GOING BEYOND THE SMART CITY? IMPLEMENTING TECHNOPOLITICAL PLATFORMS FOR URBAN DEMOCRACY IN MADRID AND BARCELONA

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Abstract

Digital platforms for urban democracy are analysed in Madrid and Barcelona. These platforms permit citizens to debate urban issues with other citizens; to propose developments, plans and policies for city authorities; and to influence how city budgets are spent. Contrasting with neo-liberal assumptions about Smart Citizenship, the *technopolitics* discourse underpinning these developments recognises that the technologies facilitating participation have themselves to be developed democratically. That is, technopolitical platforms are built and operate as open, commons-based processes for learning, reflection and adaptation. These features prove vital to platform implementation consistent with aspirations for citizen engagement and activism.

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1: Introduction

In recent years, a Smart City discourse has dominated research, policy and practice towards digital technologies and urban governance (Marvin, Luque-Ayala and McFarlane, 2015). What began as a corporate agenda for developing IT markets has expanded into an encompassing vision for digitally-enabled urbanism equipped for 21st century city challenges like sustainability, mobility, and health. In implementing the Smart City, however, city authorities and their corporate partners are having to come to terms with citizens: whether and how citizens relate to these technologies, the rights citizens have, and citizens' own priorities for their city (Kitchin, Cardullo and Di Feliciantonio, 2019). The Smart City discourse has subsequently embraced the Smart Citizen: a willing subject in digitally-shaped urban governance, infrastructure, and services (Joss, Cook and Dayot, 2017).

Whilst Smart Citizens are enrolled into databases, sensing networks, Apps, and so forth (Cardullo and Kitchin, 2018), it is in digital platforms for citizen participation where possibilities are, arguably, most expansive (Calzada, 2018). A growing market in e-participation platforms supplied by start-ups, multinationals and pioneering city authorities enable citizens to propose, comment, debate and vote for urban developments, decide how city budgets are spent, and contribute to urban strategy and local plans.[1] Critics argue such platforms implemented within an irredeemably neo-liberal Smart Citizenship are tokenistic (Kitchin, Cardullo and Di Feliciantonio, 2019).

Digital democracy platforms have been pioneered and advanced the most within a discourse that contrasts sharply with the Smart City. It is that discourse, known as *technopolitics*, that we analyse in this paper. Informed by sociological (cf engineering) understandings of technology, technopolitics seeks more democratic forms of digital development (Kurban, Peña-Lopez and Haberer, 2016). We analyse how the discourse informed the practical implementation of democracy platforms in Madrid and Barcelona. Platforms for direct democracy introduced in those cities in 2015 and 2016 respectively, are now being adopted by other city authorities internationally: the software underpinning *Decidim Barcelona* has been adopted by 31 cities, 13 regions, and 23 organisations; and the Consul software in *Decide Madrid* is being used by over 130 institutions in 33 countries, mostly city and regional authorities.

What becomes apparent from the analysis is how, in addition to citizens, technopolitics has had to come to terms with the power of public institutions. Unlike corporate concessions towards Smart Citizens, however, we find that technopolitical commitments to open-source principles and commons-based approaches in technology introduces critically important advantages. Technopolitics lends itself to the continual development of platform processes and institutional-embedding in an open dialogue with citizens, citizen groups, and wider reforms for democracy. Commitment to technologies built and operated as a commons consciously interacting with other democratic practices, distinguishes technopolitics from the growing market of proprietary vendors of citizen e-participation services (Morell, 2012; Graeff, 2018). By implication, using platforms as closed, consultative packages bolted onto the neo-liberal Smart City does not deliver meaningful democratic participation (Peña-López, 2017).

[1] Hence different to open data platforms, in which public information is made available in machine-readable form for third parties to use and develop. And different to e-government, in which public administration services are made available online.

Section two introduces our analytical framework through a critical appraisal of smart citizenship and a review of technopolitics discourse. Section three explains issues arising in Madrid and Barcelona through implementation of digital platforms for urban democracy. Section four discusses lessons for technopolitics, and section five draws conclusions for citizen platforms more generally.

2: Theory

In this section, two approaches to digital urban technology are presented in such a way as to provide a framework for analysing our case study. Smart City and 'technopolitics' approaches are contrasted in terms of their framings of technology, citizenship and urbanism. We consider implementation issues for technopolitical projects in specific situations.

2.1: Smart Citizenship

The Smart City framing of technology and urbanism is well known (Allwinkle and Cruickshank, 2011; Caragliu, Del Bo and Nijkamp, 2011; Marvin, Luque-Ayala and McFarlane, 2015; Rabari and Storper, 2015). By inserting sensors across city infrastructures and creating digital platforms that interlink these data sources - including citizens via their mobile devices - Smart City managers can use analytical techniques like Big Data to monitor and visualise urban phenomena in new ways and in real time and, so the argument goes (Caragliu, Del Bo and Nijkamp, 2011), efficiently intervene in urban activity for the benefit of responsive smart citizens. Governance is presented largely as a managerial matter: digital tools provide neutral means for meeting apparently universal, calculable and legitimate measures of efficiency for healthy, sustainable, and competitive cities. The Smart City challenge is technical - articulating messy urban processes with platform functionality (Marvin and Luque-Ayala, 2017). Things have to become legible to the monitors; urban flows and states have to be amenable to data analysis; idiosyncratic neighbourhoods have to adapt to the visualisations that characterise them; and social groups must become responsive to platform-derived interventions (Tironi and Sánchez Criado, 2015).

One of the sharpest criticisms of Smart City discourse concerns the way governance is effectively ceded to public-private partnerships dominated by the corporate technology interests who install, own and run urban platforms, and whose authoritative presence imposes a particular computational logic upon the city (Greenfield, 2013; Thrift, 2014; Vanolo, 2016; Marvin and Luque-Ayala, 2017). Criticism of platform technocracy delves into the assumptions coded into digital platforms, and it challenges the values privileged in so-called 'technical' decisions that obfuscate the real politics of those decisions (Gillespie, 2010). The Smart City is seen as the latest brand for neo-liberal urban political economy, using digital technologies to the realise competitiveness, inward investment, economic productivity and efficiency (March and Ribera-Fumaz, 2014). Smart services are criticised for advancing corporate technology priorities, urban entrepreneurship, and imperatives in capital accumulation, at the expense of democracy and citizenship rights to the city (Kitchin, Cardullo and Di Feliciantonio, 2019).

Smart Citizenship advocacy can be seen, in part, as legitimacy-seeking responses to Smart City criticism. Citizen e-participation platforms become an alluring prospect for Smart City managers seeking to cultivate inclusion. A commercial market exists in online citizen participation services, involving start-ups and multinationals. These commercial providers offer participation as a circumscribed, time-bounded service: running citizen deliberation and

voting services for clients, who receive data analysis and reports (Ghere and Rismiller, 2001; Graeff, 2018). Consistent with the Smart City, vendors of these services are contracted in to provide a uniform technological template for citizen participation.

Existing research, however, indicates the democratic quality of these platforms needs careful scrutiny in terms of their capacity to actively challenge power (Cardullo and Kitchin, 2019). Studies of Smart Citizen policies and projects find citizen inclusion to be a shallow invitation (Vanolo, 2016; Kitchin, Cardullo and Di Feliciantonio, 2019). Initiatives envisage citizens as either passive, compliant participants in a given process or, at best, entrepreneurial contributors to smart services (Cardullo and Kitchin, 2018). Active, autonomous citizenship is largely absent (Joss, Cook and Dayot, 2017). 'Citizens are to be steered, nudged, controlled; they can browse, consume, and act. If there is civic engagement it is in the form of a participant, tester or player who provides feedback or suggestions, rather than being a proposer, co-creator, decision-maker or leader' (Kitchin *et al.*, 2019: 11). It suggests the motivation is not so much citizenship, let alone democracy, but rather self-interested acknowledgement from developers of the benefits of user-centred design in the successful implementation of digital technology projects. Questions about control, representation, participation, and democracy remain unaddressed (de Hoop *et al.*, 2019).

2.2 Technopolitics

Technopolitics takes questions of control, representation, participation and democracy as its point of departure. Technopolitics makes tactical, strategic and critical use of digital technologies for collective political action, with a focus in improving democratic practices to advance emancipation and decentralization (Toret *et al.*, 2013; Kurban, Peña-Lopez and Haberer, 2016). Technopolitics has not arisen in response to the Smart City. Its roots in 1990s hacking, free and open source software (FOSS) and free culture arose in parallel to digital corporations turning towards the city (Kling and Iacono, 1988; Alcazan *et al.*, 2012). Nor is technopolitics specific to urban settings. But increasing interest in technological alternatives in response to Smart City criticism, makes technopolitical arguments attractive to urbanists seeking progressive possibilities. Technopolitics consequently informs digital urbanism in a handful of 'rebel cities', perhaps most vocally in Barcelona, where aspiration for local technology sovereignty has underpinned developments 'beyond the Smart City' (Comissionat de Tecnologia i Innovació Digital, 2016).

Technopolitics recognises technologies are never neutral tools. The design, development and use of digital technologies inevitably involve assumptions about how societies work, and unavoidably require decisions about who is expected to do what, how, where, and why. Ostensibly technical decisions embody social values that are contestable. In this, technopolitics is informed by insights coming from Science and Technology Studies (STS) regarding the social shaping of technologies and the politics of such shaping (Matthewman, 2011; Kurban, Peña-Lopez and Haberer, 2016). Where the Smart City presents technology as an external factor impacting positively upon cities, technopolitics conceives sociotechnical developments negotiated between social and technological actors situated in urban settings (Aibar and Bijker, 1997; Rutherford, 2011). In moving from analysis to action, technopolitical developers argue democracy needs to be central to sociotechnical developments. The importance of principles elaborated and tested in the free culture and open-source software movements is emphasised, regarding accessibility of technology, the rights of citizens to interrogate and modify designs, and a requirement to make those changes freely available to active participation by others.

Centralising, closed and coercive designs and uses of digital technology are criticised and avoided.

So, rather than using technology to try and ignore, disguise or displace politics, technopolitics seeks to pursue potentially progressive technological affordances in explicitly democratic ways (Kellner, 1999; Kurban, Peña-Lopez and Haberer, 2016). Examples of technopolitical practice include: digitally-enhanced political activism, rendering government actions more transparent, and, central to this paper, developing platforms for active citizen debate, coordination and decision (Sierra and Gravante, 2017). Technologies are designed such that citizens can find voice, recognition, and take actions with greater efficacy, including in the development of the technology itself.

Technopolitics is also inspired by the network governance and collective intelligence ideas of Manuel Castells, Yochai Benkler and others (Castells, 1996; Benkler and Nissenbaum, 2006). Different forms of expertise and knowledge come into contact through the discussion threads on platforms: professionalised knowledge about a topic, such as for example ecology in park management, encounters citizen expertise in, say, the neighbourhood dynamics surrounding the park. Open, networked-computing tries to facilitate collaborative production of collective intelligence through deliberated, transparent exchanges amongst differently knowledgeable peers on digital platforms. Platforms are assumed to not only lead to more participatory forms of democracy but to enable the articulation of diverse citizen and professional knowledge within those democratic relations (Barandiaran and Calleja-López, 2016; Aragón *et al.*, 2017).

Appropriately designed technopolitical platforms anticipate a transcending of historic limitations in direct democracy, by permitting citizen deliberation and decision at scale. In this respect, technopolitics exercises a notion of democracy as a process rather than end point; seeing democracy in continuous social relations more than categories of outcome, and based in the capacities for the least powerful to challenge power (Smith and Stirling, 2018). Table 1 summarises this comparison of technopolitical approaches with the Smart City.

Table 1: Smart City and technopolitical frameworks

	Smart City	**Technopolitics**
Technology	Engineering approach to managing urban processes Neutral tools for computation, communication and control	Sociological approach to urban technologies Political artefacts configured for direct democratic participation
Politics	Technocratic management Non-political	Technological sovereignty Participatory
Governance	Public-private partnership Corporate protagonists	Civic-public dialogue Activist protagonists
Ownership	Proprietary Contracted services	Commons Free software communities
Citizenship	Passive or entrepreneurial Data point and tech user	Active subject Rights to the city
Democracy	A problem of legitimacy	A design principle
Urbanism	City as operating system Neo-liberal strategy	City as social relations Democratic deliberation
Institutions	Closed services, client-oriented	Open processes, citizen-controlled

Technopolitical advocates are clear that their approach works best when social movements and political institutions commit to developing the technology in democratic form (Kurban, Peña-Lopez and Haberer, 2016). Digital technologies become one site in a wider political struggle that affects their design and application, and which recursively influences whether and how technological negotiations lead to tools helpful to wider socio-political change, or instruments captured by dominant interests. Yet despite this sociological reflexivity, a computational logic remains at the heart of technopolitics. Even if technopolitical aspirations are more democratic than corporate nods towards Smart Citizenship, developers are nevertheless trying to programme into digital platforms something more contested and messier than, say, smart city apps for urban mobility or refuse collection: they are coding contested concepts of democracy into contexts of entrenched political power. Technopolitics thus makes assumptions about citizenship and the propensity of technology to be developed democratically that may not bear fruit in practice.

2.3 Research methodology

Informed by STS, technopolitics recognises that any capacity to cultivate democratic tools and anticipate new paradigms for urban democracy will not only be embodied in the digital platforms themselves, but will also be shaped by the situations in which platform developments are embedded. Ethnographic attentiveness is required towards the lessons that developers take (or ignore) in the ongoing configuration of urban democracy platforms. That means following the actors developing technopolitical practices as they move through different urban situations and institutional settings, and how the emerging digital platforms for urban democracy become reconfigured reflexively through those developments. That is the methodology we adopted for our research: tracing developments over time; documenting the issues and lessons arising amongst the actors enrolled; explaining their responses, reconfigurations, and constraints; and discussing the implications with the technopolitical actors.

Our analysis uses evidence gathered through open-ended interviews with key digital activists, with platform coders and developers, and relevant council administrators working in citizen participation. Fieldwork also included participant observation of development meetings, and attendance at public events organised by platform developers.[2] We also followed processes online using the platform. In addition to notes, transcripts, and observations, analysis draws upon primary and secondary literature related to platform developments and the wider political changes that led to the creation of the platforms, including documentation archived on the internet, such as videos and manifestos, press articles and, of course, activity on the platforms themselves. We also made use of historical evidence about antecedents to municipal platforms in digital activism in Spain.

In interpreting the evidence gathered, our analysis looked at key implementation situations that became apparent to us through following the actors. After providing more information about platform functions at the start of section 3, our results consequently present the key situations identified:

- Political support for democracy platforms;
- Accumulating experience through technopolitical activism;
- Maintaining coder and developer communities;

[2] The first author lived in Madrid for 14 months over 2017-18, and has made regular, weeklong fieldtrips to Barcelona since 2014. The second author has been involved in technopolitics in Spain since 2010.

- Inserting platforms into public administration;
- Gamifying citizen experiences;
- Mobilising participation;
- Spaces for collective learning and adaptation.

We stress the study is not a comparison between the two cities. As will become apparent, developments are linked and learn from one another. Madrid and Barcelona constitute two sites for interrogating ethnographically the local implementation and promotion of wider processes in digital platforms for urban democracy. We use that experience to analyse in section four the two foundational ideas in technopolitics, which is its democratic content, and its commitment to collective intelligence.

3: Results: implementing digital platforms for urban democracy

We begin this section by introducing in more detail the democracy functions coded into the Decide and Decidim platforms. We then explore them as phenomena that are part of political change in city administrations, and their technopolitical origins in social activism is noted.

3.1: Platform functions in Madrid and Barcelona

Decide Madrid, Madrid's citizen participation portal was launched in September 2015. A free software system, named Consul, was created for the platform. *Barcelona Decidim* was launched early in 2016. *Decidim* developed its own free software architecture based on a fork[3] from Consul. Nevertheless, both platforms are similarly multi-functional, and share higher-level capabilities sufficiently alike for a general introduction. They both use computational features, such as discussion threads, scoring, ranking, file sharing (e.g. texts and videos), event coordination, thematic clustering and visualisation, notifications about issues or themes, and the ability of users to follow content and other users, to create a digital space where citizens deliberate and directly decide on proposals, budgets and plans for their city. Assuming citizens have the time, equipment, skills and inclination, they can view platform deliberations online and trace debates and decisions. Both offer a sliding scale of direct participation: while anybody can contribute to the discussions, a verification of residency is required to vote on proposals. Functions common to both platforms are:

Citizen debates

Citizens can initiate a debate on a topic of importance to them. Other platform users add their own ideas, comments and information, or they can simply signal their approval or disapproval (akin to 'likes' in social media).

Citizen proposals

Any citizen, individually or collectively, can propose policies and developments for the city. Proposals remain on the platform for a defined period - 12 months in Madrid and linked to planning timeframes in Barcelona - during which other citizens can comment and register their support. Subject to feasibility approvals, both councils have committed to implementing popular proposals. In Madrid, proposals surpassing a voter threshold of one per cent of the electorate are put to a citizen vote. If approved, they would be automatically adopted and implemented by the city government.

[3] A fork in software development involves programmers independently redeveloping source code, taking its development in a different direction, and creating a distinct piece of software.

Citizen budgets

Citizens propose how council budgets should be spent, and other citizens can each vote for up to ten of the proposals. Proposals receiving the most votes are evaluated by officers in the council (for validity, viability and legality), and an estimate made of the costs. Those within the available budget proceed to a final citizen vote.

Citizen plans

Citizens participate in the development of city and district plans. Citizens debate and vote on draft council strategies and plans, and propose their own items, or vote on those of other citizens.

At the time of writing (September 2019), there were 655,559 users registered on *Decide Madrid* who had created over 27,123 proposals, posted 5,699 debates and made 205,431 comments, and cast over 4 million votes (www.decide.madrid.es). Forty participatory processes had been launched on *Decidim Barcelona*, with 14,481 proposals from citizens, and 1,105 citizen initiatives. Decidim had also enabled 32,000 people to participate in the formulation of the city strategic plan, and subsequently involved 28,000 making 12,000 proposals on other plans (www.decidim.barcelona).

Some functions are widely used in both cities – such as citizen debates and proposals – whereas others are emphasised more in one place than in the other. Citizen planning has been particularly important in Barcelona, which has a tradition of participation in district-level planning. The Municipal Action Plan (2016-2019) was developed in this way, and was the first use of the *Decidim* platform. Participatory processes are launched, for the whole city or a district, which include local meetings, roundtables, walks, as well as online interactions, such as requests for comments, proposals, and information gathering, and posting videos of meetings on the platform. The process thus combines face-to-face meetings with digital deliberations. *Repensem 22@*, for example, seeks to re-plan the hitherto 'smart city' district of Poblenou. Citizens added seventeen proposals to the council's forty-five, including improving pavements and cleaning the neighbourhood; direct buses to the airport; increasing cycling facilities; and new sports and leisure facilities.

Participatory budgeting has been more active in Madrid. The first budget opened €60 million to citizen proposals in 2016. It attracted 5,184 proposals, on which 22,389 participants cast 168,111 votes. Evaluation and final phase voting led to 206 funded measures, including a network of safe houses for women, extra tree-planting in the city, photovoltaic panels in municipal buildings, noise monitoring, drinking-water fountains, urban allotments, electric vehicle charging points, and dog walking parks, facilities for oil recycling, food banks, clothes banks, intelligent street lighting, an evaluation of light pollution, cycle parking, green routes interconnecting the city, homes for refugees, and switching to free software in the Council (Ciudad de Madrid, 2017). The budget was increased to €100 million each year in 2017-2019.

3.2: Political support for democracy platforms

The introduction of the platforms was the result of a shift in political control in both city councils. On Sunday 24th May 2015, citizens of Madrid and Barcelona voted into office progressive citizen coalitions established barely a year before the elections. *Barcelona en Comú* won minority control with the support of other parties (winning 11 out of 41 seats and a majority of the overall vote). Their leader Ada Colau was elected Mayor. *Ahora Madrid* won

20 out of 57 seats – one less than the (conservative) Partido Popular, who had governed since 1991, but enough to win control with support from other parties. Ahora Madrid's leader, Manuela Carmena, was elected Mayor. Both leaders were elected on mandates to fight political corruption, economic austerity, speculative urbanism, and institute a democratic renovation that put citizens centre-stage. Given national constitutional constraints, digital platforms became an important aspect to democratic renewal (Ahora Madrid, 2015).

In Madrid, Ahora Madrid councillor Pablo Soto, with a background in cyber-activism, used his newfound political leadership to support the rapid development of Consul software and its immediate launch and use by the city. *Decide Madrid* thus began as a supply-led, all-purpose city-wide platform for direct democracy, with developers convinced of its utility from experiences in technopolitical activism (see below). A small team of developers was appointed into a dedicated office in the council, and quickly developed and launched the first citizen debate functions. Council resources, and a new department, were put at their disposal.

In Barcelona, developments proceeded more gradually, though no less intensively, and with an appreciation of lessons arising in Madrid (see later). As in Madrid, technopolitical activists were amongst the councillors voted into office, notably Gala Pin, who became leader of Participation and Territory for Barcelona. Her political roots were in activism around housing and neighbourhood rights. A small team was commissioned, including technopolitical activists and researchers, to develop the *Decidim* platform for use in the participatory development of council plans. Whilst champions included a new City Technology Officer, also with a technopolitical background, the *Decidim* team were located institutionally in a citizen participation department whose activities were rooted in traditional community development and local planning.

The manifestos for both *Ahora Madrid* and *Barcelona en Comú* were developed through participatory processes and reflected their roots in grassroots initiatives associated with 15-M activism (see below). Both brought into office people from this activist base. Thus, platform developments did not begin with the elections. They were preceded by an earlier history important for understanding key assumptions in each platform's formulation and the organisation of their implementation.

3.3: Accumulating experience through technopolitical activism

Mass occupation of city squares, in the weeks following the installation of a protest camp in Puerta del Sol in Madrid on 15th May 2011 (hence 15-M), catalysed activism against the economic and political crisis engulfing Spain. In doing so, the *indignados* recast urban politics (Corsin and Estalella, 2011). In camps, assemblies and marches, citizens set about proposing and debating ideas for doing politics differently, with real democratic alternatives in food, care, work, public spaces, housing, mobility, education and employment. Whilst existing initiatives like *Real Democracia Ya!* helped catalyse 15-M, the profile, scale and directions taken were set by citizens themselves. Fed up with endemic corruption, a banking collapse and austerity, the wider public were sympathetic to many of the aims of those assembled, reflected in opinion surveys at the time, and later through support for new movement-parties like *Podemos*, *Ahora Madrid* and *Barcelona en Comú* (Eizaguirre *et al.* 2017; Gonick 2016; Aragón, Gallego *et al.* 2017).

15-M proved formative for the articulation of technopolitics (Postill, 2014). Social media technologies were instrumental to the emergence and development of 15-M (Monterde *et al.*,

2015; Morell, 2012). The need for communication and coordination amongst large numbers of hitherto unorganised individuals – often distributed across different cities – in an open, inclusive and democratic manner was paramount. Digital activists created HackSol as a virtual plaza where people could swap ideas and information, whilst others tried linking together the proliferating websites, blogs and social media feeds emerging from the occupied squares (Corsin and Estalella, 2011). In the camps and assemblies, courses were run to help citizens get online and use digital tools, as well as providing physical spaces for coders to meet, form personal networks, and discuss practical issues in using digital tools and emerging ideas in technopolitics.

The possibilities for digital platforms to augment deliberations made in large face-to-face assemblies was an exciting one. Activists began experimenting with digital technologies to see how they could assist wide-scale participation in proposal-generation, filtering, opinion-gauging, and decision-making activities. These techniques were provided further testing grounds with the launch of movement-parties.

There had been debates within 15-M about whether or not to enter mainstream political institutions, and how this might be done without undermining direct democratic commitments. 15-M was borne of deep alienation and suspicion of party politics. Nevertheless, hacking representative political institutions with participation tools might unlock opportunities for advancing 15-M agendas. A *Partido de Internet* had been founded in 2009 to promote 'liquid democracy', in which members fluidly and freely delegated their votes to others (Aguirre Sala, 2016). *Partido-X* launched in 2012 with candidates selected to contest elections with a manifesto developed over the internet (Cruells and Ibarra, 2013; Sánchez, 2013). When the crowd-funded *Podemos* party was launched in January 2014 to contest European elections, it used 15-M digital platforms to develop lists and policies, and with a user-base of citizens mobilised through 15-M. Policy agendas developed through member proposals, deliberations and votes: online using new digital tools, and face-to-face in hundreds of local deliberative circles. Online documenting tools (e.g. Titanpads) communicated deliberative circles to discussions elsewhere.[4] Technopolitical group LaboDemo used Reddit to develop "Plaza Podemos", a virtual space for the policy development that quickly became the largest Reddit group in Spain (El Asri, 2014).

Initially, adapting existing tools was expedient, including non-FOSS services like Twitter and Facebook. But activists soon recognised how bespoke, developed using FOSS coding efforts, could allow experiments with other functions, and be more consistent with technopolitical values. Discussions, meetings and collaborations opened with activists elsewhere, such as the *Better Reykjavik* platform launched in 2010. European Commission funding for 'collective awareness platforms' was used in the *dcentproject.eu* to help exchanges amongst digital democracy activists, and raised the profile of technopolitics. The coordinator of that project, Francesca Bria, became City Technology Officer for Barcelona in 2016. Other activists went to work as developers in the municipal platforms in Madrid and Barcelona.

So, activism provided a milieu for testing technical developments in digital urban democracy amongst a willing user base: including tools to coordinate large-scale participation, supporting offline mobilization, drawing up manifestos, crowdfunding initiatives and discussion fora; as well as creating networks between coders and platform developers. Meetings, networks and

[4] Such practices have lately come into conflict with the subsequent development of Podemos into a more conventional party.

collaborations also developed ways of working consistent with technopolitical ideals for the technologies themselves to be democratic. Documentation was transparent, code and tools were freely accessible and open source, spaces for open reflection, debate and decision-making were valued. Significantly, however, these were developments largely within the sphere of technopolitical activism and citizens already mobilised to participate in social and political movements. As technopolitics moved into city councils, so a host of institutional challenges and complexities would confront the approach.

3.4: Coding decisions and communities

Consistent with technopolitics, both Decide and Decidim are constructed and maintained using free software techniques. Developers in Barcelona planned initially to reuse the Consul code from Madrid. However, in light of experience in Madrid (Pereira de Lucena and Blanco-Gracia, 2016), differing views opened up on how best to develop further the software for the platforms. Pressure for rapid installation of a city-wide platform run from a dedicated department led *Decide Madrid* to choose an integrated software architecture that permitted easy familiarisation for coders, as well as relatively straightforward deployment. The team in Barcelona were presented with a different institutional challenge, a platform that could augment planning processes distributed across districts and city departments. *Decidim* developers decided a modular software architecture would permit platform functions to be adapted and related to evolving needs, even if modularity complicated the coding initially (Pereira de Lucena and Blanco-Gracia, 2016). A fork in the software thus opened up, with *Decidim Barcelona* re-writing code for their purposes, and *Decide Madrid* further developing the Consul software.

The development and maintenance of coding communities is very important in free software, and this fork was partly about respecting contributor motivations and facilitating their involvement, as well as reflecting differences in institutional locations and priorities in each city. The coding contributions of developer communities continue to be important as implementation throws up new issues and opportunities for platform development. A vibrant coding community also helps roll out platforms in other cities.

But the fork was not solely about different approaches to coding. It reflected the way common functions were being institutionalised differently into each city in terms of specific applications and the characteristics of the host administrations. The modular approach in Barcelona was seen as appropriate for the situation there, compared to the more singular ontology of Consul aimed at city-wide application. Initial design decisions about functionalities and processes set the platforms onto trajectories that condition their future adaptability. Political decisions did so too. Leaders in Madrid committed initially to automatically taking any citizen proposals earning votes from two percent of the adult population and putting them to a city referendum. That threshold proved prohibitively high, and the trigger was later lowered to one percent. Proposals below one percent were still useful, and were adopted voluntarily into Council activity; but the headline referendum target became a symbolic marker for the platform's direct democratic credentials, and drove design activity to increase voting activity.[5] Meanwhile, in Barcelona, the pressures were different, and related more to winning support for the new technology from citizen participation teams rooted in local planning traditions.

3.5: Inserting platforms into public administration

[5] Only two proposals have achieved the one percent threshold.

Sifting and validating citizen proposals, and then appraising the viability and implications of popular platform choices, places considerable demands on city authorities. The public legitimacy of the platform turns upon these deliberations within the Council, which take place amongst relevant departments outside the authority of the platform developers. Thus, the responsiveness of the platforms depends upon internal bureaucratic machinations, and which creates a hostage to fortune that political opponents and media critics can exploit.

In Madrid, some participatory budgeting proposals have run into difficulties, with reports of citizen frustration with the slow pace of implementing selected projects. After three years, only around 19 per cent of winning projects were reported implemented, to the frustration of citizens that mobilised local campaigns and brought out the vote (*El Diario*, 15/12/2018). The administration of citizen decisions by the council is not so transparent to citizens as the initial deliberations on the platform, and can take much longer for reasons of following sue processes. The Council in Madrid admitted it needed to work at managing the 'mismatch' between temporalities and transparencies on the digital platform and in administrative procedures.

Research has long shown how administrators exercise significant discretionary power through their control over day-to-day bureaucratic activity (Lipsky, 1980). Until administrative cultures evolve with the digital platform possibilities, so developers of the latter will need continued endorsement and help from political leaders in order to ensure administrators and resources respond seriously and promptly to citizen proposals. But it is also the case that projects genuinely take time to put into action irrespective of authoritative support, and that needs continued communication and involvement with citizens after any platform decisions are announced.

Moreover, constitutional and structural features in every city ultimately limit the scope of public authority. For example, one proposal that reached Madrid's one percent threshold called for a unified ticketing system for public transport. Parts of the transport system are under the authority of the regional government and national rail operator respectively, and thus implementing the Decide proposal requires negotiation with tiers of government and agencies beyond the platform jurisdiction. Another example is those proposals for the Repensem 22@ district planning that require negotiations with owners of key tracts of land and buildings, and with the capital to invest in future urban developments. Reclaiming the former Smart City district implicates multinational pension funds, real estate firms, banks and other institutions with sunk investments in the neighbourhood (including universities) (Leon, 2008; March and Ribera-Fumaz, 2014). Unpicking these path-dependencies requires the platform-derived democratic pressure to shift scales, beyond the jurisdiction of the sponsoring municipality, and mobilising pressure at other scales. Of course, the challenges in shifting scales points precisely to the deeper limitations in democracy that motivate technopolitics, whose horizon is precisely to democratise these broader institutions.

3.6: Gamifying citizen experiences

Considerable work has been dedicated to improving the usability of the platforms. This activity works within the logic of the platform itself, exploring how specific functions can be performed better, how platform features can attract more people, how to aggregate or cluster proposals and use visualisations to make navigation easier. One issue common to both Decide and Decidim (though more pronounced for Madrid's one-percent threshold) is that votes become dispersed across similar proposals, because people create new proposals without checking first whether similar proposals already exist. Techniques are being coded that bring similar

proposals to light and enable different proposers to connect, combine and coordinate their pitches.

Lessons and techniques from crowdfunding sites, petitioning platforms and online campaigning are being drawn in. So too are gamification techniques like intermediary milestones and awards, that help motivate citizens to help proposals progress through the platform (Platoniq, 2020). If milestone votes are surpassed, then this can earn the right to post a video about the proposal, or appear prominently amongst proposals on the platform homepage, or get some other exposure or support, thus motivating citizen proposers to stay involved and to keep campaigning. Data science permits analysis of the results of these interventions on the platform, for example how many participants join, towards which issues they are drawn, and how they participate (Aragón *et al.*, 2017b).

3.7: Mobilising participation

Whilst gamifying the platform and enhancing user-experience may make the platform more attractive for some citizens, the motivations for becoming an active user in the first place still needs to be there. Unlike digital technologies in 15-M activism, the intended user base in each city is not necessarily mobilized and willing. So, beyond improved platform functionality, developers are having to learn how to connect with peoples' lives, places and issues, and demonstrate that participation matters and is worthwhile.

Cultivating participation means connecting the platforms to the lived experiences of citizens and with other deliberative democratic fora in each city. In some respects, this is evident in Barcelona from the outset, with attachment to district planning and other citizen participation methods, but also in more recent ideas for training neighbourhood facilitators (Platoniq, 2020). In Madrid too, platform developers have been experimenting with physical workshops that invite similar proposals to participate in face-to-face discussions, open to other groups and citizens, with the aim of mobilising campaigns online behind joint proposals.

The development arc of technopolitical platforms thus moves from street-level activism in 15-M into insertion into public institutions and back out to cultivating citizen activism at street-level. A willing and interested activist base provided the initial opportunity for digital democracy platforms. The subsequent move into city authorities provided greater resources, but meant also engaging with a less committed, more sceptical and plural citizen base. In moving their platforms into public institutions, and wishing to serve citizens more generally, developers needed to keep the platforms connected with everyday life and cultivate reasons for participating amongst a wider constituency. Lessons from the earlier phase of technopolitical activism became newly salient.

Renewed and sustained efforts are required for attracting participation amongst citizens and administrators, and ensuring decisions are delivered. Implementation inevitably reveals assumptions about society that get designed into platform functions; and developers have had to constantly negotiate a plurality of institutional and citizen realities.

3.8: Spaces for collective learning and adaptation

In both cities, addressing the implementation issues above has been assisted by developers opening spaces and processes for documentation, learning and adaptation. In Barcelona, a Metadecidim lab provides a public forum for debating the platform, its design, use and

governance processes. This has recently been expanded into a Laboratori d'Innovació Democràtica funded by the Council. In Madrid, Participa Lab based at Medialab-Prado (a public centre for digital culture) has played a similar role. These initiatives analyse usage patterns and deliberate design changes, such as gamification; as well as adaptations in institutional uses, and new ways to link the platforms to other processes for enhancing urban democracy. Open calls are issued for collaborative innovation activities, developing ideas and testing new features. Events are organised for coders and democracy activists more generally, and citizen involvement is encouraged through open development meetings. As with the source code, so these experiments and reflections are being documented, filmed and shared online.

Neither Decide Madrid nor Decidim Barcelona are essentially better than the other, technopolitically speaking, because the situation, individuals and history in each city are different. Even though developments share common roots in technopolitical activism, we see how commitments to platform democracy have proceeded differently. Madrid and Barcelona illustrate how important are the processes of reflection and adaptation throughout implementation, informed by an overarching commitment to improving democracy in its multiple forms. The reflexivity towards democratising technology in technopolitics discourse informed the creation of labs and promoted reflection about wider issues, learning from experience, and a willingness to hybridise and interact with other democratic arrangements. What has mattered most in both cases has been the quality of learning, reflection and adaptation from those initial decisions, which has included dialogue between developers in each city.

4: Analysis: situated technopolitics

Technopolitics contains two constitutive features, which distinguish it from Smart Citizenship. First, a commitment to direct democracy as means and end. Second, belief in the power of collective intelligence. Taking the findings in section three, here we analyse these dimensions of technopolitics.

4.1: Democratic inter-operability

One key lesson in implementing technopolitics has been how the computational logic of the platform offers certain affordances for urban democracy that need to be augmented by democratic processes off the platform. The logic on the platform favours written or video proposals that are clear and compelling in their demands in order to attract attention and succeed. Other citizens respond with their statements and votes, although people can just as easily post proposals or comments with little consideration for what has been said by others. The functions are designed towards reaching a decision, usually by majority vote over time-limited periods. The platform logic consequently affords a transactional dynamic, with exchanges of proposals and comments, and the calculation of democratic decision based in the aggregation of individual positions. Gamifying does not fundamentally alter the platform logic of positions, votes and aggregation.

The platform struggles with the less articulated working out of citizen positions available in more open, deliberative democratic processes operating over longer time-frames and at different scales. The platform facilitates exchanges of propositions. The discussion threads, thematic clustering, votes, videos, hyperlinks, texts, notifications, and so on, not only carry certain assumptions for how democracy works, but they also encounter and rely upon offline processes that work for democracy in other ways. Supplementary processes are turned to in order to build up the value of participation itself and the capacity for deliberation prior to and

alongside exchanges on the platform. Compared to offline deliberative fora, the platform can appear relatively closed or categorical, with less facility for conveying the uncertainties, cues, empathies and frustrations evident in the to-and-fro of face-to-face explorations. Open-ended deliberative situations invite joint dialogue, require active listening, the identification of common ground and of difference, and the building of shared positions.

The contribution of the platform in each city becomes more clearly defined in relation to processes like public meetings and implementing public works; and the importance of linking to traditional street-level community development, debate and social mobilisation becomes more apparent. Hybridising the platform with other kinds of democratic practices in each city attempts to make the former matter both to citizens and the public administration. As connections are made with these other processes, so it becomes apparent how important are ever-present, and self-reflective development capabilities that can adapt the platform in locally rooted ways. Platform success depends upon such democratic inter-operability.

Platform development advanced significantly with the public resources and authority won through representative democratic institutions. Elected city leaders were committed to new kinds of urban democracy. This was decisive for platform development. It meant platforms were not just contracted from technologists to provide a participation service, but rather digital democratic capability was developed in-house as part of a bigger programme for democracy. Continued leadership in that vein will be important as the platforms are tested by and test out the institutional, political and economic inertia in the city administration and in urban development. When elected political authority shifts to leaders antagonistic towards democratic aspirations, so platform development may be diminished, ossify, or withdraw entirely. Elections in April 2019 returned Ada Colau as mayor in Barcelona, but heading a different coalition of parties. In Madrid, the right-wing Partido Popular returned to power. *Decidim* and *Decide* continue to be used, but within different political configurations.

Interestingly, and in parallel to adoption by local authorities, Decidim modules and Consul code are being adapted by citizen initiatives and social organisations to help coordinate their self-governance democratically (e.g. Som Energia, the largest energy cooperative in Spain uses Decidim, and various activist initiatives, arts organisations, and other bodies are experimenting also). In these ways, platform developments return to a sphere of social action beyond public administration, though benefitting now from public development of the technologies and capabilities built through experience. Consistent with technopolitics, platforms continue to be seen by developers as providing tools for citizens: enabling citizens to find a voice, to assemble, and coordinate self-organisation irrespective of shifting political interest in city authorities.

4.2: Knowledge politics in collective intelligence

The second foundational idea for technopolitics is collective intelligence. Certainly, the sequencing of dialogues between diverse citizen and professional knowledges on urban issues is re-ordered by these platforms. On the platform, professional planners and administrators respond to citizen proposals. Professional status linked to authoritative knowledge is thus put to the test by the 'collective intelligence' of the platform. This constitutes a reversal of ordering compared to classical citizen consultation, where council proposals are elaborated first, and then submitted to citizens for comment, before final decision by the authorities (Cardullo and Kitchin, 2018). New encounters and connections are made possible across different spheres of knowledge production. Nevertheless, power relations still cut across collective intelligence encounters. Council officials elaborate the feasibility and implications of proposals, which

privileges certain knowledge criteria in those evaluations. The norms and bases of credibility for such knowledge can be more privileged institutionally than the situated knowledges coming from the neighbourhood experiences of citizens making the proposals originally. Codified knowledge is more generally conveyed better on the platform in ways that tacit and embodied knowledge cannot be.

Collective intelligence is not seamless and it remains just as fraught with knowledge politics as other ways of knowing the city. Indeed, in bringing together a wider collection of knowledges, so technopolitical platforms reveal (and must address) an expanded knowledge politics: concerning, for example, plural bases for validating different understandings of an urban issue, how issues are framed in the first place, whose voices and experiences count, the reasoning in the facts of the matter, and differences over suitable forms of evidence and justification for decisions sought and taken. Important questions open up about democracy in urban knowledge production itself, and a need to recognise and work with sometimes incommensurable knowledge claims.

4.3: Democratising technology

Platform adaptability is not simply a matter of improving technical performance, but rather an experimental search for different qualities of democracy. Commitment to FOSS amongst platform developers is not solely because it is more effective in the technical development of code (though that case exists), but more strongly because developers realise the technology, and the processes constructed around technology development, have to be open, transparent, and available for scrutiny – so that platform assumptions, values, inclusions, and exclusions can be recognised and addressed. Adaptability is not only important to the platform technology itself, but also the institutional contexts of its use – these too need to adapt in order to maximise the hybrid democratic possibilities opening up online and offline.

However, such adaptations are complicated by path-dependencies in the choices taken: the platforms' flexibility is limited and conditioned by its development and institutional embedding over time. Modularity, plurality and transparency certainly help mitigate path dependency, but will not remove it all together. Here the meta-labs provide deliberative spaces for mitigating path-dependencies. They provide important spaces for debating the worlds we create with technology. There is a risk that the important lab activity goes unrecognised as e-participation platforms (including those based in Consul or Decidim) are rolled out by other city councils. The originating commitments to developing new forms of democracy endure amongst activists, but will the reflective fora and adaptive capacity be created to accompany technology diffusion and attend to its wider democratic condition?

5: Conclusions

Decide Madrid and *Decidim Barcelona* have enabled new forms of large-scale citizen participation in urban debates, urban planning, and city budgeting. These platforms are being taken up across many cities and organisations. Technical features in the platforms enable participatory decision-making at scale, and they provide infrastructure for opening up collective intelligence building. However, technical features also set the parameters for deliberation, and the kinds of knowledge feeding into collective intelligence. Additional deliberative processes, for example permitting more open-ended explorations, complement the proposal/vote aggregations on the platform. And given the multiplicity of urban knowledge involved, sometimes arising in incommensurable forms, so it remains important that collective

intelligence building on the platform remains sensitive to any marginalising of those knowledges that are not so readily codified.

In Madrid and Barcelona, platform developers had to learn and adapt to challenges like these as they progressed. It required them to build community-development capabilities in addition to skills for institutionalising their technical functions within each local authority. In this, developers benefitted from a supportive global community of technopolitical allies – who not only contributed open code and features, but who debated implementation experience and shared strategic lessons. Developers created labs and arenas for debate, reflection and social learning – including about relations with the wider urban political milieu.

Obviously, connecting with citizens is the central platform aim. How to do that was not so readily realised as developers assumed initially based upon their activist experiences. Marginalised and less mobilised citizens needed good reasons for participating online and confidence that it is worthwhile - helping them mobilize their overlooked concerns, aspirations and knowledge. Offline activity provides important precursors and motivations for citizens to turn to platforms, including local facilitating activity to support that turn.

A striking feature then, is how much digital platforms for urban democracy rely upon local activity taking place offline. Critically important to the technology's development in Madrid and Barcelona were the political dynamics and leadership particular to each city, the specific institutional locations in which the platform is hosted, the cultivation of relationships with branches of public administration tasked with physically implementing decisions, and, above all, activities for connecting the platform with the everyday lives and aspirations of citizens in neighbourhoods. Such relationships flow back into the digital platform, and join its technical functionality in determining the platform's democratic legitimacy overall.

Digital platforms for urban democracy are necessarily entangled in the unruly worlds of city politics, urban social structures, and citizen mobilisations. Indeed, the cases here were born of those worlds. Precisely because of messy implementation challenges, technopolitics has a conceptual advantage compared to the Smart City's neo-liberal logic of contracting in e-participation. Technopolitics sees technology as a commons requiring participatory development. Capabilities are valued appropriate to building the platform as a common endeavour belonging to all participants. This conceptualisation of technology, built through participatory social relations, is key to platform success, because digital platforms for urban democracy are – like democracy itself – a perpetual work in progress.

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