

Real-time democracy. Imagining the city of permanent innovation

Paper presented at the Transnational Imaginaries of Innovation Workshop, Dec. 5-6, 2016, Harvard University.

Brice Laurent

CSI - Centre de sociologie de l'innovation, i3 UMR CNRS
Mines ParisTech, PSL Research University
brice.laurent(a)mines-paristech.fr

Félix Talvard

CSI - Centre de sociologie de l'innovation, i3 UMR CNRS
Mines ParisTech, PSL Research University
felix.talvard(a)mines-paristech.fr

Working Paper 17-CSI-01

July, 2017

Pour citer ce papier / How to cite this paper : Laurent B. & Talvard F. (2017) Real-time democracy. Imagining the city of permanent innovation. i3 Working Papers Series, 17-CSI-01.

L'institut interdisciplinaire de l'innovation

(UMR 9217) a été créé en 2012. Il rassemble :

- les équipes de recherche de MINES ParisTech en économie (CERNA), gestion (CGS) et sociologie (CSI),
- celles du Département Sciences Economiques et Sociales (DSES) de Télécom ParisTech,
- ainsi que le Centre de recherche en gestion (CRG) de l'École polytechnique,

soit plus de 200 personnes dont une soixantaine d'enseignants chercheurs permanents.

L'institut développe une recherche de haut niveau conciliant excellence académique et pertinence pour les utilisateurs de recherche. Par ses activités de recherche et de formation, i3 participe à relever les grands défis de l'heure : la diffusion des technologies de l'information, la santé, l'innovation, l'énergie et le développement durable. Ces activités s'organisent autour de quatre axes :

- Transformations de l'entreprise innovante
- Théories et modèles de la conception
- Régulations de l'innovation
- Usages, participation et démocratisation de l'innovation

Pour plus d'information : <http://www.i-3.fr/>

Ce document de travail est destiné à stimuler la discussion au sein de la communauté scientifique et avec les utilisateurs de la recherche. Son contenu est susceptible d'avoir été soumis pour publication dans une revue académique. Il a été examiné par au moins un referee interne avant d'être publié. Les considérations exprimées dans ce document sont celles de leurs auteurs et ne sont pas forcément partagées par leurs institutions de rattachement ou les organismes qui ont financé la recherche.

The Interdisciplinary Institute of Innovation

(UMR 9217) was founded in 2012. It brings together:

- the MINES ParisTech economics, management and sociology research teams (from the CERNA, CGS and CSI),
- those of the Department of Economics and Social Science (DSES) at Télécom ParisTech,
- and the Management Research Center (CRG) at Ecole Polytechnique,

meaning more than 200 people, including 60 permanent academic researchers.

i3 develops a high-level research, combining academic excellence and relevance for the end users of research. Through its teaching and research activities, i3 takes an active part in addressing the main current challenges: the diffusion of communication technologies, health, innovation, energy and sustainable development. These activities are organized around four main topics:

- Transformations of innovating firms
- Theories and models of design
- Regulations of innovation
- Uses, participation and democratization of innovation

For more information: <http://www.i-3.fr/>

This working paper is intended to stimulate discussion within the research community and among research users. Its content may have been submitted for publication in academic journals. It has been reviewed by at least one internal referee before publication. The views expressed in this paper are those of the author(s) and not necessarily those of the host institutions or funders.

ABSTRACT:

This paper focuses on the relationships between innovation and democracy at city level. Focusing on the case of San Francisco, it discusses a particular way of imagining the city in the terms of permanent innovation. In the city of permanent innovation, individual urban problems are to be solved by a permanent supply of technological solutions. Imagining the city in those terms has political implications, pertaining to the representation of social groups and public concerns on the one hand, to the public interventions deemed legitimate on the other hand. We contend that the democratic ordering at play in the city of permanent innovation is based on the permanent reconstruction of social identities, and on local experimental interventions. In San Francisco, these forms of urban action are controversial. Proponents of interest-based democratic politics and anti-eviction activists voice counter-propositions for the definition of urban democracy. By contrast, these counter-propositions help us characterize the political project of the city of permanent innovation, which we label real-time democracy.

KEYWORDS:

Urban innovation, democracy, experiments, big data, mobility

Introduction

The relationships between innovation and democracy are both tight and problematic. Innovation, particularly when it focuses on digital technologies, has been seen as a source of democratic renewal. It has also been described as a source of externalities prompting the emergence of concerned groups (Callon et al., 2009). Taking this dynamics into account, public policies focusing on innovation have spurred various democratic experiments, which intersect with the re-stabilization or displacements of political institutions (Jasanoff, 2005; Laurent, 2017).

Among the variety of sites where innovation originates, the city holds a special place, as it is both a privileged terrain for innovation and the topic of intervention of innovators. Innovations in cities pertaining to environmental concerns and/or the increased production, aggregation and use of data are recent illustrations of this feature, gathered under such popular labels as “eco-city” or “smart cities”. As the growing literature on these topics shows, these initiatives interrogate in return the forms of government of the city, namely the ability of public bodies to control and act on urban issues and inhabitants themselves, and the modalities of public participation in local decision-making (Joss, 2011; Kitchin, 2014). In particular, the current insistence on experiments has been the focus of a growing analytical interest, leading scholars to speak of an “experimental city”, which would be characterized by the pervasiveness of testing as a mode of urban policy (Evans, Karvonen and Raven, 2016). These experiments are likely to question the theory and practice of democratic ordering, as the questions of who has the ability to experiment, and for whom they hold value directly impact such political categories as representativeness or legitimacy (Laurent, 2016).

Situating our interrogation within these questionings, we discuss in this paper the joint practices of innovation and democracy in the contemporary city. We seek to identify emerging forms of public action focusing on innovation, and the consequences they might entail on democratic ordering. To do so, we use an empirical fieldwork conducted in 2016 in San Francisco¹. As this paper will show, San Francisco has the interest of being a city where innovation is an explicit end and means of public bodies. As the focus on innovation in San Francisco maps onto a genealogy of support for technological progress and of democratic politics, with which it fits more or less easily, this city appears as a relevant empirical lens to isolate contemporary articulations of innovation and democracy. We analyze these articulations by connecting various empirical sites with each other, from local electoral politics to public programs aiming to turn inhabitants into innovators, or open government data for the benefits of companies or individuals. These connections result from the trajectory of the actors involved, and the scope of interventions of the institutions that promote innovation in San Francisco. We contend that drawing these connections offer an empirical method to identify a sociotechnical imaginary of

¹ This paper draws on a collective fieldwork conducted in February 2016, and complemented by additional interviews in June 2016. We conducted interviews in public bodies, private companies, and civil society groups. We also observed several public meetings related to urban innovation. We also used the relevant public documentation, and press materials. We thank the participants to the collective fieldwork: Madeleine Akrich, Stève Bernardin, David Pontille, and the graduate students of the Public Affairs and Innovation program at Mines ParisTech.

permanent innovation, and a corresponding city, originating in, but not equivalent to contemporary San Francisco (section 1). Following the steps of the social scientists of the Chicago school who turned the city of Chicago as a “truth spot” where social patterns could be identified (Gieryn, 2006), we consider San Francisco as a site of social scientific knowledge production, where the sociotechnical imaginary of permanent innovation can be identified. Both the type of laboratorization and the form of political intervention differ though. While in the Chicago case, the production of social facts aimed to feed a political intervention targeting problems to solve, our considering of San Francisco as a “truth spot” consists in making it a lens to account for operations imagining the city of permanent innovation. We seek to analyze the normative charge of these operations, and eventually characterize the type of democratic ordering at play in the city of permanent innovation. Accordingly, we show that the city of permanent innovation raises democratic questions, related to the modalities of political representation, and to the legitimate practice of public bodies’ intervention (section 2). We show that existing forms of democratic practices in San Francisco, such as advocacy and community-building, only partly fit in the city of permanent innovation (section 3). Instead, this city proposes a radical redefinition of democracy, which we label “real-time democracy”.

1. The city of permanent innovation

“Welcome to the Innovation Capital of the World”

When landing at San Francisco International Airport, the first thing one sees is a poster claiming that Mayor Edwin Lee welcomes the visitor in the “Innovation Capital of the World” – a powerful phrase situating San Francisco in the global landscape of competition among cities trying to attract companies, investors, entrepreneurs, and possibly inhabitants. That the mayor himself was photographed on the poster is not incidental. His 2012 election had owed a lot to the “tech community” or “tech sector”, that is, the network of companies active in technological development, venture capital firms, and investors in search for potential highly valuable start-ups – the so-called “unicorns”. This community had taken an institutional shape when powerful investor Ron Conway created the San Francisco Initiative for Technology and Innovation, which, known under its vaguely digital sounding acronym sf.citi, has been serving as a platform for advocacy for the tech sector in local politics.

The tight connections between the “tech sector” (as constituted through initiatives such as Conway’s) and Mayor Lee’s elections and subsequent policy initiatives are well documented (McNeill, 2016). These connections show that the support for innovation is also a matter of local politics, as of who the elected officials feel accountable to and what priorities these officials set for their mandates. In San Francisco, the connection with innovation maps onto another layer of local ties, namely the complex relations between the city and the whole Bay Area – particularly Silicon Valley, where Conway himself had been active as an early investor in such companies as Google or PayPal. As the would-be innovation capital of the world, San Francisco can also draw on its proximity with an area that has arguably become the model of the “entrepreneurial region” (Kenney, 2000) where university and companies develop close ties to each other for the sake of technological progress and economic growth (Saxenian, 1991). Yet the benefits of Silicon Valley for the innovation capital of the world are ambivalent, and the current insistence

on innovation can be read as an affirmation of San Francisco as a city able to gain from its own economic and technological value. When Twitter opened its downtown San Francisco headquarters in 2012, the Mayor himself participated in the ceremony. As numerous press accounts stated, he was then celebrating the success of a tax policy allowing the company to avoid payroll taxes as an incentive to move to a previously under-developed part of the city, the promised renewal of downtown San Francisco thanks to the involvement of a major tech company, and the affirmation of the city as a significant player in the global and local competitions for technological activities². Such an initiative contributes to make San Francisco a site for innovation, rather than the crowded place from where technological development had to flee for the benefit of Silicon Valley (O'Mara, 2004: 99-141).

Hidden below the Twitter sign now preeminently visible on Market Street, the intricacies of local politics might be invisible for the visitor to the Innovation Capital of the World, and possibly for many of its inhabitants. Yet innovation in San Francisco is not just the rallying cry of municipal campaigns in search for business allies and attempting to fuel urban development through the growing involvement of the tech sector. It is also physically displayed on the streets of San Francisco, as it was, for instance, in April and October 2015 on Market Street, during the 3-days "Prototyping festivals", which presented various urban devices such as innovative two-side public seating devices, interactive public art installations, or off-grid station for communicating in disaster situations. These festivals are a part of a wider initiative in San Francisco, called "Pavement to Parks", meant to provide a "public laboratory for the city to work with local communities to temporarily test new ideas in the public realms"³, and which consists in several tests supported by the city's planning department and private actors, within which inhabitants experiment with new uses for public space (such as bike parks, meeting places or charging stations for electronic devices). The same spirit is at play in the "Living Innovation Zones", described by a journalist from the *Landscape Architecture magazine* as an "expression in physical form of what San Francisco is all about: innovation"⁴ – and which take the form of installations mixing art and technology, on display in the streets of the city. Whether or not "San Francisco wants you to see and feel innovation"⁵, as the same journalist claimed, such initiatives make innovation nonetheless an integral component of the urban fabric, and a material demonstration that inhabitants ought to be part, and possibly active contributors of it. They offer another aspect of the Innovation Capital of the World: not just a capital for investors and entrepreneurs, but also a city where inhabitants would take an active role in the promotion of innovation.

² See for instance Rachel Gordon "Twitter will get payroll tax break to stay in San Francisco", SFGates April 6, 2011 (<http://www.sfgate.com/news/article/Twitter-will-get-payroll-tax-break-to-stay-in-S-F-2375948.php>); Robin Wilkey, "Twitter headquarters opens: San Francisco mid-market offices revealed", The Huffington Post, June 13, 2012 (http://www.huffingtonpost.com/2012/06/13/twitter-headquarters-opens-san-francisco_n_1594237.html)

³ <http://pavementtoparks.org>

⁴ Jared Green, "San Francisco wants you to see and feel innovation", The Dirt blog, American Society of Landscape Architects, April 2, 2014 <https://dirt.asla.org/2014/04/02/san-francisco-wants-you-to-see-and-feel-innovation/>

⁵ Green, [op. cit.](#)

Taken separately, the two ends of the spectrum of the Innovation Capital of the World provide very different descriptions: while innovation might be a way of accounting for the pro-business agenda of the city, it also appears as an engine for local public engagement. What unites these two descriptions is the idea that innovation is a permanent source of benefits, and that the city should permanently encourage it. But understanding what the objective of permanent innovation stands for in San Francisco, and how companies and individuals might be connected within a single objective of permanent innovation, requires delving in further details into the processes that organize innovation.

Organizations for innovation

Making innovation a central theme of urban policies, Edwin Lee created in 2012 an Office of Civic Innovation (OCI) within the Mayor's Office, which was the first of its kind in the U.S. As recalled by the person in charge of the OCI, the objective was then to make sure that the city of San Francisco, "surrounded by innovation in the private sector", "did not just follow behind"⁶. Accordingly, the OCI articulates innovation originating from the private sector and (local) public policies. In 2013, it created the "Start-up in Residence" (STIR) program. The objective of this program is to connect the city's departments with start-ups in order to craft technological solutions to problems met by the departments. In 2013, 200 applications were sent to the Office, and 6 start-ups were eventually associated to 6 city departments. The contest ends with a "demo day" during which the outcomes of the process are presented to public officials, including the mayor himself, and potential investors – some of them can then be pursued as commercial project, or inside city departments. Within this process, the OCI helps city departments to identify the problems they want to address, and provide support to interested start-ups. Over the past years, the contest has resulted in several projects that had been used by public bodies, including for instance a prototype built by a partnership between a private company, a non-profit organization and the San Francisco airport services and meant to help blind and disabled people circulate inside the airport. Another illustration of OCI's activities is an initiative called "Civic Bridge", which "recruits private sector professionals to volunteer 16 weeks of their time to work alongside government employees on critical City issues"⁷. One of the regularly mentioned examples is that of Google, 6 employees of which volunteered to work with city officials on the analysis of data related to calls in emergency management services, and to search for affordable housing online.

Designed as a service expected to articulate public and private interventions, the OCI's work is not just about delegating public service to private actors, but aims to transform both. As the same official stated, the objective of the program is to "bring start-up thinking into the government", and "the tech ecosystem to think more about civic issues"⁸. Reciprocally, the OCI's task is also to transform the way in which city department think of their actions. As the numerous posts on the walls of their offices show⁹, OCI employees think of themselves as

⁶ Interview, OCI, February 19, 2016.

⁷ See the post "Civic Bridge. Bridging the Public and Private Sectors on Critical Challenges" on the website of SF Mayor's OCI <http://www.innovation.sfgov.org/civic-bridge>

⁸ Interview, OCI, February 19, 2016.

⁹ As we observed when we came to the OCI's offices.

“intrapreneurs”, that is, individuals promoting an entrepreneur-like state of mind within the public administration, where they seek to make their fellow civil servants think of public policies in the terms of isolated problems for which private companies might have technological answers. This mode of reasoning also applies to other components of the San Francisco public bodies. The San Francisco Municipal Transportation Authority (SFMTA) offers a telling illustration, as it recently created an Office for Innovation, which partners with private companies for the sake of the efficiency of public transportation in San Francisco.

The institutional dimension of innovation politics in San Francisco is complemented by the intervention of new actors in the scene of public/private collaborations. In 2015, a foundation called City Innovate moved to San Francisco, and has been working closely with the Mayor’s office since then. City Innovate organizes public events such as the annual *Bridge SF* conference, during which leaders from both the public sector and private companies discuss the objectives and practices of civic innovations, and the ways in which both groups can contribute to each other’s objectives¹⁰. City Innovate is also active in projects commissioned by the City or the SFMTA. One of them was reEnforce, a component of the SFMTA sfPark program launched in 2008, and consisting in devising and using sensors on parking spots so that drivers could visualize available spaces on their smartphone, and then use an associated mobile app to pay for parking time. City Innovate conducted tests in order to assess how users would use the devices, and how much they would be ready to pay. More generally, both the OCI and the Office of Innovation of SFMTA have been collaborating with City Innovate, and consider the foundation as an important partner. An official at the OCI described the Foundation as “great advocates for our work”, who do “similar things” as the OCI¹¹. Indeed, as the OCI seeks to connect public departments and private companies, thereby transforming both, City Innovate also engages in numerous brokering activities to connect public bodies and start-ups from its network. As one of the people in charge of City Innovate put it during an interview:

We were with the mayor’s office today and the idea [was]: “Give us your priorities”. The SMFTA (...) give their problems, we will find solutions. It takes time to solve this kind of problems. We strategically figure out how to get it. (...) We have a network, we choose the most adapted “local start-up”. (K.S., City Innovate Foundation, February 15, 2016)

Accordingly, City Innovate and the OCI worked in partnership to conduct the Startup in Residence (STIR) program by jointly selecting eligible start-ups. City Innovate could then also intervene at the end of the process, by acting as a potential investor in the start-ups deemed interesting after the selection phase. Thus, City Innovate is far more than a broker between public bodies and private actors. It also aims to turn city actors into entrepreneurs, and innovators into both contributors to city policies and potential successful entrepreneurs. Its rationale for intervening with public and private actors of the San Francisco scene is that local policy action needs to be understood in the terms of a series of problems to solve, for which the government itself has no possibility to find answer. As the director of City Innovate said during an interview:

¹⁰ BRIDGE Spring 2017, Celebrating Innovation in Cities, San Francisco Bay Area, June 1st 2017 <http://www.bridgesf.city/>

¹¹ Interview, OCI, February 19, 2016.

“Most of those problems won’t be solved unless you get some collaboration between public, private and academia”. (...) San Francisco public agencies will bring a city problem to the lab, and we will talk to the stakeholders (Airbnb, Uber...) to see how they could get involved. (...) We are business focused. We have a network; we choose the most adapted local start-up.” (K.S., Founder and Executive Director, City Innovate Foundation, 17/02/2016)

Imagining the city of permanent innovation

Stimulating the collaborations between public and private actors, and “acting like start-ups” may well be a common trope in today’s priorities of cities¹². In San Francisco, these collaborations are inscribed in an understanding of public action that turns city policies into separated issues – such as parking pricing, identifying non-functioning drains, making urban space accessible to disabled people –, of which a variety of actors may provide solutions to. As it is discussed in the Office of Civic Innovation, the Office of Innovation at the SFMTA, or City Innovate; experimented in Living Innovation Zones or in Pavement to Parks projects, or enacted by both tech companies and city officials seeking to attract them, innovation is expected to be permanent: that is, a never-ending flow of solutions expected to meet the never-ending flow of urban problems. Permanent innovation is both an objective and a means: realizing San Francisco as the “innovation capital of the world” is an end in itself, which requires numerous innovations involving both city departments, private companies, and non-profit organizations such as City Innovate. Permanent innovation is, in Sheila Jasanoff’s terms, a sociotechnical imaginary, defined as a “collectively held, institutionally stabilized, and publicly performed vision of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology” (Jasanoff, 2016: 6). Understanding permanent innovation as a sociotechnical imaginary allows us to grasp the collection of diverse initiatives and normative positions about the desirable future of the city. It points to the particular situation of permanent innovation in San Francisco: more than an empty discourse or a pure city marketing rhetoric, it is operationalized in targeted initiatives that materially display a larger normative perspective of the desirable city. Accordingly, we speak of the “city of permanent innovation” to point to the desirable city sustained by the sociotechnical imaginary of permanent innovation. In such a city, collectives and individuals are reshaped for the sake of innovation, where innovation is expected to provide solutions for local policy-making. Although originating there in our account, the city of permanent innovation is not San Francisco. Rather, San Francisco offers an empirical entry point to identify attempts at realizing the city of permanent innovation, and the political questions these attempts raise, such as: What are the distribution of roles and the allocation of power in the city of permanent innovation? How are the urban problems defined and who can define them? Such questions suggest examining in further details the democratic ordering at play in the city of permanent innovation. The first step to do so is to demonstrate that the sociotechnical imaginary of permanent innovation relies on a re-definition of democratic ordering.

¹² <http://www.smithsonianmag.com/innovation/citie-governments-are-collaborating-startups-and-acting-ones-themselves-180955483/?no-ist>

2. Democratic questions in the city of permanent innovation

Representation

In the city of permanent innovation, public action is defined as a series of problems to solve, for which solutions are to be crafted out of the technological and creative skills of a variety of actors (entrepreneurs, companies, civil society groups, etc.). Considering the practice of government as a matter of solving problems requires undertaking a series of operations through which one can produce isolated entities out of wider political issues, and finding technological solutions for them. How to define singular problems and identify appropriate solutions? A first answer to this question is provided by organizations such as the OCI or City Innovate, which adopt the market language of supply and demand when talking about the need to invite start-ups to provide solutions for problems faced by public bodies. To the permanent “demand” of public bodies facing urban problems start-ups, companies and citizens-turned-innovators would provide a “supply” of solutions.

The interventions of such organizations as the OCI or City Innovate show that neither the “demand” for nor the “supply” of solutions are pre-defined entities though. As we discussed above, members of the OCI and City Innovate transform both the civil servants and the company they work with. In other terms, the “demand” for and the “supply” of solutions need to be constituted. This is not surprising if one bears in mind the works in economic sociology that display the tight connections between the making of supply and demand and the organization of social and political life (Callon, 1998; 2013). By analyzing the various sociotechnical apparatus that constitute calculating economic agents, qualify economic goods and services, and organize exchanges, these works show that the making of supply and demand relies on mechanisms of representation of concerned publics (Callon et al., 2002). Adopting this perspective on the making the demand for and supply of solutions for San Francisco urban problems helps us shift from a common market metaphor to democratic issues: defining problems and solutions requires that concerned publics are given voices to, and that governing mechanisms to negotiate the nature of both problems and solutions are mobilized. Accordingly, the city of permanent innovation relies on mechanisms of representation, of supply and demand, and also of people’s concerns and proposed solutions. Representation, here, is both a matter of knowledge production and a political operation (Callon, 1986).

Among the institutions of the city of permanent innovation, the San Francisco Municipal Transportation Authority (SFMTA) is perhaps the organization where this latter point is the most explicit. A reason for this is that the SFMTA’s perspective for transportation policy in San Francisco is that it has to be “user-centric” – a phrase that the SFMTA strategic plan makes regular uses of. Becoming user-centric means both that the SFMTA has engaged in numerous studies about how San Franciscans use various transportation modes (whether public or private) and that the authority seeks to give voice to the variety of users of these transportation modes. Field surveys are used, as, for instance, SFMTA researchers seek to experience biking in San Francisco. Opinion polls are regularly used, e.g. for crafting the SFMTA strategic plan, when the

objective related to the respective share of automobile and non-automobile transportation was defined following a vast opinion polling survey. Crowdsourcing is also used in order to collect users' experiences with transportation modes, and anticipate potential issues related to the organization of the system. Representing what people experience with transportation is also done through partnerships with the private sector. Companies such as Waze, which aggregates in real-time information produced by its users about traffic, have been collaborating with the SFMTA in exchanging data, and allowing the public agency to identify traffic-heavy zones¹³.

The variety of devices used by the SFMTA to operationalize its user-centric approach represents problems to solve, and, consequently, people's concerns. These devices hope to constitute a demand for and a supply of solutions to transportation issues. They point to the importance of data, possibly gathered in real-time process, to undertake such tasks. That San Francisco was the first city in the U.S. to launch an Open Data Program is significant, since it is crucial in operationalizing the permanent process of identifying urban problems and potential solutions. A telling illustration of this latter point was provided by a public presentation given in February 2016 by Joy Bonaguro, chief data officer of the city and county of San Francisco, who spoke during a meeting of the Committee on Information Technology (COIT), "dedicated to setting policies and the overall direction of the San Francisco City and County Information Technology Community"¹⁴. Bonaguro's talk was entitled "Data in San Francisco: meeting supply, spurring demands". She adopted the language of supply and demands to talk about the open data policy, which San Francisco had been a pioneer of – "New York City is copying our open data plan", Bonaguro said at one point. As they appeared in her account, data were vehicles through which problems could be made visible for both city officials and inhabitants, and potential solutions could be envisioned – thereby "starting with problems and moving to opportunities", as one of her slides claimed. She described the various initiatives undertaken by the city to aggregate data, related, for instance, to affordable housing or utility management, and made them available for citizens or companies to use them. While she enthusiastically said that tech companies "loved to use our data to come up with new tools" (such as maps created by an online provider of custom maps called Mapbox representing the patterns of calls to SF311, signaling non-emergency situations such noise or potholes), she also spent time describing how individuals could use data to make new issues visible. Among the examples she mentioned, the "human wasteland project" stood out as a telling case of both displaying problems and envisioning potential solutions. Created by Jennifer Wong, an independent web developer, the human wasteland project is a map-based online tool that displays the places where human waste has been spotted through calls to SF311¹⁵. Widely commented in the local online media, this initiative was the winner of a "Hack Week" event sponsored by a real estate company and contributed to prompt privately-supported initiatives benefiting homeless people, as well as

¹³ Other partners include Swyfly, which resembles Waze on public transportation, and Zen Drive, which allows drivers to identify at-risk behaviors on the road.

¹⁴ See the homepage of COIT's website: <http://sfcoit.org>; quotes in this paragraph are excerpts from Bonaguro's talk, which we attended. The minutes of the meeting are available on the COIT's website (<http://sfcoit.org/meeting/committee-information-technology-february-16-2017-minutes>)

¹⁵ <http://mochimachine.org/wasteland>

“data-driven solutions” such as mobile bathroom stations, available at the place and time where they are most needed¹⁶.

Enthusiastically presented by the official in charge of it, San Francisco’s open data program not only shows that the production and aggregation of data are additional sources of innovation based on public-private collaborations, but it also displays the potential role of these operations in the representation of problems and solutions that the city of permanent innovation relies on. That data have a role to play in the city of permanent innovation is not surprising, considering that innovation in cities have recently been connected, if not entirely equated, with the increased and optimized use of data (Flowers, 2013; Kitchin, 2014). For our concern here, the examples mentioned above show that data are conceived of as powerful resources to display the urban problems that are expected to be solved in the city of permanent innovation. They are vehicle for representation understood as both knowledge production and political operation.

So far, we have discussed several mechanisms of representation of people’s concerns and potential solutions. But understanding the dynamics of the demand for and supply for solutions for urban problems requires that one explores in further details the mechanisms through which city bodies hope to intervene in the city of permanent innovation to constitute and intervene on problems and solutions. In doing so, the next sub-section will show that imagining the city of permanent innovation not only invents new and possibly data-supported mechanisms of representation, but also re-defines the legitimacy of public action at the urban level through the mobilization of experiments.

Legitimacy

The market metaphor of the demand for and supply of solutions can be further discussed, again building on economic sociology. We saw above that supply and demands need to be constituted, and rely on representation mechanisms to do so. But what recent STS works on markets also demonstrate is that the construction of supply and demand requires targeted interventions of both public and private actors, which can often be described as experiments (Callon et al., 2002). Accordingly, the city of permanent innovation relies on mechanisms that, as we shall see, redefine in experimental terms the practical ability and normative acceptability of public bodies to act – in short, their political legitimacy.

The intervention of the public bodies is meant to be limited in the city of permanent innovation. Rather than spending massive amount of public money to build large-scale urban infrastructures, they hope to rely on private actors and limit their mode of action to small-scale interventions. When voicing this approach to local public policies, proponents of the city of permanent innovation are less faithful to a liberal art of governing attuned to the risk of intervening too much in the economic life (Foucault, 2004) than aware of pervasive constraints on public intervention. The first of these constraints is time. As an official of the SFMTA office of

¹⁶ John Coté, “S.F. has new data-driven solutions to old S.F. problem: human excrement”, *SFGates*, July 15, 2014, <http://www.sfgate.com/bayarea/article/S-F-takes-data-driven-approach-to-poop-5621384.php>

innovation said, speaking of the way the authority could answer the goals it had identified in its strategic plan:

“We realized very quickly that we can’t build subways that fast, we can’t even build the infrastructures, so we have to do things tactically and very small.” (Interview with T. P., SFMTA Office of Innovation, February 10, 2016).

But the impossibility for public bodies to “build subway that fast” is also tied to the intricate rules allowing them to spend money on urban investments. This is a second constraint that San Francisco public bodies face, related to the use of public money. The amount of investment needed is part of the picture, and a member of City Innovate provided telling figures during an interview. She quantified the maintaining costs of cities’ subway system as a “\$17 billion bill” and rhetorically asked whether one could “justify expanding and building new stations” while maintaining the system alone cost that much¹⁷. The official of the SFMTA Office of Innovation quoted above seemed to follow this mode of reasoning as he described the value of the “innovative programs of green bike lanes, red bus lanes, parcels” as follows:

“The public started to get the sense that things were happening in their neighborhood – it was in the thousands of dollars, not millions, but brought very visible results”. (Interview with T. P., SFMTA Office of Innovation, February 10, 2016).

Money constraints are not just related to available amounts of spending though. The instruments that allow public bodies to use public money are limited, and potentially constraining. Constraints related to public procurement imply that actors such as City Innovate regularly operate for projects below the threshold requiring public procurement processes. Perhaps more significantly, the scope of public intervention in large-scale urban development projects was significantly hindered when the Californian Redevelopment Agencies (RDA) disappeared in 2011, following a decision of the Supreme Court of California¹⁸. RDAs had had important autonomous powers, among which that of using so-called “tax increment financing” (TIF) to fund urban projects. TIF consists in affecting future property tax revenue increase to a development project, possibly by using it as a guarantee for additional loans. While caught in lengthy controversies that eventually prompted two governors of California to ask for their elimination¹⁹, the 2011 decision of the Supreme Court also deprived local public bodies of a powerful instrument for conducting large-scale infrastructure projects.

Accordingly, some of the projects launched in San Francisco by RDAs when they still existed provide cases that vividly contrast with the limited intervention approach that is part of the city of permanent innovation. Consider for instance a major project currently undertaken in downtown San Francisco, the Transbay transit center. A future major train and bus station south of Market Street, the Transbay transit center appears from the last floor of the nearby building as a gigantic ship spreading across several blocks of downtown San Francisco, tucked between several high-rise buildings, which, under construction or already completed, are part of the

¹⁷ Interview with M.K., City Innovate, February 17, 2016.

¹⁸ *California Revolpment Association et. al. v. Matosantos*, Dec. 29, 2011. See: <https://www.paulhastings.com/docs/default-source/PDFs/2079.pdf>

¹⁹ RDAs were accused of favoring gentrification because of their built-in interest in increasing property value, and of diverting tax revenue at the expense of other areas of government activities.

ongoing redevelopment of the whole area. The massive investment needed to undertake the project was partly covered by tax-increment financing (TIF), the very mechanism that Redevelopment Agency used before they disappeared²⁰. It requires long-term planning of future transportation flows, of future resources available, and of future collaboration between various public and private actors – among which investors, the counties’ agencies in charge of the Caltrain regional train (expected to terminate at the future Transbay transit center), and the state agency in charge of the California high-speed rail (expected to connect Los Angeles to San Francisco’s Transbay Transit Center). As such, this project can be seen as an opposite to the form of public intervention sketched above. By contrast, it also offers a way to identify the conditions of the legitimate public intervention in the city of permanent innovation. Instead of investing large amounts of money on a limited number of projects, public bodies are expected to frugally spend for the benefit of multiple small-scale public demonstrations. Instead of planning long-term urban development and facing uncertainties about future issues, they prefer adapting their interventions to problems as they emerge. Instead of stabilizing beforehand the components of a large project, they would rather test possible approaches before deciding whether or not to extend them. Instead of engaging into large-scale policy programs, they ground their legitimacy to act on the mobilization of experiments.

Many of the examples we mentioned so far can be described in the terms of the latter halves of these alternatives. The initiatives tested in the living innovation zones, or within the Pavement to Park programs are expected to be small-scale, citizen-induced tests of potential transformations of the public space. Initiatives undertaken by tech companies providing pro bono collaborators in the public service or introducing tools to tackle urban problems provide ways for the public bodies to attempt new approaches at a limited cost. Smart metering as tested by City Innovate is experimented at a small-scale, before being potentially extended. Apps developed by private companies or individuals thanks to the Open Data policy of San Francisco are seen by officials such as the city’s chief data officer as powerful ways of turning “problems” into “opportunities” for the development of future solutions. In each of these cases, public bodies draw the legitimacy of their intervention in their ability to act in experimental ways, adaptable to both potential issues as they emerge, and the available competencies of private companies or individuals seen as partners. Experimenting thereby appears as a way of negotiating with a series of time or money related constraints, demonstrating an ability to act in multiple small-scale sites, while permanently re-interrogating the demand for and the supply of solutions meant to answer urban problems²¹.

A recent self-presentation of San Francisco public bodies’ legitimacy to act is provided by the SFMTA, as it answered the U.S. Department of Transportation “Smart City Challenge”. In proposing to turn San Francisco into a city that would “expand and integrate shared mobility services” (SFMTA, 2015: 1), the SFMTA saw experiments as appropriate operations to introduce innovations in local transportation practices, the most visible of them being autonomous vehicles, possibly “integrated” into the other components of the local transportation system

²⁰ The elimination of RDAs required the re-negotiation of agreements between still ongoing projects such as Transbay and the successor agency. The agreement for Transbay is available here: http://transbaycenter.org/uploads/2016/04/Item4_Intergovernmental-Agreement-with-DPW.pdf

²¹ Cf. also Callon et al., 2002 on experimentation and the construction of supply and demand.

and “shared” by users according to the similarities of their trips with the help of digital devices. The proposal expected that the concept of “integrate shared mobility services” be reached in the following way:

“To test and scale this concept, the City will challenge neighborhoods to participate and apply with participating residents, businesses and stakeholders (...) Pilots could include but are not limited to: Wi-Fi, charging, smart signals, lanes, sensors and beacons, fleet operations, first-last mile transit shuttles, flexible loading zones and open space, delivery services, parking management, geo-fencing, demand management pricing and incentives, and bike/car/scooter/cargo share pods. This iterative, community supported process will include dashboards to track and monitor progress and outcomes (...)” (SFMTA 2015, p.2).

In this excerpt, experiments appear as small-scale, controlled operations allowing the public bodies to harness the participation of “residents, businesses and stakeholders” in order to test what can be extended at a later time. Taken together, they suggest considering that:

“The city is an urban laboratory that has several locations ideally suited to create demonstration sites” (SFMTA 2015, p.8).

This latter quote suggests considering that any experiment comes with a demonstration, addressed to particular audiences, be they inhabitants attesting the value of public policy intervention, investors ready to contribute to future scaling-up operations, or potential partners interested in future replications of the tests. It connects these demonstrations within a city understood as an “urban laboratory” – an expression that echoes both the long-time sociological tradition of the Chicago school and a renewed interest coming from STS (Gieryn, 2006; Karvonen and Heur, 2014). The city of permanent innovation can indeed be described as an “experimental city” (Evans, Karvonen and Raven, 2016), as experiments are used as a mode of governing and organizing urban life, and the city itself made an “urban laboratory”. But even situated within the many works that introduced and/or used these terms to analyze historical or contemporary cities, one can already see particularities in the city of permanent innovation. It is not a “techno-city”, in that it would centralize the conduct of experiments in a controlled and planned manner (Kargon and Molella, 2008). It is not made a laboratory for social scientists to learn about social rules that can be generalized, and thereby attempt to act on urban issues (Gieryn, 2006). If it indeed associates its focus on experiments with the production of knowledge and relies on dense ties with the private sector, such general categories as “neo-liberalism” or the “knowledge economy” (May and Perry, 2016) are more impetus to further analyze the conduct of experiments and the type of urban laboratory at stake than ready-made explanatory resources. The important question for us here, once it is clear that imagining the city of permanent innovation requires crafting operations of representation and legitimacy-building, relates to the kind of democratic ordering at stake. As the sociotechnical imaginary of permanent innovation is also about the democratic organization, we need to ask: how is the representation of people and the definition of problems constructed? What experiments can be conducted? How do these processes stabilize political realities and eliminate others? Examining how these questions are answered will help us characterize the type of democracy that the city of permanent innovation brings to life, and the alternate democratic orderings it is at odds with. The next section shows that the city of permanent innovation is not necessarily aligned with modes of democratic practices that have long-term roots in San Francisco’s political life, but might well lead to invent an original one, which we label “real-time democracy”.

3. What democracy in the city of permanent innovation?

Interest politics between progressivism and conservatism

The importance of the representation of problems and publics is not a new concern in San Francisco, where local democracy has relied on mechanisms of direct democracy in local policy-making. As in California as a whole and many other cities in the United States, propositions for policy-making can be put on the ballot through initiatives, if they gather enough voters' signatures. Ballot initiatives have been a central feature of urban policy-making in San Francisco, particularly related to urban development, where they have been the preferred mechanisms to constrain construction (DeLeon and Powell, 1989). Scholars who comment on local politics in San Francisco have described how interest groups have organized themselves so that they could put new issues on the political agenda, and how the influence of these "single-issue lobby groups" has resulted in unexpected coalitions, aligning for instance pro-environment and pro-business groups (Hartman, 2002). Ballot initiatives might be the most visible interventions of interest groups that are particularly active in San Francisco, considering especially the urban environment and its evolutions. But they are not their only mode of action. Consider for instance the San Francisco Bicycle Coalition, which advocates for the extension of bicycle lanes and the safety of bikers. This interest group intervenes in debates about ballot measures, but also engages in direct advocacy at the level of public bodies²². The officials we met within the SFMTA mentioned the Bicycle Coalition as a partner in the definition of their policies. One of them, mentioned by an official in charge of "sustainable streets" projects, explained that several former members of the group have been hired by the SFMTA²³.

The various forms of advocacy in San Francisco might be seen as a source for the representation objectives we discussed above. In a sense, the city of permanent innovation as it is imagined in San Francisco seems to draw on a long-term tradition of progressive politics making communities key actors of local policy-making. Yet this connection only partly covers the type of democratic ordering at play in the city of permanent innovation. Advocacy through single-issue lobby groups has been the topic of lengthy debates in the press²⁴, and among the actors of urban policies in San Francisco. Some of those we met were critical of this form of collective action, and, reproducing willingly or not an argument often used in political theory, singled out the "conservatism" of this form of political action – which would lead to regular controversies and associated administrative hindrances for urban redevelopment projects²⁵.

²² See e.g. Aaron Bialiks, "SFBC, Walk SF Push SFMTA to Make Room for Bike/Ped Projects in Its Budget", Streets Blog SF, April 2, 2014, <http://sf.streetsblog.org/2014/04/02/sfbc-walk-sf-push-sfmta-to-make-room-for-bikeped-projects-in-its-budget/>

²³ Interview with G.R., SFMTA, February 17, 2016.

²⁴ See e.g. "The perils of extreme democracy", *The Economist*, April 20, 2011, <http://www.economist.com/node/18586520>

²⁵ Interview with J. C., Office of Community Investment and Infrastructure, June 28, 2016.

These positions have roots in a long-term opposition between what political scientist Richard DeLeon has described as a “pro-growth regime” and a “progressive slow-growth regime” (DeLeon, 1992a; 1992b). The 1988 election of Mayor Art Agnos can be seen as a victory of the latter, albeit rapidly ambivalent (DeLeon, 1992a). More than twenty years later, the approval of Proposition B, advocated by Agnos and which required high-rise waterfront development to win voter approval²⁶, can be read as an additional victory, led by the same advocate, of the progressive justification for limiting urban development²⁷. By contrast, it has also been commented as one in the long series of fights in San Francisco that rest on coalition-building and advocacy in the name of local interests eager to preserve the urban environment²⁸.

These elements only scratch the surface of the many debates about direct democracy and the role of advocacy groups in San Francisco, pertaining to questions such as: Who has access to ballot initiatives? Do advocacy practices in San Francisco favor interest groups with enough money to gather the signatures to validate ballot initiatives? What decisions does it render possible or impossible? Our objective here is not to extensively map these debates. Rather, it is to point to the ambivalent situation of the city of permanent innovation within the San Franciscan version of direct democracy. In the city of permanent innovation, adaptation requires that social groups are to be reformulated when problems evolve, hence an unease with forms of public participation that tend to re-stabilize vested interests. In the city of permanent innovation, progressive politics based on single-issue lobbying is re-interpreted as the dynamics of the “old economy”, in geographer Donald McNeill’s term (McNeill, 2016), and needs to be complemented, if not replaced, by mechanisms allowing for the permanent representation of publics and problems as they emerge.

New collectives for a new class warfare

If the appropriate mode of representation in the city of permanent innovation cannot reproduce the advocacy practices of San Francisco’s direct democracy, then the collection of data can offer ways to make problems and solutions emerge, as the examples discussed above when we mentioned the city’s open data program show. The use of data is not limited to the city of permanent innovation though. The idea that data are crucial in sustaining public action would meet enthusiastic agreement at the Innovation Office of the SFMTA, the Office of Civic Innovation or City Innovation. It is shared by San Franciscan activists who, within the “Anti-Eviction Mapping project”, gather data in order to map increases in rents, narratives of

²⁶ Proposition B was approved in June 2014.

<http://district5diary.blogspot.fr/2014/06/art-agnos-on-proposition-b-and.html>

²⁷ Agnos drew this connection himself during an interview (February 15, 2014).

²⁸ Historian Jasper Rubin, author of a history of the negotiations about the San Franciscan waterfront (Rubin, 2011), was interviewed by local online and university media about Proposition B, and situated this event in the series of previous controversial initiatives (see: John Coté, “Prop. B height-limits battle an echo of past SF fights”, *SFGates*, May 30, 2014, <http://www.sfgate.com/bayarea/article/Prop-B-height-limits-battle-an-echo-of-past-S-F-5514912.php>; Anthony Lazarus, “On SF’s Waterfront: 5 Questions for Professor Jasper Rubin”, *SF State News*, June 2014, <https://news.sfsu.edu/sf%25E2%2580%2599s-waterfront-5-questions-professor-jasper-rubin>)

evictions, or ties between initiatives in urban redevelopment and business interests²⁹. The connection the two groups propose between data production, aggregation and use on the one hand, and political representation and collective action on the other could not be more different though. While the former, in imagining the city of permanent innovation, make data a vehicle for the permanent reformulation of problems and solutions, the latter use them as a tool for display one single and major problem – that of the transformation of the city for the benefit of the few.

This critical position toward urban innovation has become vocal in San Francisco. The transformations of the city have spurred numerous protests, some directed against the tech companies accused of causing increases in rents and subsequent evictions. The Google buses protests, during which buses transporting employees of the company living in San Francisco were stopped by activists, were spectacular demonstrations widely commented on³⁰. Re-using an expression used during a public meeting by a local resident, scholars and journalists alike talk of a new “class warfare”, between the affluent new residents working in the tech sector, and the victims of high rents and potential evictions³¹. This language requires drawing lines between relatively stable social groups, a “tech class” that would be responsible for the transformation of the city, and another one that would suffer from it. This is what protesters have been attempting to do, targeting buses that would benefit from an affluent minority of people also constitutes the riders of these buses as the enemy group, however ambivalent the relationships of its members with the city might be. Some of the activists also engage in operations that constitute collectives able to fight against increases in rents or evictions. One can read the anti-eviction mapping project in those terms. Within this project, the aggregation of data helps gather collectives, using maps as tools for displaying unacceptable social evolutions and, in parallel, the existence of groups suffering from them³².

Gathering data for mapping purposes are not the only actions that make a new class warfare emerge in San Francisco. When we met Joseph Smooke and Dyan Ruiz, who run the independent online media platform *People.Power.Media* and are in close connection with the Anti-Eviction Mapping project, we spoke about the numerous housing right initiatives they engaged in – such as organizing local communities so that they can voice their concerns about future developments, and ensuring that enough participants intervene in public meetings for

²⁹ See: <http://www.antievictionmap.com>

³⁰ Press accounts of these events have been numerous. An international example is: Andrew Gumbel, “San Francisco’s guerrilla protest at Google buses swells into revolt”, *The Guardian*, January 25, 2014 <https://www.theguardian.com/world/2014/jan/25/google-bus-protest-swells-to-revolt-san-francisco>

³¹ See De Kosnik (2014) and Maharawal (2014), and among numerous examples in the press: Katy Steinmetz, “The class war is back on in San Francisco”, *Time Magazine*, April 2, 2014 <http://time.com/47406/san-francisco-google-bus-silicon-valley-tech-class-warfare/>; Susie Cagle, “In this Silicon Valley tech culture and class war, we’re fighting about the wrong things”, *Wired*, December 16, 2013 <https://www.wired.com/2013/12/silicon-valley-class-war/>

³² An executive director at the non-profit, Oakland-based organization Ecocity Builders, Kristin Miller saw these maps as proofs of the “failure of belief in the city as a common, a city that supports existing residents and new arrivals by integrating them into the collective spaces and systems perhaps best represented by public transportation” (Miller, 2014: 62).

these concerns to be heard³³. Defining relevant public action as an exact opposite as proponents of the city of permanent innovation would do, Smooke and Ruiz were harsh critics of the fact that San Francisco's public bodies tend to come up with "simple technological solutions" to "simple problems" instead of tackling what they define as "complex issues" pertaining to the allocation of resources in the city. By making their interventions a matter of mobilizing local communities and opposing their transformations due to the flow of newcomers, Smooke and Ruiz offer an explicit contrast with the democratic ordering at stake in the city of permanent innovation. Representation, for them, is not a matter of permanently redefining urban problems and small-scale solutions, but should be grounded in community building. They do not consider that the legitimacy of public action stems from local experiments with those problems and solutions, but that it should originate from a planned ability to mitigate political and economic struggles.

Real-time democracy

Albeit originating in San Francisco, where advocacy politics and activist community building have been long time practices of democratic organization, the city of permanent innovation proposes forms of public action and public participation that are only partly map onto local interest politics, and are vividly opposed by anti-eviction activists. By contrast, the city of permanent innovation fits particularly well with mechanisms able to reconstitute new collectives for each new problems and potential solutions. Thus, a member of City Innovate explained during an interview that one of the resources of her organization was to "cut through a lot of the interest groups". She was referring to a project she had been involved in. This project, which we mentioned above, consists in providing drivers with online tools to pay for parking fees and know in advance the location of the available parking spots. As it dramatically redefines their work, meter maids had been opposed to this project. "Cutting through interest groups", in the language of City Innovate, meant that the experiment allowed the organization "to stand up a test and prove, using data, that the outcome is socially good"³⁴. Facing the opposition of a group potentially concerned about future job availability (or at least future change in work practices), the experiment would test users' behaviors and opinions and potential revenue for the city. As such, it would make new solutions emerge, and would give voice to new groups interested in these evolutions. "Cutting through interest groups", then, refers to a practice of re-defining interests thanks to experiments based on data, so that innovative solutions can be envisioned, rather than negotiating with "special interests" – that is, those that already exist in the political environment of the city. In turn, it also serves as a powerful device for the elimination of crucial concerns for existing social groups.

One can see in this example a variation on the perspective advocated by the chief data officer of San Francisco city and county, as she made data the engine for ensuring the emergence of new representations, thereby spurring the demand for new solutions to urban problems. But it also adds another layer to our analysis of the city of permanent innovation, namely an explicit stance about the production of the common good, and the appropriate democratic functioning of the city, all expected to be based on the permanent transformation of both social concerns

³³ Interview with Joseph Smooke and Dyan Ruiz, February 15, 2016.

³⁴ Interview MK, chief of strategy and communication, February 17, 2016.

and social groups. As it is based on the ability to permanently represent newly re-defined people's concerns and provide new solutions, we label it "real-time democracy". Real-time democracy points to a type of democratic ordering that allows the permanent reformulation of problems and solutions that is at the heart of the city of permanent innovation. It relies on representation mechanisms that "cut through special interests" by re-ordering collectives as new problems emerge. Defined as such, real-time democracy is consistent with the initiatives we described above, be they contests aiming to mobilize new start-ups for each new urban problem, or apps being developed as new data are made available by the San Francisco's Open Data program, or new connections drawn among them by companies or individuals.

Real-time democracy is well illustrated by a project on which City Innovate, the SFMTA Office of Innovation and the city of San Francisco have been collaborating. The objective of the project is to develop an application that will allow the user to choose his or her preferred mode of transportation, be it public or private, to move from one place to another. "Choosing" here, is an operation that goes beyond the mere comparison of available means of transportation, as the additional objective of the project is also to test pricing mechanisms, possibly used as incentives to prompt users to adopt one transportation mode or another. This experiment was mentioned during interviews as a topical illustration of an approach adopted by the organizations involved. As an official of the SFMTA Office of Innovation told us, talking about this project and also imagining future collaborations with private companies such as Waze, which could tell in real-time "where there is congestion" and consequently where people need to be incentivized not to go:

"People make decisions every day. It's not the government's role to tell them what to do but (...) we have to nudge them to shift their behavior. If we told people 'we're gonna change your behavior' it would never work. So instead we're basically say 'we're gonna partner with businesses and give you incentive to make you feel it was your decision in the first place'" (T.P., SFMTA Office of Innovation, February 10, 2016).

"Nudging" as it is referred to in this quote, has become a topic of its own in contemporary policy-making, discussed as a form of paternalism with conservative undertones (Schnellenbach, 2012) or as a way of de-coupling rationality and emotion in individual decision-making (Whitehead, Jones and Pykett, 2011). In the city of permanent innovation, it is connected to an objective of adequate and real-time representation of problems and solutions, based on permanently observed behaviors rather than the voiced opinion of citizens – "what people will tell you is very different from what they do" said a member of City Innovate in an interview³⁵ – and thus skeptical of other forms of democratic practices such as advocacy or activism. This approach requires close collaboration with a variety of actors able to gather data on behaviors and act on them, but can be undertaken with limited investments focused on localized, circumscribed tests.

Incentives are not the only mechanisms in the city of permanent innovation. But used as in the examples mentioned here, they offer a telling illustration of the mode of democratic organization that may emerge in the city of permanent innovation. Real-time democracy makes individual choices the core of democratic life, and the basis for the permanent re-composition

³⁵ Interview MK, chief of strategy and communication, February 17, 2016.

of collectives, as interests align depending on, for instance, the status of the transportation system at a given moment. It relies on the multiplication of data production, and on the ability of public bodies to coordinate among them. In doing so, it excludes from the set of legitimate and feasible urban operations both long-term reflections about future actions (e.g. infrastructure development projects), and consistent public action for the benefit of stabilized social concerns (e.g. the increasing gentrification issue in San Francisco).

Conclusion

Connecting several sites of urban innovation in San Francisco, this paper has identified the city of permanent innovation as a sociotechnical imaginary, that is, as a collection of material practices, rules and norms, and projections of future developments. In this city, public action is based on the identification of problems to solve and corresponding solutions. This raises democratic questions, related to the political representation needed for this identification task, and the legitimacy of the public bodies to act on them. San Francisco is a city where progressive politics has a complicated genealogy, pertaining both to mechanisms of direct democracy and a tradition of activism on social and environmental issues. The city of permanent innovation does not unproblematically draw on these resources though. We showed that its modes of functioning might be at odds with practices of advocacy building or community building. By contrast, real-time democracy proposes a mode of political organization that offers resources for permanent representation of concerns and small-scale experimentations. It is sustained by powerful economic actors organized as advocacy forces. Some of them have been instrumental in ensuring the election of Mayor Lee and the success of pro-business initiatives such as Proposition E, which replaced a payroll tax with a gross receipts tax varying across industrial sectors – a measure that was supported by venture capitalist and creator of sf.city Ron Conway, and interpreted as beneficial to technology firms (which tend to hire before earning revenue)³⁶.

The actors who imagine the city of permanent innovation, while relying on advocacy-based mechanisms traditional in San Francisco's political landscape, also propose to radically redefine what democratic life is about. Real-time democracy is antithetical to practices of political action that stabilize interests (such as advocacy or community-building) or engage in long-term planning for the sake of large-scale infrastructure project. It says nothing about the identification of the long-term objectives, such as a mobility system without cars, in the name of which incentives are introduced. One can then identify in the current initiatives related to urban innovation in San Francisco a crucial issue at stake, namely the ways in which local democracy ought to be conducted, for the benefit of whom, and in the name of what common interest.

³⁶ See: San Francisco Gross Receipts Tax on Businesses, Proposition E (November 2012), Ballot Pedia, [https://ballotpedia.org/San_Francisco_Gross_Receipts_Tax_on_Businesses,_Proposition_E_\(November_2012\)](https://ballotpedia.org/San_Francisco_Gross_Receipts_Tax_on_Businesses,_Proposition_E_(November_2012)); Somini Sengupta, "San Francisco tech companies win a proposition to save on taxes", *The New York Times*, July 7, 2011, http://bits.blogs.nytimes.com/2012/11/07/san-francisco-tech-companies-win-a-proposition-to-save-on-taxes/?_r=0

References

- Callon, Michel. 1986. "Some elements of a sociology of translation: domestication of the scallops and the fishermen of St. Brieuc Bay." In John Law (ed). *Power, Action and Belief: A New Sociology of Knowledge?* London, Routledge: 196-223.
- Callon, Michel. 2013. *Sociologie des agencements marchands*. Paris, Presses des Mines.
- Callon, Michel (ed.) 1998. *The laws of the markets*. Oxford, Blackwell.
- Callon, Michel, Cécile Méadel, and Vololona Rabearisoa. 2002. "The economy of qualities." *Economy and society* 31.2: 194-217.
- Callon, Michel, Pierre Lascoumes and Yannick Barthe. 2009. *Acting in an uncertain world*. Cambridge, MIT Press.
- De Kosnik, Abigail. 2014. "Disrupting Technological Privilege: The 2013–14 San Francisco Google bus protests." *Performance Research* 19.6: 99-107.
- DeLeon, Richard 1992a. "The Urban Antiregime Progressive Politics in San Francisco." *Urban Affairs Review* 27.4: 555-579.
- DeLeon, Richard 1992b. *Left coast city: Progressive politics in San Francisco, 1975-1991*. Lawrence, University Press of Kansas.
- DeLeon, Richard, and Sandra S. Powell. 1989. "Growth control and electoral politics: The triumph of urban populism in San Francisco." *The Western Political Quarterly* 42.2: 307-331.
- Evans, James, Andrew Karvonen, and Rob Raven (eds.). 2016. *The Experimental City*. London: Routledge.
- Flowers, Michael. 2013. "Beyond Open Data: The Data-Driven City." In Goldstein, Brett and Lauren Dyson (eds.), *Beyond Transparency: Open Data and the Future of Civic Innovation*, San Francisco, Code for America Press: 185-198.
- Foucault, Michel. 2004. *Naissance de la Biopolitique*. Paris, Gallimard.
- Gieryn, Thomas. 2006. "City as truth-spot laboratories and field-sites in urban studies." *Social Studies of Science* 36.1: 5-38.
- Hartman, Chester. 2002. *City for sale: The transformation of San Francisco*. Oakland, University of California Press.
- Jasanoff, Sheila. 2005. *Designs on nature: Science and democracy in Europe and the United States*. Princeton, Princeton University Press.
- Jasanoff, Sheila (ed.). 2016. *Dreamscapes of modernity*, Chicago, Chicago University Press.
- Joss, Simon. 2011. "Eco-city governance: a case study of Treasure Island and Sonoma Mountain Village." *Journal of environmental policy & planning* 13.4: 331-348.
- Kargon, Robert H., and Arthur P. Molella. 2008. *Invented Edens: techno-cities of the twentieth century*. Cambridge, MIT Press.
- Karvonen, Andrew, and Bas Heur. 2014. "Urban laboratories: experiments in reworking cities." *International Journal of Urban and Regional Research* 38.2: 379-392.

- Kenney, Martin. 2000. *Understanding Silicon Valley: The anatomy of an entrepreneurial region*. Palo Alto, Stanford University Press.
- Kitchin, Rob. 2014. "The real-time city? Big data and smart urbanism." *GeoJournal* 79.1: 1-14.
- Laurent, Brice. 2016. "Political experiments that matter: Ordering democracy from experimental sites." *Social Studies of Science* 46.5: 773-794.
- Laurent, Brice. 2017. *Democratic Experiments. Problematizing nanotechnology and democracy in Europe and the United States*. Cambridge, MIT Press.
- Maharawal, Manissa. 2014. "Protest of gentrification and eviction technologies in San Francisco." *Progressive Planning* 199: 20-24.
- May, Tim, and Beth Perry. 2016. "Cities, experiments and the logics of the knowledge economy." In Evans, James, Andrew Karvonen and Rob Raven (eds.) *The Experimental City*, London, Routledge: 32-46.
- McNeill, Donald. 2016. "Governing a city of unicorns: technology capital and the urban politics of San Francisco." *Urban Geography* 37.4: 494-513.
- Miller, Kristin. 2014. "Mapping Our Disconnect." *Boom: A Journal of California* 4.2: 62-67.
- O'Mara, Margaret Pugh. 2015. *Cities of knowledge: Cold War science and the search for the next Silicon Valley*. Princeton, Princeton University Press.
- Rubin, Jasper, 2011, *A negotiated landscape: the transformation of San Francisco's waterfront since 1950*. Chicago, Chicago University Press.
- Saxenian, AnnaLee. 1991. "The origins and dynamics of production networks in Silicon Valley." *Research policy* 20.5: 423-437.
- Schnellenbach, Jan. 2012. "Nudges and norms: On the political economy of soft paternalism." *European Journal of Political Economy* 28.2: 266-277.
- San Francisco Municipal Transportation Authority (SFMTA). 2015. *City of San Francisco. Meeting the Smart City Challenge*. Notice of Funding Opportunity, DTFH6116RA00002.
- Whitehead, Mark, Rhys Jones, and Jessica Pykett. 2011. "Governing irrationality, or a more than rational government? Reflections on the rescientisation of decision making in British public policy." *Environment and Planning A* 43.12: 2819-2837.