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Chapter 12

Innovation for whom? City experiments and the redefinition of urban democracy

Brice Laurent

Abstract As “smart cities” or “eco cities” proliferate, innovation has become a central component of urban policy. This chapter discusses the politics of innovation in urban contexts by focusing on city experiment, that is, experiments conducted *in* the city and *with* the city. The analysis of city experiments is a path for displacing oppositions between (1) the stability of urban space and the “disruption” introduced by innovation, (2) “technical” innovation and “social” innovation, (3) the local life of cities and the global flows of technologies and capital. Instead, one can contrast various propositions for organizing innovation in the city. The example of innovation policy in San Francisco and its associated controversies shows that these propositions offer various imaginations of the beneficiaries of innovation, and eventually different understandings of urban democracy. In particular, the imagination of the city as a place for real-time experiments and the increasing role of global investment can be contrasted with other propositions, which make collective life the means and ends of urban innovation.

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12.1 Introduction

In December 2017, news was reported that San Francisco was restricting the use of the delivery robots that had been introduced on the city's sidewalks by companies eager to automatize at home delivery¹. The San Francisco Board of Supervisors decided on December 5 that companies would need to apply for permits to operate their robots, and that they could do so only in particular zones with low foot traffic, and only for research purposes.

This episode is a perfect illustration of the ambivalence regarding technological innovation that San Francisco might be a scene of. After decades of being little more than a place to sleep and party for Silicon Valley tech workers, San Francisco has been active in attracting tech companies. That Twitter decided to locate its headquarters in downtown San Francisco, in an impoverished part of the city, was a sign of urban renewal and, more generally, of the new character of the city as the "innovation capital of the world". Yet the restrictions put on delivery robots also point to a pervasive ambivalence in San Francisco, regarding who should benefit from innovation. This question directly relates to the material ordering of the city as a place where space is allocated across users, some of them aiming to make private profits out of spatial use (Graham and Marvin 2001). Seemingly benign issues such as who (or what) can use sidewalks acquire pressing political dimensions, as they pertain to the allocation of space for public use or private profits, and force to reflect on the ways in which cities can (and should) be redesigned according to technological advances. For all its anecdotal appearance, the delivery robot episode suggests reflecting on the contested ways in which technological innovation changes (or is expected to change) city life, at economic, social and material levels.

A familiar reading of the delivery robot episode would oppose the stability of urban settings and the disruption caused by innovation, the social life of the city and the change caused by technological development, the local characteristics of the city and the global flows of technologies and capital that private companies make circulate, and for which San Francisco is one site among many, soon to be replaced if too reluctant to accept innovation. These oppositions echo some pervasive modes of reasoning about innovation, such as the "deficit model" (which explains critical positions toward innovation by a lack of understanding), which tend to introduce an asymmetrical understanding of who has the ability to innovate, who can problematize innovation, and who should benefit from innovation (Jasanoff 1998). By contrast, works in Science and Technology Studies (STS) have proposed to refine these oppositions by discussing the distribution of the ability to innovate across society (Callon et al. 2009).

¹ "San Francisco just put the break on delivery robots", *Wired*, December 6, 2017; <https://www.wired.com/story/san-francisco-just-put-the-brakes-on-delivery-robots>, accessed December 29, 2017.

This chapter discusses some examples of urban innovation and the opposition it faces in San Francisco² in order to develop a critical reflection on the transformation of innovation in the city. It argues that understanding the politics of innovation in the city requires displacing oppositions (such as stable/unstable, social/technological, local/global) that might come to mind when accounting for episodes such as the San Francisco delivery robot story. The chapter argues that the politics of innovation in the city can be examined in the context of a way of governing innovation based on experiments, which one can identify in San Francisco but is much wider – as a growing literature focusing on “urban laboratories” (Karvonen and van Heur 2014), “experimental cities” (Evans et al. 2016) or “test-bed urbanism” (Halpern et al. 2013) shows. Accordingly, I propose to use San Francisco as a lens to examine current transformations of urban innovation, and cities themselves, through experiments, and eventually discuss the possibility of counter-experiments.

Urban innovation, then, allows us to better understand innovation in general as an outcome of sociotechnical processes, not only because it stems from policy choices and the economic interests of private actors but also because it shapes individual agencies and collective organizations. The examples discussed in this chapter, as others in this volume, show the importance of a concern for “public participation” or “community-based intervention” and the ways in which it impacts innovation (see Chap. 9, Chap. 11, Chap. 14). They also demonstrate that this very concern is a sign that innovation is a site of democratic struggle, where pervasive political questions need to be asked, including: who are the “participants” to innovation processes? In the name of whom is innovation conducted? For the sake of what objectives? In this chapter, I show that the analytical focus on city experiments offers a path for exploring these questions, as proponents and critics of urban innovation propose different (and sometimes conflicting) statements about who can experiment, who can attest that experiments are successful, and how the value of experiment is defined.

In the following sections, I start by discussing the oppositions in San Francisco as an echo to current fractures around city space. I then argue that a way to analyze them in ways that do not simplify the oppositions at stake is to explore the politics of innovation in greater details, and in particular a mode of governing the city based on experiments. This will lead me to discuss counter-experiments as a basis for alternative imaginations of the city, again using examples in San Francisco as empirical entry points.

² I use empirical material collected in 2016 in the framework of a collective study, undertaken with Madeleine Akrich, Stève Bernardin, David Pontille and Félix Talvard, as well as graduate students from Mines ParisTech. I draw on a more detailed case study written by Félix Talvard and I, and forthcoming in an edited volume directed by Sheila Jasanoff on sociotechnical imaginaries of innovation in urban contexts (Laurent and Talvard 2017). I also refer to other fieldworks in Medellín and Singapore conducted within the City Experiments research project, coordinated by David Pontille and myself (see: Talvard, 2018 about Medellín).

12.2 Frictions in the innovation capital of the world

12.2.1 A global city and the innovation capital of the world

The 2012 election of Edwin Lee as mayor of San Francisco 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 of 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. Known as sf.citi, this organization has been serving as a platform for advocacy for the tech sector in local politics. Geographer Donald McNeill has described the tight connections between the “tech sector” (as constituted through initiatives such as Conway’s) and Mayor Lee’s elections and subsequent policy initiatives (McNeill 2016). These connections were made explicit as pro-business initiatives passed, such as Proposition E, which replaced a payroll tax with a gross receipts tax varying across industrial sectors – a measure that was supported by Ron Conway, and interpreted as beneficial to technology firms (which tend to hire before earning revenue)³. The connections between the city of San Francisco and the “tech sector” were publicly displayed on downtown Market Street, when Twitter moved its headquarters there. Mayor Lee participated in the opening ceremony in 2012. 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 activities⁴. Turning parts of the city into special zones dedicated to private investments is of course not limited to San Francisco. In fact, the making of the “global city” can be read as a re-direction of urban policy to a global public of would-be investors that public bodies try to lure by designating targeted tax policies. As Michael Goldman’s study of Bangalore shows, making the “global city” often articulates the development of technological sectors with various forms of land speculation, thereby redirecting the beneficiaries of urban policies from local inhabitants to a global public of investors and entrepreneurs (Goldman 2011). In San Francisco as in other global cities, this dynamics is tied to

³ See: [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)); “San Francisco tech companies win a proposition to save on taxes”, *The New York Times*, July 7, 2011.

⁴ See for instance “Twitter will get payroll tax break to stay in San Francisco”, SFGates April 6, 2011; “Twitter headquarters opens: San Francisco mid-market offices revealed”, The Huffington Post June 13, 2012.

a recurrent housing problem, driven by rising prices and the ever-increasing flows to and from the entire Bay area that crisscross the city – as the architects of the “innovation capital of the world” hope not only to attract tech workers working in Silicon Valley but become a place of innovation in its own right.

12.2.2 Protests and a new class warfare

The recent transformations of San Francisco have given rise to various forms of protests, perhaps best epitomized by the Google bus controversy. In 2014, the *Guardian* spoke of “guerrilla protest” to describe how activists repeatedly stopped the luxury shuttle buses transporting employees of Silicon Valley based companies such as Facebook and Google from San Francisco (where they lived) to their work place⁵. There are several ways of accounting for these protests. Officials in San Francisco tended to see them as misguided, drawing undue connections between rising housing costs and bus riding tech employees (Maharawal 2014)⁶. The critical voices, on the contrary, framed the oppositions not just as a local protest, more or less adjusted to the pricing dynamics of housing, but also as a new “class warfare”. The expression was then regularly used in the media and in scholarly accounts of the bus protest⁷. It reads the oppositions in San Francisco as a fight between affluent new residents working in the tech sector, and the victims of high rents and potential evictions. 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 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. During a collective fieldwork, colleagues and I met Joseph Smooke and Dyan Ruiz, who run the independent online media platform *People.Power.Media*. 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

⁵ “San Francisco’s guerrilla protest at Google buses swells into revolt”, *The Guardian*, January 25, 2014.

⁶ One official in San Francisco criticized during an interview the connections drawn by activists between the trajectory of the private buses and rising rent prices.

⁷ See de Kosnik (2014); Maharawal (2014), and among numerous examples in the press: “The class war is back on in San Francisco”, *Time Magazine*, April 2, 2014; “In this Silicon Valley tech culture and class war, we’re fighting about the wrong things”, *Wired*, December 16, 2013

enough participants intervene in public meetings for these concerns to be heard⁸. 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. Instead, they construed their interventions as a matter of mobilizing local communities and opposing their replacements by flows of affluent newcomers. Community organizing was an answer to the current transformations of San Francisco and a necessary complement to demonstrative protests such as those stopping private buses.

12.2.3 Oppositions to refine

These debates, and the very language of class warfare, map onto a series of oppositions. They oppose the stability of urban life and the instability introduced by permanent flows of technologies, people and capital, the social identities of local communities and technology-based transformations, the locality of urban life and the global characteristics of a "world city" attracting capital investment. These three couples of oppositions are only rough descriptions though, and need to be refined.

First, oppositions in San Francisco do not simply originate from the clash between the disruptions introduced by innovation on the one hand, and the stability of social groups on the other. The language of disruption should not hide the fact that the instability resulting from the flows of technologies, people and capital is the product of stable arrangements, including those resulting from advocacy politics in San Francisco that has turned the tech sector into a powerful political actor of its own. By contrast, oppositions in San Francisco are as much about the stability of social groups as related to the emergence of new coalitions of protests, associating for instance anti-eviction movements with wealthy owners eager to limit high-rise buildings in the city. The initiatives undertaken by people such as Smooke and Ruiz are only efficient if they manage to extend the collectives voicing their concerns, and indeed destabilize the existing passive social groups.

Second, reading the opposition as that of "social identities" reacting against technological development would ignore the dual fact that protesters and activists are very much prone to use technology, and that technological developments are also social projects. Activists in San Francisco have been engaged in the "Anti-Eviction Mapping Project". This project aims to collect various data (about housing prices, evictions, types of retailing activities...) and draw correlations among them. In turn, technology development projects in San Francisco are also

⁸ Interview with Joseph Smooke and Dyan Ruiz, February 15, 2016.

political programs aiming to turn the city into the “innovation capital of the world”. The trajectory of Edwin Lee is revelatory of the dual role of technology development programs, as technological innovation was for him an engine in the redevelopment of downtown San Francisco.

Third, the oppositions in San Francisco can only partly be described as local resistance to global transformations. The locality of the protest is also associated to global movements of resistance, and draws on repertoires of activism that cut across geographical and moral boundaries, such as those separating “developed” from “developing”, “legal” from “illegal” (Roy 2003). By contrast, the alleged “globalism” of urban transformations is also fractured by tensions that are inherent to the ways in which the contemporary forms of liberalism are shaped. In a study that resonates with the case of San Francisco, Katharyne Mitchell has analyzed how the growing flows of foreigners investing in real estate in Vancouver disrupt national liberal discourses about the role of communities in political and economic life (Mitchell 2004).

These considerations invite us to adopt theoretical and empirical approaches that displace the oppositions between stable/unstable, social/technology, and local/global. Below, I argue that Science and Technology Studies (STS) have much to offer in that regard, particularly as they propose to explore the politics of innovation in ways that do not take for granted the distribution of the ability to innovate, and explore processes of joint social and technological ordering. Building on this body of work, one can envision an analysis of the politics of innovation, particularly as it is conducted in formats, such as *city experiments*, that cut across the too simple oppositions we need to refine.

The study of city experiments, as the remainder of this chapter will argue, makes it possible to unpack the notion of innovation, seeing it as a mode of producing political legitimacy and political subjectivities. But before we discuss these points, we need to discuss the notion of experiment and how it is manifested in contemporary urban innovation.

12.3 From experiments in San Francisco to city experiments

12.3.1 Experimental situations

The vocabulary of experiments has become a pervasive trope in contemporary discourses about the city. Multiple examples in San Francisco can be seen as illustrations of this trend. The language of experiments is a recurrent part of the official discourse of public bodies like the San Francisco Municipal Transportation Agency (SFMTA). Consider for instance the Muni Mobile application, which presents transportation data for users of public transportations

to plan their journeys. The experimental dimension of the Muni Mobile App was explicit in the initial testing phase, which was managed by a dedicated private company, and during which self-registered users tested a beta version and offered feedback to the SFMTA. But the experiment extends far beyond the initial testing phase of the app. Once in place, the app offers a platform gathering data, which can be used to test various mechanisms related to pricing and incentives. As the person in charge of innovation at the SFMTA said during an interview:

“We’re experimenting with what the customers actually care about – what they care about is getting free things. We call that gamification. We don’t have the money to pay for these things so we think the right approach is to partner with the private sector and have them do it.” (SFMTA Office of Innovation, 10/02/2016)

Another example is SFParks, the parking management program based on the real-time definition of parking prices according to availability, or, in other words, “smart parking”. Launched in 2011, the project was expected to test new management and pricing technologies, and meant to be alternatives to road pricing in downtown San Francisco – an option that the chamber of commerce and then mayor Gavin Newsom refused⁹. In this case as in the previous one, and in San Francisco as in many cities across the globe (Kitchin 2014), experiments are based on the ability to collect large amount of data, assemble them to gain knowledge about transportation or parking behaviors, and use them to introduce incentives in the form of differentiated prices.

Experiments are not limited to this format though. Consider for instance small-scale, citizen-induced tests of potential transformations of the public space, such as those occurring in the so-called “Living innovation zones”, or within the “Pavement to Park” program, which aims to offer inhabitants the possibility to redesign portions of public space. These tests are intended as material interventions on city space, and are directed towards inhabitants expected to be turned into day-to-day innovators.

Apps developed by private companies or individuals thanks to the Open Data policy of San Francisco, or material interventions in city space as framed by initiatives such as the “Living Innovation zones” or the Pavement to Park program 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 solutions¹⁰. 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

⁹ “San Francisco is not London”, *SFGate*, December 22, 2008; “San Francisco studies fees to ease traffic”, *The New York Times*, January 3, 2009.

¹⁰ She used those terms during a public presentation (cf. a discussion in Laurent and Talvard, 2017)

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 problems.

When the SFMTA answered the U.S. Department of Transportation's "Smart City Challenge" in 2015, it proposed a synthetic vision of the city as a place dedicated to experimentation. 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 meant 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 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" would 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: 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 that:

"The city is an urban laboratory that has several locations ideally suited to create demonstration sites" (SFMTA 2015: 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 scholarly interest (Gieryn 2006; Karvonen and van Heur 2014). San Francisco can indeed be described as an "experimental city" (Evans et al. 2016), as experiments are used as a mode of governing and organizing urban life, and the city itself made an "urban laboratory". The evolution making experiments a basis for governing cities parallels the transformation of private interventions, as companies undertake tests "in the wild" to experiment with innovative technologies and services (Laurent and Tironi 2015).

This invites us to theorize further the notion of experiment and discuss the ways in which it offers a renewed understanding of innovation in the city.

12.3.2 Experiment as an analytical category

The recent literature on cities and urban innovation invites us to study experiments in cities, and to consider cities themselves as experimental sites (Halpern et al. 2013; Evans et al. 2016; Laurent and Tironi 2015; Tironi and Sánchez Criado 2015). One can then speak of “city experiments” to point to a dual process, whereby: (1) initiatives such as those I mentioned in San Francisco are urban related projects intended to serve as tests, assembling a sociotechnical apparatus for the sake of a learning objective, at least partly uncertain, and tied to public demonstrations, and (2) the city itself (or part thereof) is experimented with: as transportation tests re-route flows of passengers, or parking behaviors are transformed, various configurations of the material and human organization of the city are tested.

The analysis of city experiments can build on a body of scholarly works in STS that have discussed the politics of experiments. Early works in the field discussed experiments as operations that simultaneously act on the production of knowledge and social ordering. Shapin’ and Schaffer’s seminal study of the nascent experimental physics in 17th century England (Shapin and Schaffer 1985) and detailed studies of testing practices (Pinch 1993) have been followed by analysis that have extended the discussion of experiments to situations where economists test, in vitro or in vivo, their theories or models and thereby re-arrange the economy itself (Muniesa and Callon 2007; Mitchell 2005), protesters reinvent the forms of political activism (Barry 1999; Doubleday and Wynne 2011), experts test “technologies of democracy” (Lezaun and Soneryd 2007; Laurent 2011), users of mundane technologies make sustainable development a matter of personal engagement (Marres 2012), and actors engage in various types of political experiments (Laurent 2016; Millo and Lezaun 2006). These works have used experiments as an analytical category that allows the analyst to account for situations where a sociotechnical apparatus is aimed at demonstration practices, for the sake of a learning objective that is at least partly uncertain upfront.

Seen through the analytical lens of STS, the discourse of experiments as it is present in contemporary urban initiatives can be problematized in ways that displace the oppositions introduced above, namely stability/instability, social/technical, local/global. First, experiments inherently rest on a degree of instability, as they are aimed to produce results that are at least partly uncertain. Doing so also implies that the experimental conditions are stabilized, in such a way that results become transferable, and, perhaps more importantly, that convincing proofs can be produced. Consider for instance the transportation app Muni Mobile. The tests that are conducted on this platform act on and perform

behaviors that are not known in advance, and the very possibility of producing knowledge about these behaviors rests on the possibility to use a transportation system that will remain the same across time.

Second, and as historians of science working on early experimental practices have convincingly shown (Shapin and Schaffer 1985), scientific experiments are operations that engage in joint technical and social ordering. As they are configured to produce knowledge thanks to the mobilization of technical devices, they also require the assemblages of social collectives able to attest the validity of their outcomes. Extending the notion of experiments to account for certain economic and political interventions does not change this characteristic. Thus, SFMTA's proposal to test autonomous driving in San Francisco is tied to both technical infrastructures ("wifi, charging, smart signals" in the quote above) and particular collectives expected to attest the validity of the tests, including the federal Department of Transportation in charge of validating the proposal.

Third, experiments require demonstration practices that associate local sites of intervention with global scales of action (Latour 1983). Assembling audiences that would attest the validity of the experiment, and defining the ways in which experiments matter and for whom associate situated practices with distant ones. Urban experiments are performed under the gaze of a variety of audiences, including technology companies, investors, or potential future inhabitants.

Once identified as a recurrent topic of urban intervention and made an analytical category, city experiments can now serve as entry points to reflect on the politics of urban innovation without reproducing the oppositions between stability/instability, social/technological, and local/global. Instead, considering experiments as a mode of governing cities will allow us to discuss the politics of urban innovation, and to whom urban innovation is directed.

12.4 Politics and counter-politics of urban innovation

Analyzing urban initiatives such as the experiments conducted in San Francisco implies that we account for a series of components of these projects. Several components of city experiments can be analyzed, including the identities of the experimenters, the experimental subjects and objects, the perimeter of the laboratories, and the definition of audiences expected to attest the value of the initiative at stake. For our concern here, the experimental entry point offers an analytical lens to explore the politics of urban innovation.

12.4.1 Redefining the legitimacy of urban policy

One can identify a variety of city experiments, which differ according to the ways in which they articulate the roles and identities of experimenters, the entities being experimented with, the perimeter of the laboratory in which experiments are conducted, and the audiences to which they are addressed. One can thus speak of “techno-city”, in which a single entity centralizes the conduct of experiments in a controlled and planned manner (Kargon and Molella 2008). Here, an extreme case might be provided by cities that are built from scratch as test-beds – the Korean town of Songdo being a primary example (Halpern et al. 2013). In other situations, experiments are tied to nation-building projects, as, for example, Singapore seeks to turn itself into a laboratory for foreign companies to test technological innovation (Laurent et al., forthcoming).

In San Francisco, experiments are tied to an imagination of the city making innovation a central component of the urban fabric, in which the close relationships between the tech sector and Mayor Lee’s vision of the city can then be situated. This is apparent when considering the series of initiatives undertaken by Edwin Lee. In 2012, Lee created an Office of Civic Innovation (OCI) within the Mayor’s Office. This Office was the first of its kind in the U.S. and was expected to make sure that the city of San Francisco, “surrounded by innovation in the private sector”, “did not just follow behind”¹¹. One can identify here a variation on the evolutions introduced in the first section of this chapter, as public bodies adopt practices originating from the private sector, while also attempting to lure companies and investors. The evolution might be even deeper though. Consider for instance the “Start-up in Residence” (STIR) program, created by the OCI in 2013. 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 with 6 city departments. The contest ended with a “demo day” during which the outcomes of the process were presented to public officials, including the mayor himself, and potential investors – some of them could then be pursued as commercial projects, 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.

In an initiative such as STIR, the objective is dual, as it aims both to make city officials think like private actors, and private actors think about urban problems. Here, the experimental intervention offers a format of action that makes this re-alignment possible¹². Designed as a service expected to articulate public

¹¹ Interview, OCI, February 19, 2016.

¹² 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”. One of the

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"¹³.

Many of the examples introduced above can be read as illustrations of these themes. Projects based on the production and manipulation of transportation or parking data are realized in partnership with a foundation called City Innovate, which has been working closely with the Mayor's office. 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 objectives¹⁴. City Innovate and the OCI worked in partnership to conduct the Start-up 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 (the foundation is linked to a venture capital fund and its executive director has an investment banking background). 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 answers. As the director of City Innovate said during an interview:

"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)

In San Francisco, what the experimental format both facilitates and depends upon is a pervasive intervention of private actors in city affairs, as well as a distributed alignment between private interests and the definition of urban issues.

This evolution of private and public roles in the city is articulated with another one, which makes experiments alternatives to other types of urban

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. (<http://www.innovation.sfgov.org/civic-bridge>)

¹³ Interview, OCI, February 19, 2016.

¹⁴ <http://www.bridgesf.city/>

intervention that would require costly investments in infrastructure. At the SFMTA Office of Innovation, the OCI or within City Innovate, people would regularly point to a renewed ability to act in the city thanks to small-scale interventions. 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 much¹⁵. An official of the SFMTA Office of Innovation adopted 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"¹⁶. By contrast to costly investments tied to long term planning, experiments allow urban actors to intervene quickly, and display visible outcomes.

The political negotiations that go with this type of intervention request multiple adjustments between public and private actors, and the permanent redefinitions of urban problems and potential solutions (Laurent and Talvard 2017). Described as such, this type of political action offers a stark contrast with practices of local politics in San Francisco, where interest groups are organized into "single-issue lobby groups" that advocate for the issues they care for. This mode of organization has resulted in coalitions that might be unexpected, as, for instance, pro-environment and pro-business groups become allies for the sake of limiting the development of high-rise buildings (Hartman 2002).

Advocacy through single-issue lobby groups has been the topic of lengthy debates in the press¹⁷, and among the actors of urban policies in San Francisco. In San Francisco, the advocates of urban innovation as it is conducted at the OCI, the SFMTA Office of Innovation, or City Innovation, would speak of the "conservatism" of advocacy politics, which is based on the defense of well-defined interests, at the expense of the permanent redefinition of urban problems and solutions that the experimental format renders possible. In Donald McNeill's term, advocacy politics is part of the "old economy" that is being disrupted by current city policies (McNeill 2016). This opposition also points to an important dimension of the politics of innovation in urban environment, namely the political subjectivities that emerge from innovation projects: who are the political actors expected to intervene in city life? How is their role imagined? Are they imagined as assembled in some collective forms?

12.4.2 Re-assembling political subjectivities

¹⁵ Interview with M.K., City Innovate, February 17, 2016.

¹⁶ Interview with T. P., SFMTA Office of Innovation, February 10, 2016.

¹⁷ See e.g. "The perils of extreme democracy", *The Economist*, April 20, 2011.

When asked with regards to city experiments, the questions above point to particular political subjectivities. Turning people into experimental subjects can take various forms. Pricing experiments are initiatives that turn users of public transportation systems or car drivers into experimental subjects caught in various kinds of tests. The efficiency of urban policies here is dependent on the ability to manufacture these experimental subjects. This reading is not entirely passive though. Incentive-based systems perform economic modes of reasoning, as inhabitants are expected to weigh costs and benefits in real-time and adapt their behaviors accordingly. App-based transportation systems use data collected from the users themselves.

Perhaps more importantly, inhabitants are expected to actively engage in experimental practices. Manufacturing innovators has become institutionalized practice in numerous settings, from high education organizations to technology companies (Wisnowski et al., 2019). In the urban context, city policies become innovation policies in that they seek to turn inhabitants into innovators. This evolution can be identified in numerous settings. In Medellin (Columbia), for instance, the narrative of the transformation of the city from the capital of drug to (yet another) capital of innovation is sustained by city policies organized in such ways that inhabitants are expected to be turned into contributors to the city's innovation objective (Talvard 2018). In Singapore, the Smart Nation program seeks to turn Singaporeans into innovators, able to actively intervene in the development of new technologies. When he presented the overall objective of the program, the deputy director of the "Smart Nation Programme Office" drew a contrast between the "traditional" mode of technology development in Singapore, relying on the intervention of foreign companies, and what he hoped could be a path for the development of a new Singaporean citizenry, made of creators and innovators¹⁸.

Thus, "activating" city dwellers and turning them into innovators has become a common trope in urban policies, possibly mirroring a more general topic of concern in neo-liberal projects of government. This undertaking takes various forms. In Medellin, it is articulated with the would-be transformation of the city alongside a path of urban development that would be "inclusive", and possibly a model for the global south (Talvard, 2018). In Singapore, it goes with a problematization of the nation as in need for experimentation – whether it is addressed to foreign companies using the city-state as a suitable laboratory before future extension, or to an internal workforce hopefully turned into participants in technological progress (Laurent et al., forthcoming). In San Francisco, turning citizens into innovators goes through the multiplicity of initiatives whereby inhabitants are invited to intervene in small-scale initiatives at street levels (as in the "Pavement to Park" initiatives or the "Living Innovation Zones"), participate as experimental subjects into the many tests related to the use of data for

¹⁸ Colleagues and I assisted to this presentation during a field visit in February 2017.

optimization objectives, use city data to propose new apps for the identification and solving of urban problems. Some of the manifestations of the manufacturing of innovators can be easily connected to more general movements making public bodies adopt the norms of the private sector, as, for instance, the OCI defines its task as that of the transformation of the public administration into an organization made of “intrapreneurs”, promoting entrepreneur-like state of mind through which civil servants may think of public policies in the terms of isolated problems for which private companies might have technological answers. But the experimental format in San Francisco also sustained a particular imagination of the city, whereby permanent innovation reconfigures city life as a matter of real-time adjustment of problems and solutions, social groups and their concerns, urban issues and the spatial organization of the city. The “real-time democracy” that emerges from these initiatives (Laurent and Talvard 2017) might be the most explicit manifestation of the politics of innovation in San Francisco.

12.4.3 Counter-experiments and an alternative city

We can now go back to the oppositions with which we opened our reflection about the politics of innovation in the city. On the first side of the opposition between the tech sector and San Francisco activists, the previous pages have introduced a political project articulating stability/instability, social/technical, and local/global in such ways that innovation becomes a basis for real-time democracy. In San Francisco, city experiments are “social innovation”, not in the sense that they would not be “technical” (they can be highly technologized!) but in that they reshape the social fabric of the city in experimental terms, thereby redefining the sources of political legitimacy and proposing to shape new political subjectivities.

The alternatives that activists propose are not just about the “stability” of urban identities (as opposed to the instability brought about by technological change), “social innovation” (as opposed to technical development) and “local” activism (that would be opposed to global forces). The lens of city experiments is again particularly helpful here, in that it suggests considering activists’ interventions as counter-experiments. This expression points to operations that are meant as responses to other experiments, and explicitly meant to displace their aims. As in scientific practices, where experimenters might face opponents who built other laboratories, redefine experimental parameters, and eventually propose counter demonstrations (Latour 1993), the urban life can display counter experimental interventions. Two examples are particularly telling in the case of San Francisco.

First, one can regard the Google bus protests as operations aiming to produce public proofs. Using the dual meaning of the word “demonstration”, Andrew Barry has shown that public protests can be understood in experimental terms (Barry 1999). Spectacular interventions configure a parallel public space, where collective problems and social identities are redefined. In San Francisco, the

Google bus protests were small-scale events, intended to display the connection between the transformation of the city and those who benefited from it – namely wealthy tech sector workers. They were localized, on the streets of San Francisco, and involved only small numbers of people, in some cases only a dozen. But as spectacular demonstrations, they cannot be understood without taking the active construction of audience they rely on into account. The media presence and the social network activities that accompanied the protests made their audience as global as the companies they targeted. As such, the Google bus protests were flexible, small-scale interventions associated with powerful demonstrations, or, in other words, counter-experiments. They were experiments conducted in the city as well as with the city, as they turned the urban space into a site of intervention, where the flows of tech workers could be visibly confronted with collectives associating local inhabitants and global audiences.

A second type of activist interventions in San Francisco provides an illustration of counter-experiments. The Anti-Eviction Mapping Project can be described as a form of “data activism” (Milan and van der Velden 2016), in that its objective is to gather data in order to map increases in rents, narratives of evictions, or ties between initiatives in urban redevelopment and business interests¹⁹. While it shares with many public bodies and private companies in San Francisco an interest for the production and use of data for experimental practices, the anti-eviction mapping project connects data production, aggregation and use on the one hand, and political representation and collective action on the other hand in a way that strongly differs from those who see San Francisco as the “innovation capital of the world”. While the latter, in imagining the city of permanent innovation make data a vehicle for the permanent reformulation of problems and solutions, the anti-eviction mapping project uses them as a tool for displaying one single and major problem – that of the transformation of the city for the benefit of the few. Within this project, the aggregation of data helps activists to gather collectives. They use maps as tools for displaying unacceptable social evolutions and, in parallel, the existence of groups suffering from them. The bus protests made the urban space a site of global demonstration. The anti-eviction mapping project proposes to rearrange the digital representation of the urban space so that pressing social issues can be displayed, and new collectives can be turned into political actors.

These two experimental interventions offer a stark contrast to the politics of innovation that imagines the city in the terms of real-time democracy. The counter-experiments are also innovation practices, yet at the service of an alternative imagination of political legitimacy and political subjectivities, and ultimately of the city itself. Here, the legitimacy of the urban intervention is tied to the ability to display to whom the transformations of the city are directed, and political subjectivities are shaped in collective forms according to the issues that are made visible. The city becomes less a space defined by the permanent adjustment of small-scale problems and solutions than the outcome of practices

¹⁹ See: <http://www.antievictionmap.com>

associating local inhabitants and global audiences according to concerns about transportation and housing issues necessarily extended in space and time.

An executive director at the non-profit, Oakland-based organization Ecocity Builders, Kristin Miller described the maps produced by the anti-eviction mapping project as public demonstrations and 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). This quote points to a radical redefinition of the controversies between innovation and its critics in San Francisco. Less than oppositions between stable/instable, social/technical, and local/global, these controversies are revelatory of a clash between different political projects that articulate innovation and society in different ways, and ultimately construe the city in different ways. Real-time democracy, on the one hand, is based on the ability to permanently redefine and adjust urban problems and technological solutions. The counter-experiments that activists propose, on the other hand, suggest new tools for assembling collectives in the city, whether by targeting the sole benefactors of urban transformations during the bus protests, or by gathering data about the evolutions of the city. The “new class warfare” then appears far wider than the contest over the distribution of capital across the city. It is an opposition about the type of society one might want to live in in the city, and the sociotechnical tools that might be used to realize this collective project.

12.5 Conclusion

The contemporary transformations of cities have been described in numerous analytical languages, including “neo-liberalism”, “knowledge economy”, or “privatization” (e.g. May and Perry 2016). Such general categories are impetus to further analyze the frictions that technological innovation introduces in cities. Oppositions can be easily identified between the instability introduced by technological change and the stability of urban collectives, technical innovation and social resistance, global forces and local practices. In a city such as San Francisco, which claims to be the “innovation capital of the world”, one can locate these oppositions in recent protests that have accompanied the growing influence of the tech sector in the definition of urban policies. Taken at face value, these oppositions risk masking the various layers of the politics of innovation in the city. This chapter has argued that a way to account for the politics of innovation in the city in more nuanced ways is to take the experimental dimension of urban innovation seriously. Used by city actors in San Francisco as elsewhere, the experimental language also offers an analytical lens able to cut across the somewhat simplistic oppositions by which one could be tempted to account for urban controversies related to technological innovation. The objective is then to

analyze the conduct of experiments and the type of urban laboratory at stake, rather than considering them ready-made explanatory resources.

When following this approach, one can identify in San Francisco a problematization of the sources of democratic legitimacy based on city experiments, as well as a proposition for the identification of the active participants of urban life - namely those who engage in those experiments. The “real-time democracy” that emerges here is also the outcome of economic ordering processes, as private actors make urban issues a new source of market demand, and, perhaps more fundamentally, as inhabitants are expected to adopt economic modes of reasoning, following incentives, or acting as entrepreneurs to propose new solutions for urban problems. The example of San Francisco offers a contrast, in the same city, to this problematization of innovation, as activists propose to shape new communities to fight against the transformation of the city for the benefit of the few. This alternative problematization is less a “stable”, “social” and “local” version of innovation, than a proposition for another politics of innovation, and, ultimately, another society. The particularities of the case of San Francisco can provide lessons for the analysis of the current transformations of the city. They display the interest of studying city experiments as experiments “in” the city, and “with” the city, which can be conducted in different ways (as, for instance, counter-experiments are organized in San Francisco) and, as comparisons with cities like Medellin or Singapore suggest, for the sake of different politics of innovation.

The cases discussed in this chapter display innovation as a site of democratic struggle, not only because of concerns about who can participate in it, who benefit from it, and for the sake of what objectives, but also because innovation shapes individual agencies and collective organizations. Identifying the processes through which these interventions occur, and make alternatives emerge then appears as a particularly important task. The study of city experiments offers a fruitful entry point to undertake such a task.

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