought it was worth in 2014. Despite these difficulties, the company is still standing, and its survival is certainly due to the immense amount of data it has gathered throughout the years. By collecting location data from its users, Foursquare has constituted a huge geo-referenced database of places which has enabled it to become a "pillar of the mobile app ecosystem" (Barouch 2013) by providing its API to other developers. Recently, the executive committee of Foursquare decided more explicitly to exploit the financial value of this data, by monetizing access to the API and by creating the platform 'enterprise.foursquare.com', on which different services based on Foursquare's 'locational intelligence' are proposed to other companies.

If 'data is the new oil' it is, without a doubt, the oil of Foursquare. Data thus becomes not just the driver of urban life, or of people's engagement with urban amenities, but it constitutes the most important asset for securing the very existence and economic success of the company. The power formation that Foursquare articulates is one in which what needs to be defended and secured is not a collective concern that requires a governmental

form of action but the profitability of the company. The economic value of data sheds new light on the key subject constituted by Foursquare: the producer of this data, the 'user'. The story we have told demonstrates the complex arrangements developed to constitute this subject but we would miss the point if we conceived the user solely as a consumer of the company's smart service for urban exploration. The user as the producer of data is indeed the main resource exploited in its business model.

3. Smarter Together: On Sovereignty, *Berufbürger* and the Politics of Translation

How else does the politics of smart cities unfold in the contemporary context? The second story we would like to present concerns the implementation of the project Smarter Together in the area of Neuaußing-Westkreuz in the city of Munich; a project funded by the EU-Horizon 2020 program Smart Communities and Cities aimed at funding consortiums of cities with a common smart city CO₂-reduction agenda. Together with Vienna and Lyon, Munich is a lead city of the consortium Smarter Together, which includes over 30 partners from administration, industry and research, as well as three further so-called follower cities. Although the project revolves around the implementation of smart, data-driven infrastructures (the grand vision planned for the city involves the implementation of an app through which citizens will have secured access to smart services concerning transport, environment, etc.), what distinguishes the smart city agenda of Smarter Together in Munich is the targeting of a residential area and the implementation of a co-creation participatory approach. In its scope, the case of Smarter Together resonates with what we can observe in many European cities, where urban projects and interventions that go by the name 'smart city' do not (yet) involve systems or services based on real-time data analytics but rather encompass urban development projects. Indeed, investments in data infrastructures aimed at energy-consumption reduction and modal mobility split are only a small part of smart city investments which, in cities like Munich, opt for the building of multi-modal mobility stations, the energetic retrofitting of buildings or the renewal of street lighting systems. Accordingly, the notion of a data-driven city describes only a possible result, one possible framing of interventions in the built environment, but does not offer a key angle from which to look at these projects.

So how are we to trace the political trajectory of this smart city project in Munich, if the political-1, that is, the introduction of new socio-technical arrangements that subtly but effectively change the way humans and non-humans are articulated, is not the starting point of the story? That was the case with Foursquare which took us from the data-driven city as a sub-political invention of a new way of constituting users by means of big data

(politics-1) to an exploration of broader power formations (politics-5). The smart city project in Neuaußing-Westkreuz has followed a quite different political trajectory, one that actually begins with a sovereign decision of the city administrations to pursue and implement the project (politics-3), efforts for sparking publics into being (politics-2) and for achieving consensus through co-creation (politics 4).

Let us then begin this story by considering the city area chosen for Smarter Together in Munich taking into account the broader city-wide urban development master plan called 'Perspektive München', where Neuaußing-Westkreuz features as the first of the 10 urban areas to be intervened in before 2040. From this perspective, Smarter Together is an urban development instrument useful for this wider master plan, which ultimately relies on the capacity of the city administration to make collectively-binding decisions about the urban environment. Smarter Together thus involves an exercise and a reminder of the city administration's sovereignty upon the urban body under its jurisdiction. At stake is a modality of the political shaped by the juridical arrangements and institutional checks and balances of a city administration which corresponds to what Latour calls political-3. Starting from this observation, the political trajectory of Smarter Together that we would like to discuss here unfolds around the efforts of different actors, notably city officials, co-creation experts and local actors, to define what participation in this project should involve. We would like to dwell on this process, which we know especially well, given that one of the authors, Ignacio Fariás, together with two colleagues from MCTS, Claudia Mendes and Hannah Varga, played the role of the co-creation experts in this process.

Interestingly, the expectations on co-creation held by city administration officials were based on their interest in design thinking methods that could foster creativity, lead to the proposition of 'cool' and 'crazy' ideas for smart technologies and services, as well as create a space where experts could learn about their prospective users. A good example of the latter was the encounter between mobility experts and local residents in the collaborative space called 'design collective: mobility', where the former were mostly concerned with achieving a reliable knowledge of user profiles and preferences. Co-creation thus was not imagined as a speculative exercise for developing new ideas, where the involved citizens could act as designers or planners, but rather as a technique to generate knowledge about prospective users so that mobility stations could be adapted to such user needs. Co-creation was imagined and practiced by city officials as a key technique for a consensual mode of the political (politics-4). Consensus was to be found through co-creation rather than through deliberation among rational actors, expressed in the design of the mobility station rather than in shared propositions and achieved through the common sense of creative citizens rather than through their argumentative capacities.

Such consensual politics was, however, significantly limited by the fact that there were in practice only few elements of the planned infrastructures

that could be modified. In the case of the mobility stations, not only their location or number were out of the scope of co-creation but also the concerns brought up by participants, such as the improvement of cycling infrastructures, were outside of the scope of the project. A more promising opportunity for a co-creation process was carved out in the conversations between the co-creation team (Farias, Mendes, Varga) and the city's IT department in charge of the development of lampposts endowed with sensors. Apart from adaptive lighting and W-Lan connection, these lampposts are equipped with empty slots for sensors to be provided by private companies by means of a call for bids. Accordingly, the co-creation team conceived a whole process of hands-on activities aimed at bringing together public servants, technical experts and concerned residents to collectively shape the call for bids. The process would not involve the physical prototyping of sensors but it would require tinkering with the technical, legal and social parameters for sensors, as well as assessing the potential benefit of smart services enabled by them.

Even if this process was aimed at finding a consensus concerning the types of sensors and services to be provided, the co-creation team understood this as an opportunity to foster the formation of an issue-public concerned with sensor infrastructures and data issues in a collaborative space called 'design collective: data'. Indeed, the main aim of this co-creation process was not just to acknowledge the residents expertise in the matters at stake or to find a consensus about what the call for bids should include, but also to put experts in a situation in which their technical knowledge, value certainties and plans could be contested by a public (Farias 2017). In that sense, inspired by John Dewey's political philosophy, the aim was to create conditions for the emergence of an issue public that would explore existing uncertainties, produce and share knowledge and eventually confront the city with demands not yet considered in their smart city designs.

Both readings of the co-creation process as a consensual form of user engagement (political-4) and as the sparking of issue publics (political-2) are surely justified. There were moments in which the co-creation process functioned as a consensus-oriented device and moments in which residents, neighbours and interested and affected individuals and groups came together and acted as an issue public concerned with key issues that were not on the agenda, such as data privacy. Yet these two readings do not capture the mode of the political that most significantly shaped these participatory spaces and which was articulated around a different type of subject that is often called the *Berufsbürger* or professional citizen.

By *Berufsbürger* we generally refer to members of the organized civil society, often retired seniors, who have actively engaged with the project Smarter Together, voiced their concerns about its aims and foreseen interventions and, in some cases, also criticized the modes of public engagement characteristic of co-creation. Their qualification as *Berufsbürger* seemed appropriate considering their almost exclusive dedication to local affairs and their participation in all sort of activities irrespective of their thematic

focus. In Germany the role played by *Berufsbürger* in participatory processes is mostly problematized as a representativity issue, given their specific demographics and the attached underrepresentation of younger people, less educated individuals, women and non-white citizens. Without underscoring the importance of these issues, we would like to highlight that the political challenge posed by the *Berufsbürger* was a completely different one.

To begin with, *Berufsbürger* were strongly against playful, hands-on and symmetrical modes of public engagement and participation. The first workshop of the ‘design collective: data’ involved playing a sensor game invented by the co-creation team. Each participant would get cards with information on specific sensors and come up with an application or service that run based on the data collected by these sensors. Each group would then build a mock-up of the sensor, as well as sketch out the kind of situations in which it would be useful. The skepticism with which this activity was received by some of the *Berufsbürger* was well captured in an email we received some weeks afterwards:

Whereas on January 16, 2017 [date of the first workshop], many participants were there, during the event on January 26, 2017, I was the only one from the civic bodies [*bürgerschaftliche Gremien*] of the city district who attended. Something must have gone wrong, so that the interest of citizens and civic bodies in this project decreased so strongly. Was it the presentation with toilet brushes and clothes pegs at the level of a kindergarten or the insufficient information about the possible implementation of the project that made the interests of the citizens disappear? The Technical University should have been required to inform on what is technically possible, its meaningfulness and its costs (Email Communication, Date).

The email advanced two key propositions that radically challenged the way co-creation was being pursued. Firstly, the email implicitly suggested that what matters the most is the participation of representatives and members of local civic bodies and not whether or not the co-creation process was capable of reaching out and activating other residents concerned about the potential benefits and costs of installing sensor infrastructures. Secondly, the email quite strongly pleaded for a clear division of labour between experts and citizens. Experts should inform citizens about the technical feasibility, meaningfulness and costs of different technical options, citizens could then set priorities and make recommendations based on their knowledge of local needs.

Needless to say, this understanding of how public engagement should occur radically undermined the participatory agendas of the co-creation team (issue-public formation) and the city administration (user engagement). Indeed, *Berufsbürger* came to these meetings with a clear political agenda that involved pushing issues they have personally been concerned about for many years. Such issues would involve the installation of a mechanical escalator at an overground station, the building of a cycling lane in a traffic underpass or the allocation of municipal resources to a cultural

center. By making demands that went well beyond the limits of the planned intervention, *Berufsbürger* were forcing all those involved to at least consider the ways in which the planned smart infrastructures are embedded in the local context. Most significantly, they often managed to steer a conversation about smart infrastructures into a larger conversation about local development ambitions, plans and agendas.

So how are we to consider the political modality enacted by these actors? It seems fair to say that *Berufsbürger* know very well where power to act in the local environment ultimately resides, namely, in the sovereign power of the city administration. Rather than a concern with the capacity of data to govern the city, *Berufsbürger* understand that the capacity to make binding decisions has been delegated to the city administration and aim at, if not influencing, at least making their cases in front of city administration officials. Politics here is not understood as ultimately involving a challenge to the existing institutional order but about finding the right moment to get the ear and eventually favour of the sovereign. The kind of sovereignty at stake here differs only partially from the one described by Foucault. Instead of open displays of the power to punish, it is based rather in highly formalised mechanisms of representation and delegation of power. The city is not run by absolutist kings but by an elected government who need to be re-elected and for whom a project such as Smarter Together will not prove to be a disaster. In a similar sense, Foucault (2007, 271) would point out, with reference to Machiavelli, that the Prince's main concern is not how to govern the people or the population but rather how to make sure that the most distinguished citizens, that is, the nobles, wouldn't plot against him.

Similarly, knowing that *Berufsbürger* are key political actors, multipliers in the language of city officials, the political challenge for the city consists in how to enroll them in the smart city project or, more precisely, how to let them use the smart city project as a resource for their own agendas and projects. The politics of the smart city appears here to be about the capacity of different actors to make compromises and build a network of allies, and the forging of such political alliances seem to involve a process of translation, as theorized by the thoroughly Machiavellian early actor-network theorists². Translation, they argue, involves “all the negotiations, intrigues, calculations, acts of persuasion and violence, thanks to which an actor or force takes, or causes to be conferred on itself, authority to speak or act on behalf of another actor or force” (Callon and Latour 1981, 279).

² Machiavelli is indeed the model of early ANT regarding translation, with the only objection that Machiavelli doesn't sufficiently take into account the role of non-humans: “...how [much cleverer] it is to bind together men [...] by-wires, meters, copper, and filament lamps. Instead of a tiny list that includes love and fear, the modern Prince has a long-mixed list that includes many other elements in addition to love and fear” (Latour 1998, 9).

The enrolment of *Berufsbürger* is based on a political alliance that, at one moment, requires *Berufsbürger* to show interest in the smart city and allow the city to speak in their name, while assuming that at a different moment the city will need to show interest in their own problems and concerns.

Berufsbürger thus played a key role in the smart city project, also proving capable of redirecting project discussions towards local concerns hardly connected to smart and data-driven infrastructures. As a result, data, sensors and algorithms were becoming secondary (if not absent) elements in the political trajectory of Smarter Together. Indeed, the quest for a data-based urban politics – a quest pursued by both the city administration in charge of the project, as well as by the co-creation team in its ambition to form an issue-public around data infrastructures – was continually interrupted by these other matters of concern. This brings us back to the (cosmo)-political perspective with its emphasis on the contested composition of our common worlds. From this perspective the non-digital concerns of the *Berufsbürger* appear as a powerful grain of sand in the gears of a world-making machinery that often reduce cities to datafiable and computable problems. As such, the examples raised here remind us of the importance of looking at the ways in which smart and data-driven urban assemblages interact and collide with other ways of envisioning, valuing and practicing the city.

4. Thinking with and beyond the Data Driven City

In 1997, Amin and Graham advocated for a better consideration of “ordinary cities” against the tendency of urban studies at that time to take the cases of a few paradigmatic cities, or to consider only one aspect of city development, as totalizing descriptors for what the urban is or should be. These authors mentioned a “problem of synecdoche” (1997, 416) – a figure of speech where a part is used to describe the whole – to account for the ways in which expressions such as ‘global cities’ or ‘creative cities’ were used to characterize whole urban realities, regardless of the actually more complex, diverse and multi-layered nature of these realities. Turning to the ordinary city has not just involved paying attention to the multiplicity of urban assemblages that enact the city in diverse and often contradictory ways (e.g. Fariás and Bock 2016), but also, following Robinson (2013), departing from the ‘new’ as a key heuristics to understand cities and moving towards a more complex analysis of the ‘urban now’.

Exploring ‘ordinary smart cities’ is then crucial to avoid the potential totalizing-effect entailed by a description of cities as ‘smart’, while paying detailed attention to how smart city projects are fully embedded in a complex urban now, where pasts and futures are articulated in different ways. Notably, this involves, firstly, crafting an empirically-grounded and agnos-

tic account of how smart cities are actually assembled and, secondly, emphasizing how – beyond a vision of the digital as the main driver of urban life – various actors and non-necessarily digital logics articulate and collide with smart and data-driven urban projects. In this article, we have done so by following the trajectories of two existing instances of smart urbanism: a smart service for urban exploration proposed by a private company (Foursquare); and a smart city project implemented by a municipality (Smarter Together). The two cases are rather unlike in their aims, in their rationales as well as in the type of actors they entangle, but together they entail a double decentering of the conventional understandings of the smart city.

Firstly, the juxtaposition of these two cases makes apparent that, in order to understand the fashioning of cities as data-driven assemblages, it is crucial not only to look at smart city projects run by city administrations but to consider the services offered by other non-governmental actors (notably, private tech companies). Our cases even suggest that the most advanced data-driven urban services are not necessarily occurring under the umbrella of smart city projects run by municipalities. Further, the case of Foursquare not only shows how such tech companies leverage the data produced by their users but also makes apparent the profit-oriented rationale for the constant re-invention, upgrading and expansion of the services offered. In this context, users are the essential basis of the company's business model. These need to be enrolled through the creation of attachments to the service in order for locational data to be farmed, aggregated and eventually capitalized upon – a mode of user engagement that radically contrasts with the participative and clientelist approach presented by Smarter Together.

Secondly, both cases required us to look beyond the digital, paying attention to how smart and data-driven cities are always entangled in, or articulating with, other non-data-centered urban development projects, logics or practices. Whilst the example of Foursquare illustrated the centrality of data – ‘the new oil’ – in market-based arrangements, the case of Smarter Together, to the contrary, evidenced how data and digital infrastructures were sometimes disappearing from the smart city agenda. Such non-digital logic was notably apparent in the role played by *Berufsbürger* and their local concerns in the implementation of this smart city project. This example allowed us to stress that the formulation ‘data-driven cities’ was not always a good descriptor of the new modes of urbanization currently coalescing around the construction of digital infrastructures. This also leads us to reiterate the importance of ‘defetishizing’ data and algorithms as central and powerful actors orchestrating urban life and allows us to look at the case of Foursquare from a different perspective, emphasizing how this apparently perfect case of data-driven urbanism is also articulating with non-datafiable attachments to and experiences of urban places.

The analytical consequence of this double decentering concerns how we study the politics of the smart city or, to put it differently, it raises the

question of the conceptual repertoires that we can mobilize in order to grasp the multiplicity of ordinary smart cities and their politics. What has become clear is that we need to significantly widen the focus from a concern with what smart digital technologies do, or are supposed to do, towards the empirical study of the contested stories and trajectories of smart city projects, where functioning digital systems are nothing but one instantiation. Accordingly, studying these two cases, we were forced to go beyond a critical perspective that would exclusively focus on the ways in which digital technologies discipline or govern us, to a broader perspective on the (cosmo)politics of these human and nonhuman arrangements.

Empirically following the cosmo-political trajectories of smart city projects, such as Foursquare and Smarter Together, has also made apparent the incommensurability among the political modalities at stake. This incommensurability does not just imply that collectively binding decisions are made in radically different sites, but it also points to the absence of a common political language and instruments to articulate these various forms of smart urbanism. Here lies indeed one of the major political challenge for ordinary smart cities.

References

- Barouch, J. (2013) Foursquare's API is a pillar of the mobile app ecosystem *TechCrunch*, online: <https://techcrunch.com/2013/03/29/the-internet-needs-foursquare-to-succeed/> (retrieved August 25, 2017).
- Callon, M. and Latour, B. (1981) *Unscrewing the Big Leviathan: How Actors Macro-Structure Reality and How Sociologists Help Them to do so*, in K. Knorr-Cetina and A.V. Cicourel (eds.), *Advances in Social Theory and Methodology. Towards an Integration of Micro and Macro-Sociologies* London, Routledge, pp. 277-303.
- Cochoy, F. (2017) *From Social Ties to Socio-Economic Attachments: A Matter of Selection and Collection*, in L. McFall, F. Cochoy and J. Deville (eds.), *Markets and the Arts of Attachment*, London, Routledge.
- Collier, S.J. (2011) *Post-Soviet Social: Neoliberalism, Social Modernity, Biopolitics*, Princeton, Princeton University Press.
- Datta, A. (2015) *New Urban Utopias of Postcolonial India: 'Entrepreneurial Urbanization' in Dholera smart city, Gujarat*, in "Dialogues in Human Geography", 5 (1), pp. 3-22.
- Fariás, I. and Blok, A. (2016) *Introducing Urban Cosmopolitics. Multiplicities and the Search for a Common World*, in A. Blok and I. Fariás (eds.), *Urban Cosmopolitics. Agencements, Assemblies, Atmospheres*, London, Routledge, pp. 1-22.
- Fariás, I. (2017) *An Idiotic Catalyst. Accelerating the Slowing Down of Thinking and Action*, in "Cultural Anthropology", 32 (1), pp. 34-40.

- Foucault, M. (1982) *The Subject and Power*, in “Critical inquiry”, 8 (4), pp. 777-795.
- Foucault M. (2007) *Security, Territory, Population: Lectures at the Collège de France, 1977-78*, New York, Palgrave Macmillan.
- Gabrys, J. (2016) *Program Earth. Environmental Sensing Technology and the Making of a Computational Planet*, Minneapolis, University of Minnesota Press.
- Issenberg, S. (2012) *How Obama's Team Used Big Data to Rally Voters*, in “MIT Technology Review, online”, <https://www.technologyreview.com/s/509026/how-obamas-team-used-big-data-to-rally-voters/> (retrieved August 25, 2017).
- Klauser, F., Paasche, T., and Söderström, O. (2014) *Michel Foucault and the Smart City: Power Dynamics Inherent in Contemporary Governing through Code*, in “Environment and Planning D: Society and Space”, 32 (5), pp. 869-885.
- Klauser, F. and Widmer, S. (2017) *Surveillance and Control*, in R. Kitchin, T. Lauriault and M. W. Wilson (eds.), *Understanding Spatial Media*, London, Sage, pp. 216-224.
- Latour, B. (1998) *How to Write 'The Prince' for Machines as Well as for Mechanizations*, in B. Elliott (ed.), *Technology and Social Change*, Edinburgh, Edinburgh University Press, pp. 20-43.
- Latour, B. (2007) *Turning around Politics: A Note on Gerard De Vries' Paper*, in “Social studies of science”, 37 (5), pp. 811-820.
- Mackenzie, A. (2016) *Distributive Numbers: A Post-Demographic Perspective on Probability*, in J. Law and E. Ruppert (eds.), *Modes of Knowing*, Manchester, Manchester Mattering Press, pp. 115-135.
- Robinson, J. (2013) *The Urban Now: Theorising Cities beyond the New*, in “European Journal of Cultural Studies”, 16 (6), pp. 659–677.
- Ruppert, E. (2012) *The Governmental Topologies of Database Devices*, in “Theory, Culture and Society”, 29 (4/5), pp. 116-136.
- Shaw, B. (2013) *Transcript: Machine Learning with Large Networks of People and Place*, Hakka Labs.co, <https://www.hakkalabs.co/articles/transcript-machine-learning-with-large-networks-of-people-and-places> (retrieved August 25, 2017).
- Shelton, T., Zook, M. and Wiig, A. (2015) *The ‘actually existing smart city’*, in “Cambridge Journal of Regions, Economy and Society”, 8 (1), pp. 13-25.
- Tironi, M. and Sanchez Criado, T. (2015) *Of Sensors and Sensitivities. Towards a Cosmopolitics of “Smart Cities”?*, in “Tecnoscienza: Italian Journal of Science and Technology Studies”, 6 (1), pp. 89-108.
- Vanolo, A. (2014) *Smartmentality: The Smart City as Disciplinary Strategy*, in “Urban Studies”, 51 (5), pp. 883-898.