Chapter 3
Multilayered Linked Democracy

An infinite amount of knowledge is waiting to be unearthed.
—Hess and Ostrom (2007)

Abstract Although confidence in democracy to tackle societal problems is falling, new civic participation tools are appearing supported by modern ICT technologies. These tools implicitly assume different views on democracy and citizenship which have not been fully analysed, but their main fault is their isolated operation in non-communicated silos. We can conceive public knowledge, like in Karl Popper's World 3, as distributed and connected in different layers and by different connectors, much as it happens with the information in the web or the data in the linked data cloud. The interaction between people, technology and data is still to be defined before alternative institutions are founded, but the so called linked democracy should rest on different layers of interaction: linked data, linked platforms and linked ecosystems; a robust connectivity between democratic institutions is fundamental in order to enhance the way knowledge circulates and collective decisions are made.

Keywords Linked democracy · Multilayered linked democracy · Linked data · Linked platforms · Linked ecosystems · World 3 · Institutions

3.1 Introduction

Contemporary democracies face growing scepticism about their capacity to manage complex societal problems. Financial crises, inequality and poverty, climate change and armed conflicts routinely test the resilience of our democratic systems. Researchers are predominantly expressing concern about the developments of the last decade. Larry Diamond draws from Freedom House data to argue that we are in a 'mild but protracted democratic recession' since 2006 (Diamond 2015, 144). Roberto Foa and Yascha Mounk analyse World Values Surveys to conclude that citizens in Western democracies have 'become more cynical about the value of

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democracy as a political system, less hopeful that anything they do might influence public policy, and more willing to express support for authoritarian alternatives' (Foa and Mounk 2016, 7). John Boik et al. warn that traditional democratic institutions are failing and that 'the versions of democracy attempted by newly democratizing nations have been even less effective' (Boik et al. 2015). Globally, voter turnout—a standard proxy to measure citizens' satisfaction with democratic institutions—has been steadily but consistently declining since the 1960s (IDEA International 2016).

This sceptical outlook coexists with some unprecedented technology trends: by 2020, about 1.7 megabytes of new information will be created every second, for every human being (Forbes 2015); there will be more mobile phone subscriptions than people on the planet and more than 6 billion of these devices will be smartphones (ITU 2015). Digital technologies not only disrupt business models, they now shape the way we access information, knowledge, and increasingly, the way we exercise our rights. In doing so, they also transform civic action and enable new forms of citizenship.

Political science, media and culture studies, and ICT disciplines have already produced a vast literature on civic participation online (e.g., see meta-analysis by Boulianne 2015; Gil de Zúñiga and Shahin 2015; Martin 2014). In contrast, democracy and citizenship studies have largely ignored the cyberspace and its implications for broader theories and practices of democratisation and citizenship (Polat and Pratchett 2014; Isin and Ruppert 2015; Theocharis and Van Deth 2016). Yet, the new venues for civic and political participation enabled by the geomobile revolution find their roots in well-established traditions. Different conceptions of citizenship derived from liberal, republican, deliberative, and epistemic political theories of democracy are now implicitly embedded in a myriad of tools and apps designed to support a number of activities, such as accessing information, monitoring representatives, making petitions and requests, or engaging in deliberation or document drafting. Are these spaces the seeds of an emergent ecosystem where data, information and knowledge will circulate seamlessly across platforms? At the moment, the organic growth of participatory tools looks more as a fragmentary, disjointed, and disconnected multiplicity of digital silos than an interdependent system of entities with different functionalities and complementary strengths.

As new tools for democratic participation continue to populate the cybersphere, they offer potential alternatives for mass participation. At one end of the spectrum there is a scenario of persistently enclosed silos (filter bubbles and echo chambers,[1] in the worst case) that reinforces both atomisation and reverberation. At the other end there is a dynamic ecosystem that leverages data to generate information and mobilise knowledge for coordinated civic action and collective decision making. We call this second alternative 'linked democracy' as digital technology enables

[1]Your Filter Bubble is Destroying Democracy. Wired, Nov. 2016. https://www.wired.com/2016/11/filter-bubble-destroying-democracy/.

multidimensional connections within the ecosystem: data with data; people with data; people with people; people with government, etc.

3.2 Knowledge Discovery: On the Shoulders of World 3 Explorers

In 1986, Don Swanson, Dean of the Graduate Library School at the University of Chicago, coined the term of 'undiscovered public knowledge' to refer to independent fragments of knowledge that 'are logically related but never retrieved, brought together, and interpreted' (Swanson 1986, 103). Swanson considered 'undiscovered public knowledge' to be part of what Karl Popper had conceptualised as 'World 3' in his 1975 book *Objective Knowledge*. Popper, not without cautioning his readers from "taking the words 'world' or 'universe' too seriously" (Popper 1975, 106) used them to refer to three different domains. Hence, World 1 was the world of physical objects or states; World 2 referred to states of consciousness or mental states; World 3, finally, was the world of '*objective contents of thought*' (idem). The contents of Popper's World 3 are vast and ever-growing. Among them, we find scientific knowledge, problems, arguments, poetic thoughts, or works of art. As this universe of human knowledge is continuously expanding, Swanson argues, it can also 'yield genuinely new discoveries' (Swanson 1986, 103). In this sense, his working hypothesis foresees 'vast areas of World 3 not yet discovered solely because of our limited ability to index, organize, and retrieve information' (Swanson 1986, 107). This anticipates contemporary work on informational retrieval and on computational creativity, a branch of Artificial Intelligence exploring 'the use of computers to generate results that would be regarded as creative if produced by humans alone' (Boden 2015, v). In Swanson's view, 'information retrieval is necessarily incomplete, problematic, and therefore of great interest—for it is just this incompleteness that implies the existence of undiscovered public knowledge' (Swanson 1986, 109). Since a 'total exploration of World 3' in search of all information relevant to a theory (or its refutation) will always be unattainable, information retrieval techniques circumvent total exploration 'by assigning each piece of recorded information (or 'document') different 'points of access' or 'searchable attributes' such as title words, index terms, descriptors, subject headings, or classification symbols' (Swanson 1986, 113). In doing so, Swanson acknowledges that 'it is illusory to think that such handles can encode either the meaning or the relevance of a document with respect to all problems or theories to which it is logically related, especially to problems and theories not recognized or formulated at the time the document is created' (idem). Again, Swanson's point about the essential incompleteness and uncertainty of information retrieval is relevant to linked open data. Today's explorers of World 3 have standardised routes to navigate data, but new knowledge that awaits discovery (and most important, application) will remain elusive without the emergence of institutions supporting the processes of aggregation and alignment as described by Josiah Ober (Ober 2008).

Swanson's account of undiscovered public knowledge was based on scientific knowledge (and, more especifically, medical knowledge) but the Web 2.0 and the explosion of user-generated contents makes it possible to extend his notion to other areas. The cybersphere is now a trove of the most varied forms of undiscovered knowledge, including political knowledge that has been produced in a particular context but remains untapped beyond that boundary. Yet, this knowledge could be useful for deliberation and decision-making purposes in another context, provided that it continues to be relevant in the new scenario (e.g. it covers a similar topic, a similar issue or process, etc.). A mass scale deliberation on how to regulate food packaging in Norway, for example, can provide relevant insights for a similar discussion being held in Canada. But how do we discover that? And how do we identify (and translate!) key ideas, issues, or suggestions debated in the Norwegian case? Do we need to read thousands of posts by the order they were posted? From our perspective, making this emergent knowledge available whenever necessary is a key challenge, and one that can only be addressed by combining different strategies at different levels.

3.3 Data, People, Institutional Arrangements

Open data and linked open data are essential resources in a linked democracy approach as they provide both the elementary contents and the connecting architecture. For the sake of clarity, we adopt here the well-established distinction between data, information, and knowledge that is standard in the domains of knowledge management and information systems. Yet, this process is not automatic nor spontaneous. It requires additional arrangements—such as agreements about what type of data are relevant in any particular context, the human computing procedures to work with them and the rules that will guide the overall process.

We consider these arrangements as 'institutional' for they require: (i) multiple, repeated interactions between people, technology, and data, and (ii) guidelines, procedures and rules to coordinate behaviour, execute processes, make decisions, and manage misalignment and conflict. Institutional arrangements can be pre-existent to the design and development of digital tools or they may emerge and evolve with them. If pre-existing, we have established institutions (for example, local councils, state, and national governments) supporting the design and development of a digital tool with a particular purpose—public consultation, deliberation, voting, etc. This can be part of a broader e-government program or strategy. Some parliamentary bodies have also followed that path. An example of this is Wikilegis, one of the participatory platforms created by LabHacker, a technology unit of the Brazilian Parliament that designs and develops digital tools to facilitate online participation of citizens in the early stages of legislative processes (Ferri 2013).[2]

[2] http://labhackercd.net/.

> Where institutional arrangements are not pre-existent, we have emerging movements and organisations building their own tools, procedures, and rules as they grow. A growing body of literature is now exploring the rise of digitally-savvy political parties such as the Pirate Party in some European countries, Podemos in Spain, or the Five Star Movement in Italy (e.g. Postill 2017; Simon et al. 2017; Tormey and Feenstra 2015). A more recent example is DIEM25, launched in February 2016 as pan-European movement for "democratising Europe in general and the European Union institutions in particular" (not a political party but a movement supporting third party candidates in national elections across Europe.[3] DIEM25 relies on both an online platform for transnational coordination and on spontaneous collectives (DSCs) to promote the movement locally.

This can also be illustrated with the case of #BlackLivesMatter, the movement that started in 2012 as a Twitter hashtag to protest against the fatal shooting of African-American Trayvon Martin and the subsequent acquittal of George Zimmerman. The hashtag resurfaced on Twitter in 2014 following the deaths of two other African Americans: Michael Brown in Ferguson, and Eric Garner in New York City. The movement, founded by community activists Alicia Garza, Patrisse Cullors and Opal Tometi now has 37 chapters in the US, one in Canada, and has gained traction with support rallies in cities such as Sydney and Melbourne in Australia. #BlackLivesMatter also defines the movement as 'an online forum intended to build connections between Black people and our allies to fight anti-Black racism, to spark dialogue among Black people, and to facilitate the types of connections necessary to encourage social action and engagement'.[4] One of the offshoots of #BlackLivesMatter is WeTheProtesters.org, which describes itself as a 'hub and a source of information', as well as 'a space for protestors nationwide to access the tools and resources to mobilize and organize'.[5] Among the available sources of information is Mappingpoliceviolence.org,[6] a digital map of police violence in the US, built on top of other Web sources. The mappers deploy different procedures to visualise and locate violent incidents, including aggregation of crowdsourced datasets, social media monitoring, and information retrieval:

> This information has been meticulously sourced from the three largest, most comprehensive and impartial crowdsourced databases on police killings in the country: FatalEncounters.org, the U.S. Police Shootings Database and KilledbyPolice.net. We've also done extensive original research to further improve the quality and completeness of the data; searching social media, obituaries, criminal records databases, police reports and other sources to identify the race of 91% of all victims in the database.[7]

[3] https://diem25.org/organising-principles/.

[4] http://blacklivesmatter.com/.

[5] http://www.wetheprotesters.org/exe-sum-and-overview.

[6] http://mappingpoliceviolence.org/.

[7] Idem.

As the civil rights activists put it 'we were able to almost create an alternative institution that did a better job of collecting [data on this issue] than the federal government' (Peters 2016). In a related project that aims to hold police chiefs and mayors accountable for violent incidents,[8] activists also deployed a micro-tasking strategy:

'There's actually no national database of local elected officials, what their districts are, what their contact information is, and that's a huge issue when we're talking about policing, which is predominantly local,' he says. 'So all of those things can be crowdsourced, broken up into manageable tasks that anyone can complete'. People with some specialized skills—attorneys or designers, for example—will be connected with more specialized tasks. (Peters 2016).

#BlackLivesMatter and WeTheProtesters.org evolve fluidly as they attract more participants, release and test new tools, and deploy different procedures to achieve different aims as emergent civil rights movements (raising awareness, monitoring, reporting, campaigning, advocating, etc.). While the aims remain the same as their predecessors in this domain, members of the new movements interact with data and tools in innovative ways, such as leveraging social media, deploying crowdsourcing and microtasking methods, or producing and releasing open data with an intended ripple effect.

These cases certainly deserve a more detailed analysis of the emerging institutional arrangements, but they help to shed light on the claim that our linked democracy approach is multidimensional and pays attention to different layers of connections and connectors, which is another way to refer to the new explorers of digital World(s).

3.4 Connections and Connectors: A Multilayered Linked Democracy

Our linked democracy approach builds on a multilayered ecosystem of connections and connectors. Since both connections and connectors are dynamically related, different analogies are possible. The concept of 'layer', widely used in Web science, is one of them. For example, the Internet is usually visualised as a three-layered architecture (with its three main infrastructural, logical, and social layers). Likewise, the Semantic Web is typically represented as a stack of different technologies and languages, and both platforms and apps are now said to be built 'on top of' open data Fig. 3.1.

Linked democracy could also be represented as a three-layered structure that would include: (i) Linked Open Data (LOD); (ii) Linked Platforms (LP), and (iii) Linked Ecosystems (LE). While "linked' in LOD implies the use of standardised technologies (such as URIs to identify entities, HTTP to retrieve resources

[8] http://www.checkthepolice.org/#review.

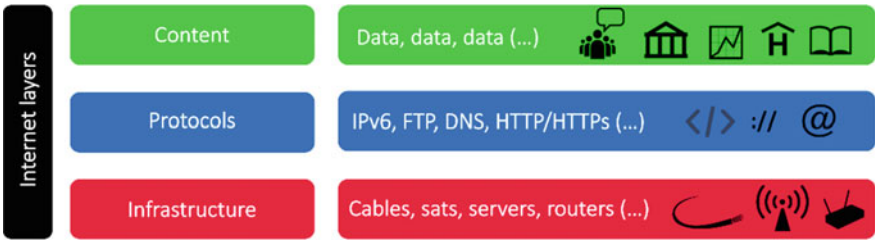

Fig. 3.1 Internet layers

or descriptions of resources, or RDF specifications to structure and connect data that describe things in the world), the concept is not used in the same way in LP and LE, where it refers to loosely connected institutions and ecosystems (and therefore, without the technical infrastructure that characterises LOD). In the remaining pages of this chapter we will present these three layers with more detail. We will argue that the recent developments in LOD are appreciable in many areas, whereas the efforts to link platforms and build linked ecosystems are much less discernible. Yet, a comprehensive linked democracy requires a full-fledged connectome, to borrow the concept that has sparked the mapping of the neural connectivity within the brain (Hagmann 2005). Sebastian Seung, one of the leading researchers in the emerging area of connectomics, defines the connectome as the 'totality of connections between the neurons in a nervous system' (Seung 2012, vii). Our claim is that a robust connectivity between democratic institutions is fundamental to enhance the way knowledge circulates and collective decisions are made. Such connectivity exists and can be mapped now at the data layer, but since our digital platforms remain largely disconnected that knowledge is kept inside silos.

3.4.1 Linked Open Data (LOD)

In our approach, the Linked Open Data cloud described in Chap. 1 is a key component of a linked democracy ecosystem. Politically relevant knowledge premised on the LOD cloud is critical for monitoring, deliberating, or making informed decisions. In the last few years, governments, international organisations, and other public and private entities have contributed to the growth of LOD by releasing an increasing number of datasets in LOD formats.

Linked open government data (LOGD) comes with a number of potential benefits, such as 'the reuse of government data, opening up new business opportunities, enhancing government transparency and citizen engagement, and distributing the cost of government data processing to communities' (Ding et al. 2012, 11). The US and the UK portals (Data.gov and Data.gov.uk) and the EU Open Data Portal were among the early adopters of LOGD at the start of this decade and have developed a number of mandates and policies ever since. Other initiatives currently developing

in this area are The Talk of Europe (TOE), a project that curates the multilingual proceedings of the European Parliament, enriches this data with biographical and political information on the MPs, and converts these data to RDF, so they can be linked with other parliamentary records or further resources in other European countries (Hollink et al. 2015). Another European project exploits the LOD service for pre-legislative documents available at the EU Publications Office to enable citizens' participation in public consultations within the EU decision-making process (Schmitz et al. 2016). In the US, the Library of Congress makes available its entire collection as a Linked Data Service,[9] and the Department of Veterans Affairs is also using Linked Data 'to integrate over 35 years of health data from over 1200 care sites'[10] (Richards 2015).

The public effort to produce, collect, and make LOD publicly available does not necessarily lead to immediate uptake by other organisations, the private sector, or citizens at large. Although research is still scarce in this area, there are some studies analysing the impact of open data and LOD at the country level. For example, in their review of open data for higher education in South Africa, van Schalkwyk et al. note, 'the open data that are made available by government is inaccessible and rarely used' (van Schalkwyk et al. 2016, 68). To mitigate such 'data viscosity', they argue, intermediaries are essential. As they put it, "intermediaries are found to play several important roles in the ecosystem: (i) they increase the accessibility and utility of data; (ii) they may assume the role of a 'keystone species' in a data ecosystem; and (iii) they have the potential to democratize the impacts and use of open data" (idem). 'Keystone species' in the open data ecosystem are 'actors who bridge institutional boundaries and translate across disciplines, or (…) creators of value in ecosystems by creating platforms, services, tools or technologies that offer solutions to other actors in the ecosystem' (van Schalkwyk et al. 2016, 77). These findings are consistent with another study on UK citizens' perceptions of the usability of open data, which reports that the 'rawness' of open data makes citizens 'unable to use the data for any meaningful purpose relating to their life events or decisions' (Weerakkody et al. 2017). The authors argue that both the advanced analytical skills required to analyse open data and the generic nature of most data repositories are barriers to citizens' use of such data for public policy making debate or decision making. Nevertheless, the different filtering operations required to make data usable for citizens also offer opportunities to develop efficient platforms and interfaces (idem). In his interesting ethnography of the Open Knowledge Foundation in Germany, Stefan Baack observes that 'raw data' typically means 'as collected' and does not imply any 'objective' or 'unbiased' nature (Baack 2015, 4). Baack also notes that the open data community has largely adopted the model of open source projects and communities, and this has an impact on the way they conceive the relation between open data, participation, governance, and democracy:

[9] http://id.loc.gov.

[10] http://vistadataproject.info.

> Taken together, the way [open data] activists apply the open source model of participation to governance results in a notion of a more open and flexible form of representative democracy. 'Open' refers to a higher degree of transparency (by sharing raw data) and the openness of political decision-making processes for public participation. 'Flexible' means that activists think that the inclusion and coordination of citizens' voluntary, 'self-selective participation' should be adapted to the issue at hand and to the local context. (…) From the perspective of democratic theory, they negotiate between representative models of democracy—in which participation is mainly limited to periodic voting—and direct models of democracy, where entire electorates vote on certain proposals. (Baack 2015, 5)

Baack equally points to the key role of 'empowering intermediaries' in nurturing a 'data-driven' paradigm of citizen empowerment (Baack 2015, 6). We refer to these different 'keystone species' or 'empowering intermediaries' as 'connectors', that is, agents whose operations with data and technology enable the creation of more accessible, contextualised, and reusable contents. Connectors have also been referred to as 'infomediaries', or 'intermediate consumers of data (…) [that] play an essential role in making sense of, and creating value out of raw data' (Wessels et al. 2017, 62).

Examples of connectors are journalist networks and organisations that engage in data-driven journalism, such as the Global Investigative Journalism Network (GIJN),[11] ProPublica,[12] Internews,[13] The Intercept,[14] or Bellingcat.[15] In the legislative domain, the platform Digital Democracy makes California and New York state bills, hearings, committees, speakers, and related organisations searchable by keyword, topic, speaker, organization, or date. Videos in the platform are transcribed and can be annotated by its users.[16] Other examples of connectors are Data.world (a social network facilitating collaborative discovery of data), Citygram.org (a platform transforming open data from cities in human readable format), or sites such as Extractafact.org,[17] ResourcesProjects.org,[18] the US Extractive Industries Transparency Initiative, and OpenOil.net[19] (analysing open data from extractive industries). In the area of financial data (budgets, public expenditure, public procurement, etc.) examples include platforms such as OpenSpending.org (tracking and analysing public financial information globally),[20] OpenContracting

[11] https://gijn.org/.

[12] https://www.propublica.org/.

[13] https://www.internews.org/data-journalism.

[14] https://theintercept.com/.

[15] https://www.bellingcat.com/.

[16] https://www.digitaldemocracy.org.

[17] https://www.extractafact.org/.

[18] https://www.resourceprojects.org/.

[19] https://openoil.net/.

[20] https://openspending.org/ (see Höffner et al. 2015).

(publishing government contracting data with the 'Open Contracting Data Standard' and reporting information for different countries),[21] GosZatraty[22] (using Russian public expenditure data to examine, understand and detect abuse or corruption in public procurement), OpenCorporates (an open database with data from about 110 million companies in 115 different jurisdictions)[23] and ProductOpenData (building a public database of product data). Vafopoulos et al. (2016) have recently proposed a top-level ontology (Linked Open Economy (LOE)) to link open economic data. The ontology models the flows in public procurement together with market processes and prices. The LOE ontology, according to its proponents, 'is designed to be a compact common ground established for developers, journalists, professionals and public authorities to use and customize open economic data' (Vafopoulos et al. 2016, 9). As a top-level ontology, LOE could provide 'a baseline to develop new systems, to enable information exchange between systems, to integrate data from heterogeneous sources and to publish open data related to economic activities' (idem).

The role of connectors is also referred in the literature as 'data activism' (Milan and Van der Velden 2016, Schrock 2016). In this perspective, data activism is a distinctive form of digital activism that 'embraces the composite series of sociotechnical practices that, emerging at the fringes of the contemporary activism ecology, interrogate datafication and its socio-political consequences' (Milan and Van der Velden 2016, 3). Data activism can imply different tactics: positive action ('affirmative engagement with data') but also 'resistance to massive data collection' (idem). Schrock's data activism is conflated with advocacy and includes 'requesting, digesting, contributing to, modeling, and contesting data' (Schrock 2016, 581). In Schrock's perspective, data activists are seen as both civic hackers who 'transgress established boundaries of political participation' and 'utopian realists involved in the crafting of algorithmic power and discussing ethics of technology design' (idem). While many open data initiatives may find their practices and rhetorics well rooted in the civic hacking soil, this characterisation entails the risk of leaving a number of other relevant connectors out of the picture. Authors such as Coleman (2013) and Baack (2015) have already emphasised in their studies the heterogeneity of hackers' communities. Especially when it comes to the adoption and further deployment of LOD, the active involvement of governments, international institutions, non-for profit organisations, public and private research funding, etc. makes the landscape significantly more complex than it was a decade ago. The broad range of stakeholders, ultimately, is also an essential component of a linked democracy.

[21] http://www.open-contracting.org/.

[22] https://clearspending.ru/.

[23] https://opencorporates.com/.

3.4.2 Linked Platforms

Since Berners-Lee's first paper on design issues in Linked Data (Berners-Lee 2006), there has been a vast effort over the past decade to build and enlarge LOD infrastructures. Data in the Web are now more linked than ten years ago and the LOD ecosystem is expanding, but silos persist in many areas. Civic engagement technologies are one of them. As John Gastil has written, 'Dozens—and possibly hundreds—of online platforms have been built in the past decade to facilitate specific forms of civic engagement. Unconnected to each other, let alone an integrated system easy for citizens to use, these platforms cannot begin to realize their full potential' (Gastil 2016, 1).

There is no easy solution to this disconnect. The platforms, apps and portals that have proliferated with the advent of the Web 2.0 are usually stand-alone solutions enabling a vast range of civic activities (e.g. signing a petition, voting and/or debating an issue, reporting an issue, following parliamentary activity, etc.). We have elsewhere referred to these tools as crowd-civic systems (McInnis et al. 2017), which can be defined as socio-technical systems blending people, digital technologies, and data for civic engagement purposes: information management, large-scale deliberation, decision making, etc.

Crowd-civic system designers, developers, and users may not explicitly link their digital tools to any conceptual model of democracy and citizenship. Yet, it is possible to connect present crowd-civic systems with different visions of citizenship derived from liberal, republican, deliberative, and epistemic theories of democracy. Highlighting these linkages can help to elucidate the current discussions around 'digital citizenship' that are taking place in a number of academic disciplines (political sciences, sociology, media and communication studies, etc.). As Engin Isin and Evelyn Ruppert have succinctly argued, "any attempt at theorizing 'digital citizens' ought to begin with the historical figure of the citizen before even shifting focus to the digital" (Isin and Ruppert 2015, 19).

Table 3.1 frames a subset of 130 crowd-civic systems (52 of them open source) within different political theories of democracy and their related visions of citizenship. The categorisation of the models (liberal, republican, developmental, and deliberative) draws from previous work by Geoffrey Stokes (2002). We also have added the 'epistemic' model (together with the deliberative one) since some of the crowd-civic systems (e.g. constitution-drafting platforms) combine mass-scale deliberation functionalities with the aggregation of structured ideas, issues, or contents via microtasking (for example, they invite their users not only to discuss the pros and cons of a suggested article, but also to draft a new version of it).

The suggested taxonomy is far from exhaustive. To be sure, an extended survey would certainly help to discover a much larger number of tools currently in use. It is not categorical or clear-cut either, as a number of tools may be linked to more than one model and/or scope. If that is the case, then we consider the core functionality of the tool to determine its most adequate position in the Table 3.1.

Table 3.1 Table of tools and crowd-civic systems

vision	Liberal		Civic/republican / monitorial	Developmental	Deliberative/epistemic	
Scope	Access	Vote	Monitor	Engage/network	Deliberate/design	
	Americadecoded	BallotBin	Abgeordnetenwatch.de	Aavaz.org	All Our Ideas	
	Changepolitics	BoardRoom	Alaveteli.org*	Brigade	Argunet*	Mindhive
	Civi*	Easypolls	Askthem.io*	Change.org	Assembl*	Objective8*
	ClearGov	Electionbuddy	Dailwatch.i.e.	Citizinvestor.com	AvoinMinisterio*	Opentownhall.com
	Congress app	e-Vox*	Del Dicho al Hecho*	Cityflag	Carneades*	Parlement&Citoyens
	DemocraticDashboard	FollowMyVote*	Elections*	Citysourced.com	Civiciti	PolemicTweet*
	DKAN*	Helios Voting*	Elteuparlament.cat	Civinomics	Cohere*	Pol.is*
	Digital Democracy	Horizo State StanVotes	FragDenStaat.de*	Communityplanit.org	Collaboratorium	PyBossa*
	Everypolitician*	OpaVote	GovTrack	Ethelo.org	Common Ground for Action	PopVox
	Followthemoney	OpenVoters*	Issues*	Frankfurt Gestalten*	Compendium*	Reddit
	Intuitive voting	Simply Voting	Nosdeputes.fr*	Fixmystreet.org*	Consider.it	RegulationRoom
	MapIt*	TrustTheVote	Marsad.tn	GlobalCitizen.org	Constitucio.cat	Unanovaconstitucio.cat
	OpenAustralia*	Turbovote	Meinparlament.at	Neighbor.ly	Consul*	Whysaurus.com*
	Opencongress	Vooter	OpenDialog	Neighborland.com	Dastoorikurdistan.org	YourPriorities
	Openstates		OpenParlamento*	OurSay.com	Debate.org	UNU.ai
	PartyofLincoln		OpenPolitici*	Petitions*	Debategraph.org	
	Politicalpartytime		Politikercheck.lu	Represent	DebateHub*	
	Politomix		Pombola*	Seeclickfix.com	Debatepedia.com	
	SayIt*		Questionnezvoselus.org		Debatewise.org	

(continued)

Table 3.1 (continued)

vision	Liberal		Civic/republican / monitorial	Developmental	Deliberative/epistemic	
Scope	Access	Vote	Monitor	Engage/network	Deliberate/design	
	Americadecoded	BallotBin	Abgeordnetenwatch.de	Aavaz.org	All Our Ideas	
	They Vote For You*		Right to Know*		Deliberatorium	
	VoiSieteQui*		Sahana*		DemocracyOS*	
	The Voting App		Theyworkforyou.com*		Discourse*	
	Yoquierosaber		Ushahidi*		EngagementHQ	
	YourNextRepresentative*		Votewatch.eu		LaConstituciondetodos.cl	
			Vouliwatch.gr		Loomio	
			Whatdotheyknow.com*		LiquidFeedback*	
			Writeinpublic.com*		LiteMap*	
			Writetothem.com*		Madison*	

We have followed two basic criteria when including digital tools in Table 3.1. First, we have included civic, grassroots, foundations, research, or start-up initiatives aimed at citizens' participation, as opposed to a number of local, state, and national government-supported consultation platforms (e.g. the ones by states such as South Australia (YourSAy),[24] or by local councils in Mexico City, Barcelona or Madrid (Constitución CDMX,[25] Decidim Barcelona,[26] Decide Madrid[27]), to name a few. Likewise, initiatives by parliaments such as Wikilegis in Brazil,[28] or Mi Senado in Colombia[29] have been left out of our scope. Nevertheless, it is important to note that governments at different levels have currently deployed some of these platforms included in the table. For example, a number of Spanish municipalities, including Barcelona and Madrid, use the open source platform Consul, while some others have opted for Civiciti, which is not open source but offers a free version to small municipalities.

Second, our taxonomy includes tools that leverage some form of crowdsourcing. In this particular context, crowdsourcing methods can consist of outsourcing input information from the general public—e.g. collecting data about candidate representatives and political parties—, collecting ideas, comments, and petitions in a particular area, or designing more elaborated forms of microtasking where participants are requested to complete a specific task—e.g. reporting incidents for election monitoring tasks (with Ushahidi), or providing their version of an article in a proposal for a new legislation, bill, or constitution (e.g. LaConstitucionde Todos.cl or unanovanonstitucio.cat).

These different models of democracy and visions of citizenship (or 'scopes') are synthesized in Table 3.1. Tools marked in with an asterisk in the figure are open source.

A cautionary note is required here, for this synthesis is a highly simplified version of models and conceptualisations that democracy theorists, coming from different philosophical traditions, have been elaborating over the past decades. We are also mindful of Mark Warren's cautioning words: "democratic theorists usually think in terms of "models of democracy"—a strategy that encourages us to center our thinking on an ideal typical feature of democracy, such as deliberation or elections, and then to overextend the claims for that feature (Warren 2017, 39). Our synthesis of models should therefore be read through Warren's lens.

Under a liberal, minimalist vision of citizenship, citizens are basically expected to vote in elections, so that access to information (and limited deliberation) is instrumental to that purpose. Hence, when it comes to the scope of the liberal vision, we

[24] https://yoursay.sa.gov.au/.

[25] http://www.cdmx.gob.mx/constitucion.

[26] https://www.decidim.barcelona/.

[27] https://decide.madrid.es/.

[28] http://beta.edemocracia.camara.leg.br/wikilegis/.

[29] http://www.senado.gov.co/historia/item/26548-senado-lanza-app-mi-senado-un-paso-mas-hacia-la-modernidad-y-la-transparencia.

consider these two dimensions: access and vote. 'Access' includes tools that aim at collecting and structuring the data and information that citizens need to know to cast informed votes in political elections. These data can be sourced from open datasets, if available, or crowdsourced from the public. 'Vote' contains those tools whose core functionality (while not necessarily focusing on political processes) is to facilitate the design of and implementation of online elections, polls, or surveys.

Republicanism constitutes a long and rich tradition in political philosophy, inspiring different conceptions of citizenship over time (e.g. Held 2006). From a republican perspective, the protection of the 'public interest' or the 'common good' generally demands greater involvement of citizens in politics, and hence a more proactive role to deter arbitrary abuses of power. As Philip Pettit—one of the main proponents of contemporary 'civic republicanism'—summarised, the protection of republican freedoms and the common interest relies 'on the existence of an active, concerned citizenry who invigilate the exercise of government power, challenge its abuses and seek office where necessary' (Pettit 2003). In this same vein, Frank Lovett points out that 'through collective political action, citizens can bring instances of domination to public attention; they can support laws and policies that would expand republican freedom; and they can do their part in defending republican institutions when called upon to do so' (Lovett 2017).

This vision also resonates with John Keane's notion of 'monitory democracy', which he defines a as "'post-Westminster' form of democracy in which power-monitoring and power-controlling devices have begun to extend sidewards and downwards through the whole political order' (Keane 2009). The list of monitory bodies is extensive and includes, for example, 'public integrity commissions, judicial activism, local courts, workplace tribunals, consensus conferences, parliaments for minorities, public interest litigation, citizens' juries, citizens' assemblies, independent public inquiries, think-tanks, experts' reports, participatory budgeting, vigils, 'blogging' and other novel forms of media scrutiny' (Keane 2009). Although crowd-civic systems are out of the scope of Keane's work, the tools we list in Table 3.1 under the 'republican' vision are monitorial in Keane's sense: tools that enable citizens to ask questions to their representatives, monitor, report and/or map people and political processes (e.g. elections, parliamentary activity, deployment of policies, etc.).

In the developmental vision of democracy, the proactive role of citizens is not restricted to the political realm. Rather, citizens adopt an expansive, far-reaching commitment to enhance the conditions of their (online and offline) communities. In other words, there is a high expectation that citizens will be able to contribute to the betterment of their polity at any of its levels (local, national, or supranational).

This broader consciousness of community and its collective concerns expands to areas where only very recently the Web 2.0 has enabled citizens' involvement at a large scale (for example disaster management or citizen science[30]). The crowd-civic

[30]For a survey of digital tools and platforms for crowdsourced disaster management, see Poblet et al. (2017).

systems considered under this vision aim at engaging citizens to network (e.g. Brigade), participate in detecting community issues and improving the local environment (e.g. CityFlag, CitySourced, FixMyStreet, Neighbor.ly, SeeClickFix) or in supporting both local and global petitions and campaigns (e.g. Aavaz.org, Change.org, GlobalCitizen.org).

Deliberative democrats situate deliberation as the underpinning principle of their theories. Although an ocean of literature has provided multiple definitions and principles over the past two decades, John Dryzek and Simon Niemeyer (2010) have outlined what they consider to be the essential components that constitute deliberative systems. Thus, deliberation is supposed to be: (i) authentic (debate, discussion, or dialogue in non-coercive ways, encouraging reflection and accommodation of diverse views; (ii) inclusive (all 'affected actors' may participate), and (iii): consequential (can determine outcomes such as laws, policies and decisions). Public deliberation by 'free and equal' citizens provides legitimation for political decision-making, therefore, justifications for proposed decisions, policies and law s need to be publicly given and debated to inform the voting public.

Epistemic models have developed in parallel to these visions and the body of literature is not less impressive. Melissa Schwartzberg (2015, 187-88) contends that 'epistemic democracy does not position itself as an alternative to deliberative democracy but instead generally resituates deliberation as being instrumental to meet the aim of good, or correct, decision making'. Similarly, Hélène Landemore argues that 'epistemic democracy is both a subset of deliberative democracy and goes beyond it because it includes things that deliberative democracy doesn't necessarily include' (Knight et al. 2016, 142).[31] According to Landemore, the epistemic models aim 'to emphasize the knowledge-producing properties of democratic institutions and procedures' (Knight et al. 2016, 141). An epistemic vision of democracy, therefore, is consistent with citizens playing an active role in producing contextually relevant knowledge in collaborative ways (e.g. making proposals, drafting of legal texts, etc.).

From this perspective, crowd-civic systems in the last column of Table 3.1 enable the emergence of collective knowledge about topics under discussion. By leveraging different design features that facilitate interaction, debate, and content creation, these systems aim at overcoming the limits of mainstream social media as flagged by a number of studies (e.g. Gürkan et al. 2010; Klein 2015; Iandoli et al. 2016; 2017). For example, as Mark Klein (2015) has aptly pointed out, social media predominance of time-centric discussions (where contents are organised based on

[31]Elsewhere, Landemore argues that epistemic approaches in both democratic and decision-making theory have an extensive genealogy that is evident in argumentation 'running from Aristotle to Dewey… in a deliberative direction'. Acknowledging the selective nature of her exercise, Landemore cites examples from a divergence of theorists from Aristotle, Machiavelli, Spinoza, Rousseau, etc. to make the 'epistemic case for democracy' constructing a linkage to contemporary theory regarding 'collective intelligence' (2013, passim).

the time they are posted) tend to produce low signal-to-noise ratios, insular ideation, balkanisation, non-comprehensive coverage, etc. that may hinder functional deliberation.

To address these issues, a number of crowd-civic systems have incorporated the alternative designs to time-centric systems that Klein (2015) identifies: (i) question-centric systems (Pol.is, UNU.ai) (ii) topic-centric systems (e.g. All Our Ideas, Cohere); (iii) debate-centric (e.g. Consider.it, Common Ground for Action, DebateGraph, Debatepedia); (iv) argument-centric systems, (e.g. Argunet, Carneades, Deliberatorium, Whysaurus). In addition to that, we can also refer to some systems as 'microtask-centric', as they invite users to complete a task (PyBossa) or draft/amend a small text (e.g. Dastoorikurdistan.org, LaConstitutiondeTodos.cl, Unanovaconstitucio.cat). Some tools are also 'internally sequential', that is, they provide a voting system once the deliberation phase concludes (e.g. Assembl, Consul, Civiciti, DemocracyOS). Whether they are also externally 'sequential' in Dryzek and Niemeyer's sense (determining outcomes such as laws, policies and decisions) (Dryzek and Niemeyer 2010), or externally 'aligned' in Josiah Ober's one (facilitating a seamless transition from decision-making to implementation of decisions) (Ober 2008) can only depend on institutional commitments, arrangements, and procedures that are external to the platforms.

Platforms and apps such as the ones in Table 3.1, and more recently blockchain deployments (for example, blockchain-based political parties such as MiVote[32] and Flux[33] in Australia) are just the technology component of an emergent participatory ecosystem. Linked Open Data, as we have seen, is another component, although not necessarily connected to these tools. As Baack puts it, 'even though civic technologies do not always depend on open data, data is key to their functioning in two ways: first, the availability of open data creates more opportunities to develop civic technologies (for example, when they require traffic data); second, they often datafy the activities they are concerned with, i.e. they often create new data' (Baack 2015, 7). Much as this interplay between digital tools and open data is a key condition to increase connectivity across crowd civic platforms, it still falls short of achieving the goal of building a 'civic commons' (Gastil 2016) for the benefit of democratic institutions. Working in this direction would also require building ecosystems where people co-produce and share data and knowledge in particular contexts and for specific decision-making purposes. The examples below may help to shed some light in this direction.

[32] https://www.mivote.org.au/.

[33] https://voteflux.org/.

3.4.3 Linked Ecosystems

In January 2016, the Parliament of Mexico approved a constitutional amendment to grant the capital of the country, Mexico City, the enactment of its first constitution. The Mayor of Mexico City started the constitution-making process by appointing a group of 30 experts (many of them with a legal academic background) to discuss and draft a proposal.[34] In order to open up the drafting process to the citizenry, the City Council made available a collaborative editing tool where citizens were able to provide feedback on the specific topics posted by the drafting group.[35] Moreover, as crowdsourced legal drafting does not typically attract a large number of citizens, this approach was complemented with other participatory strategies, namely a survey and a collaboration with Change.org to collect petitions relevant to the constitutional text (at the closing date of the process, 280,678 people had supported 129 petitions). The Constitution of Mexico City was finally published on 5 February 2017,[36] although at the time of writing the Supreme Court of Mexico is hearing a number of appeals to the constitutional text (with 40 out of 70 articles being challenged) by the federal government, two political parties, and other organisations.[37]

The constitution-making process in Mexico City echoes the one in Iceland five years earlier, when the meetings and workings of a Constitutional Council of 25 individuals (drafted by sortition from a larger pool of citizens) were made publicly available in the Council website for comments via social media and e-mail. It also reminds of the Moroccan constitutional reform of 2011 that engaged more than 200,000 Facebook and Twitter users (although in this case the process was not led by a government or a parliament, but by grass-root activists who had launched the platform reforme.ma to collect popular input on the process). These earlier examples sparked a wave of crowdsourced constitution-making processes across the world (Gluck and Ballou 2014; Deely and Nesh-Nash 2014; Luz et al. 2015) with varied levels of engagement and success.

Compared to previous initiatives, the most recent example of Mexico City takes an interesting approach to participation by acknowledging that citizens may have different motivations, interests, skills, availability, etc. when engaging in participatory processes. As digital tools come with different affordances and functionalities, the repertoire of political participation in democratic societies is broadening rapidly (Theocharis and van Deth 2016). Mexico City residents could chose to attend off-line forums and roundtables, use collaborative editing tools, fill surveys, and propose and sign online petitions. This approach can be seen as a linked participatory ecosystem where participants interact in both offline and online environments, leveraging different tools and co-producing a collective outcome.

[34] https://www.constitucion.cdmx.gob.mx/constitucion-cdmx/#grupo-trabajo.

[35] https://www.pubpub.org/pub/constitucioncdmx-principios.

[36] http://www.cdmx.gob.mx/storage/app/uploads/public/589/746/ef5/589746ef5f8cc447475176.pdf.

[37] http://eleconomista.com.mx/sociedad/2017/06/12/debate-publico-constitucion-cdmx.

Strikingly, both the Icelandic and Mexican crowdsourced constitutional drafts had similar fates, coming to a standstill as other institutional bodies were involved. In Iceland, the constitutional text went a bit further than the Mexico City one in the procedural stages. While two-thirds of the voting population approved the text in a referendum in late 2012, it eventually stalled in Parliament. And so it remains, despite the efforts by the Icelandic Pirate Party to renew the approval process.

Presented as a new, unconventional form of political participation, the Icelandic and Mexican processes have not lived up to the early expectations of effectively translating the collected political wisdom of the crowds into law. Why is there such a gap between initial hopes and final outcomes? As both cases show, there is no guarantee that embedding participatory components and digital technologies into the process will eventually have an impact on decision making and, ultimately, will lead to more bottom-up, inclusive decisions. The lessons that can be drawn from such experiments are multiple and involve aspects of political opportunity and trust, institutional design, or experts' involvement (e.g. Valtysson 2014; Landemore 2015; Suteu 2015). Furthermore, as Gianpaolo Baiocchi and Ernesto Ganuza write, 'the literature seldom shines a light on the process of implementing participatory instruments themselves or the conflicts these efforts generate within administrations' (Baiocchi and Ganuza 2017, 14).

Another recent example, the Irish Constitutional Convention (2012-2014) may help to shed some light to this missing link. Like its Northern neighbours in Iceland, Ireland went through intense political turbulence in the immediate aftermath of the economic meltdown of 2008. The general election of 2011 marked the collapse of Fianna Fáil, in a defeat that Michael Marsh et al. (2017, 2) have described as one of the 'largest experienced by a major party in the history of parliamentary democracy', and the subsequent emergence of a large parliamentary coalition eager to adopt a broad reform agenda. In this context, the newly-elected government gave green light to a Constitutional Convention (ICC) that would be tasked to discuss and make recommendations to the national Dáil on eight major issues (such as the voting age, the electoral system, the representation of women in politics or marriage equality). The ICC was composed of 66 randomly selected citizens mixed with 33 self-selected politicians, plus an independent chair. This combination was a notable departure from previous experiences—notably the British Columbia and Ontario citizen assemblies of 2003–2004, which explicitly excluded politicians. The ICC would meet on a series of weekends to deliberate and their members would cast their votes by secret ballot. The Convention plenary meetings were broadcasted live and then archived on the official website,[38] which also enabled submissions from the general public on each particular issue. Twitter users could contribute and follow discussions with the hashtag #ccves (or #MarRef for the topic of marriage equality). Digital technology and social media, as in Iceland, extended the reach of the ICC and amplified the debate among a much larger audience. In the specific case of the referendum on marriage equality, it was finally passed in 2015, through

[38] https://www.constitution.ie/.

heavy social media use coupled with extended global media coverage (Elkink et al. 2016).

At its closing date on early 2014, the Irish Constitutional Convention had produced 41 recommendations and nine reports. In a summary of the status of these outcomes, David Farrell (2016) reported that 17% of proposals had been accepted (and 17% rejected), but 63% remained unresolved. As per the reports, which the government had committed to bring to the Dáil for debate within four months of receipt, he also recounted that 'of the five that were responded to in the Dáil, this was generally in the form of a ministerial statement (in the most recent instance made by a junior minister) crammed into the final hour or so of a Dáil session just before a recess, when many members had already left for their constituencies' (Farrell 2015). Farrell, who had been involved in designing and analysing the process together with other academics from the Political Studies Association of Ireland, concluded that while the Convention and its deliberative method brought a real constitutional change (the inclusion of marriage equality), the overall record was mixed and made 'imperative that tighter guarantees are made to require the government to treat [any future Convention] with a lot more respect than it has treated this one' (Farrell 2016).

Farrell's criticism reveals the tensions that novel participatory mechanisms bring into current representative models of democracy. Tensions between participation, representation, and legitimacy are not easy to resolve and require both incentives and alignment mechanisms. Incentives are critical: why should people commit their weekends to deliberate on recommendations that most likely will end up gathering ministerial dust? Should their advice be given for free? How is this voluntary, sortition-based, unpaid deliberation body going to be regarded by professional, elected, and remunerated politicians? On the other hand, we should not assume that the goals of each institution are aligned, because alignment does not happen spontaneously or by mere goodwill. It requires mechanisms that make sure that decisions made by one institution travel across the ecosystem and are effective included in other decision-making processes. This 'alignment by design', so to speak, is the direction taken by the municipality of Utrecht in the Netherlands with regard to its citizen panels:

> The key feature of this process of political innovation is that citizens were randomly selected to participate, they received remuneration for their participation and they could be regarded as an alternative form of citizen representation. In contrast with many other forms of participation such as citizen panels, the advice was not 'free': local government had committed beforehand to follow this advice and to translate it to an energy policy plan. Our empirical analysis of this case shows that an interplay between idealist and realist logics explains why they are 'accepted' by the institutionalized democratic system." (Meijer et al. 2017, 21)

Another example of 'alignment by design' is vTaiwan, the open consultation process started in Taiwan in December 2014. The consultation process started at the request of one of the ministers of the government to gov0, the Taiwanese civic tech

community that had already launched civic participation processes as part of the 2014 Sunflower movement (Hsiao et al. 2018). The consultation process follows a sequence of flexible steps.

> vTaiwan process consists of four successive stages: proposal, opinion, reflection and legislation. There is no strict policy in the vTaiwan process to move from one stage to the next. The transitions between stages are decided by consensus from the vTaiwan community. This open format principle enables meaningful deliberation when all stakeholders are ready and willing to collaborate and iterate on solutions. The methodology of the participant-oriented agenda and rolling correction substantially engages citizens and public servants. (Hsiao et al. 2018, 2)

According to the authors, 'an issue will not move into the vTaiwan process without a government authority being accountable for the issue and a facilitator taking charge of the issue.' (Hsiao et al. 2018, 2) This approach, therefore, aligns stakeholders within the community network with members of the executive willing to champion the issue and activate the institutional mechanisms to take the outcomes of the consultation to the legislative stage. As a result of this process, '26 national issues have been discussed through the vTaiwan open consultation process, and more than 80% have led to decisive government action' (Hsiao et al. 2018, 3)

3.5 Conclusion

The examples considered so far can be depicted as political ecosystems where different actors and institutions exhibit some linkages and levels of connectivity. Nonetheless, we have seen that deploying civic tools for large-scale participation or selecting conventions or panels by sortition does not ensure any real influence on either rule making or policy making unless alignment mechanisms are in place. Moreover, it leaves issues of power and inequality largely untouched. Open data can be celebrated to make governments more transparent and accountable, but it takes more than access to data to remove corrupt ministers from office or effectively prosecute illegal donations to political parties. Likewise, we may choose to run our councils, parliaments and event governments by lottery, but that will not make them less exposed to self-inflicted, inequity-prone policies dictated by financial markets and rating agencies, as Greece, Ireland, Portugal, Spain or Italy—and many other countries before 2008—know very well. Any model of democracy, and ours is not exception, should be aware of the conditions that threaten to turn democratic systems into ill-disguised technocracies or oligarchies.

In the following chapter we will discuss some principles that may help to underpin a linked democracy model. We consider these principles as a place to start an investigation that contributes to a multidisciplinary dialogue on how to strengthen both democratic theory and practice.

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