Technology and democracy: the who and how in decision-making. The cases of Estonia and Catalonia

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Recommended citation:

Borge, Rosa; **Brugué, Joaquim**; **Duenas-Cid, David** (2022). "Technology and democracy: the who and how in decision-making. The cases of Estonia and Catalonia". *Profesional de la información*, v. 31, n. 3, e310311.

https://doi.org/10.3145/epi.2022.may.11

Artículo recibido el 25-11-2021
Aceptación definitiva: 11-04-2022

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Abstract

This paper focuses on the use of technology to improve democracy, comparing the cases of Estonia and Catalonia. Both examples are closely related in their use of technology to further democratize the decision-making processes, but have opposite starting points. Estonia's internet voting system is an offshoot of the comprehensive e-governance system developed by the Estonian government. It is meant to make it more convenient for people to vote and, thus, easier for them to take part in elections. In Catalonia, the online participation system *Decidim*, initially set up in the city of Barcelona, represents a bottom-up project that emerged from the 15 May protests and aims to make the representative democratic system more direct and participatory. In our comparison we approach both paradigmatic cases from a theoretical reflection on the ideal types of democracy in relation to how decisions are made and by whom. Both projects have evolved and integrated new features that draw them together. First, internet voting is able to reach wider portions of society and digitally transform the Public Administration. Second, online participation platforms increase the potential for collecting citizens' proposals and enriching discussions. These features make them more like a mixed model which, in the current model of representative democracy, creates spaces for a more direct and deliberative democracy.

Keywords

Internet voting; Online participation; Digital platforms; Representative democracy; Aggregative democracy; Direct democracy; Deliberative democracy; Estonia; Catalonia; *Decidim*.

Funding

The work of David Dueñas Cid has received funding from the Electrust (EU H2020 MSCA programme, grant agreement no. 101038055), Dynamika (braku) zaufania w kreowaniu systemów głosowania internetowego (*Narodowe Centrum Nauki*, OPUS-20 competition, grant agreement no. 2020/39/B/HS5/01661) and ECePS ERA Chair (EU H2020 research and innovation programme, grant agreement no. 857622) projects.

Acknowledgements

The authors thank the reviewers for their work and their comments to improve the text. They also thank David Jiménez Guillemat for his work designing the figures.

Note

The authors contributed in the same manner in the current piece of work.

1. Introduction

In this paper we analyse how democratic decisions are made in the 21st century given the opportunities provided by new technologies. We draw on two case studies, Estonia and Catalonia, as well as on the discussion of democratic deepening and innovation that has taken place in recent decades (**Barrientos-del-Monte**, 2019). Thus, the empirical focus of our study is on these two experiences that seek to boost citizen involvement in decision-making by means of digital resources, such as participatory platforms, e-government, web and mobile applications, and electronic voting systems.

Assessing the quality of decision-making processes is no simple task, despite the overwhelming body of literature on the subject. It is not the aim of this paper to review this literature in depth, but rather to focus our attention on two threads of the conceptual debate: the who and how of democratic public decision-making. First, in the face of possible democratic innovations, we must ask whether the ultimate responsibility for decision-making lies with elected representatives or directly with the public. In both countries, new participatory technologies have followed the representative model, but they have also raised tensions and opened up clear opportunities for direct democracy. Second, we also need to consider how decisions are made. To flesh out this second point we will use the contrast between aggregative and deliberative models of democracy. As we will show, Estonia's experience is closer to the first model, while Catalonia's is closer to the second. Both cases are paradigmatic of the discourses on how to incorporate technology in democracy that are embedded in academia, in civil society, and public management.

Finally, we must not forget the need to situate both the empirical cases and the conceptual debate they ignite in a broader context where democracy is currently facing major challenges. It must be borne in mind that we are writing this paper amidst a pandemic that has threatened not only our health, but also our economy, our society, our political institutions and, of course, our democratic forms of decision-making.

2. Models of democracy, decision-making and new technologies

Democracy has been one of the most discussed terms in political thought, although it is still a multifaceted concept that can be approached from many different angles. Some analysts consider that the noun "democracy" has been so adjectivised (popular, elitist, participatory, direct, representative, deliberative, real, etc.) that we must be careful not to muddle and confuse the levels of analysis. We therefore propose to approach the term from the dual perspective of the "who" and "how" of democratic governance.

The combination of who and how in decision-making is useful for differentiating between democratic models, and thus for interpreting our empirical studies theoretically. In the following table we cross the two dimensions of analysis and identify four scenarios, which we label as democracy of the ancients, democracy of the moderns, representative-deliberative democracy, and direct-aggregative democracy.

Table 1. Models of democracy according to how and by whom decisions are made

		Who makes decisions?	
		Representative democracy	Direct democracy
How are decisions made?	Aggregative democracy	Democracy of the moderns	Direct-aggregative democracy
	Deliberative democracy	Representative-deliberative democracy	Democracy of the ancients

The current crisis of modern democracy, exemplified by the *15 May* slogan *No nos representan* (They don't represent us), raises questions about the future of democracy. A democracy that is torn between returning to its ancient roots (recreating the old assemblies); opting for a direct democracy that would do away with representative intermediaries and, in today's societies, be expressed through voting (referendums, citizens' initiatives and consultations) or even direct government (*Government as a platform*, *Wikidemocracy*, *Liquid democracy*); or regenerating traditional representative democracy with deliberative aspects that improve how and by whom (through sortition) public decisions are made. All of this is greatly facilitated by the potential of new technologies. The case studies presented below can be interpreted in the light of this debate.

2.1. Representative democracy and direct democracy

We should begin by examining the distinction between direct democracy (of the ancients) and representative democracy (of the moderns). In 5th century BC Athens, trust was placed in the people, while mechanisms of representation were

decisions directly, without any intermediation. At the same time, distrust in politicians manifested itself in the absence of professionalised politics and in institutions such as ostracism (an example of drastic control over those who held public office) and the lottery (anyone could hold office). This model, which we can define as direct-deliberative democracy, succumbed to an acute crisis and would not resurface until more than twenty centuries later under the new guise of modern democracy.

The new landscape saw the tables turn. As suggested by several authors (**Manin**, 1997; **Pitkin**, 1985), emerging democratic institutions started to be built on trust in representatives and distrust in the people. While elected representatives took on a leading role in public decision-making, citizens became increasingly passive spectators who limited themselves to voting from time to time, only to be quickly swallowed up by a complex web of institutions that distanced them from political activity. Weariness with this model has manifested itself in the emergence of new social movements and new democratic proposals and innovations that seek to broaden the spheres of citizen participation (**Mair**, 2013; **Rosanvallon**, 2011; **Von-Reybrouck**, 2017).

The experiences presented in this paper add to this debate, highlighting the need to both improve how representative democracy works and promote direct democracy initiatives. Although these approaches differ, they often coincide in their references to new technologies, sometimes used to enhance the performance of election systems and other times to gather citizens' proposals without political intermediation.

2.2. Between aggregation and deliberation

As explained earlier, we are interested in exploring not only who exercises power in democracy, but also how this takes place. Thus, beyond the well-known distinction between direct and representative democracy, we find a second distinction between aggregative and deliberative models (**Barber**, 2020; **Mansbridge**, 1981), i.e. between decision-making processes based on individual voting and those based on collective dialogue. Both models coexist in the experiences we intend to analyse.

On the one hand, aggregative democracy holds that the best way to make decisions is precisely by aggregating individual preferences as expressed through each citizen's vote. This perspective is linked to the utilitarian positions of the 19th century and was later developed by the advocates of an economic theory of democracy (**Downs**, 1957; **Schumpeter**, 1994). Aggregative democracy thus emphasises individual preferences and how these are aggregated through voting processes. In this sense, it is commonly said that aggregative democracy stems from a view of people as selfish maximisers of their individual preferences, as in **Mcpherson**'s (1964) possessive individualism.

Aggregative democracy also prompts us to ask whether individual competences and abilities are enough to produce good collective decisions. In this respect, **Manin** (1997) and **Sartori** (2007) remind us that the great advantage of representative models is that, despite relying on the votes of uninformed or unknowledgeable people, collective decisions do not suffer because voters do not directly make decisions, but instead use their vote to choose those who will. Thinking about our case studies, we should ask whether vote aggregation works in the same way when we choose representatives as when we intend to make decisions; that is, when we move towards forms of direct democracy.

We also need to consider what minimum rules and criteria we should demand from aggregation processes. The quality of aggregative democracy is usually linked to voter turnout and whether or not the voter profile is biased. Both criteria should be taken into account when analysing our case studies, especially considering the impact of new technologies on participation levels and the type of people who take part. We know, in this regard, that digital platforms favor the participation of professional, middle-class, and younger-than-average people in face-to-face processes (**Klinger**; **Russmann**, 2015; **Rottinghaus**; **Escher**, 2020).

On the other hand, over the last decades we have witnessed a broad academic debate around the deliberative model (**Besson**; **Martí**, 2006; **Fishkin**, 1991; **Gutmann**; **Thompson**, 2004; **Habermas**, 1984). Positions have oscillated between idealists who draw on **Habermas**'s (1984) communicative ideal and pragmatists who include more flexible and emotional forms of discourse (**Bächtiger** *et al.*, 2010). Nowadays, the balance has shifted towards the latter. It should also be borne in mind that deliberative experiences were at first rather experimental, such as deliberative surveys (**Fishkin**, 1991). Today, deliberative initiatives are increasingly linked to real and effective decision-making processes, for example the citizens' assemblies in Ireland, Canada and Belgium (**Ganuza**; **Mendiharat**, 2020). The digital experiences that we will analyse in the case of Catalonia involve this deliberative dimension, but we must determine whether they have a relevant scope and a real impact on public decisions.

In any case, it is important to know what conditions make deliberative democracy work well. We will highlight two of them. Firstly, deliberative democracy does not work by aggregating votes, but by encouraging different people to exchange their views. In other words, instead of conceiving people as being selfish and incapable of coming together, this model is based on the idea that we are indeed capable of meeting, engaging in discussion and even moving forward together despite our differences of opinion. We should therefore look at the Estonian and Catalan experiences in terms of their ability to foster an exchange of views and the conditions that are conducive to this (**Fischer**, 2003; **Hajer**; **Wagenaar**, 2003).

Secondly, for deliberation to succeed, it requires citizens who are not only tolerant but also respectful and able to put themselves in the place of others. Deliberation does not demand, at least in its pragmatic versions, that consensus be reached, but that the positions of others be listened to and respected. In this regard, as **Barber** (1984) aptly explains, in a deliberative process not only are views exchanged but, just as importantly, relationships are established that allow us to understand and recognise one another. This is a reflection that we will need to transfer to our case studies by analysing to what extent those experiences facilitate an exchange of views and mutual understanding and recognition. This will depend on several variables, such as the length of time the participatory process lasts, the number of times we can interact online with the same people and how the online spaces for deliberation are designed.

2.3. Technology at the service of different models of democracy

Society and politics are becoming more digital, and this can be an opportunity to renew and transform the prevailing model of representative democracy towards more participatory models of direct or deliberative democracy. However, the use of digital technologies does not imply an automatic or deterministic transformation of democracy (**Morozov**, 2013). The terms digital democracy and e-democracy are often used to describe this digital move, but we need to analyse specific cases where digital tools have been implemented and study their link to the political system overall if we are to determine their true transformative potential. The digitalization of democracy or the implementation of e-democracy implies embracing in certain ways specific models of democracy that depend on how political decisions are made and by whom.

Digital technologies can transform the classical, "of the moderns" model of representative democracy through three dimensions:

a) Political disintermediation, that is when citizens make political decisions directly thanks to digital platforms and electronic voting, without the need for representatives. Digitally enabled disintermediation processes have been advocated by protest movements criticising the representative political elite (e.g., the *15 May* movement) and by new parties such as the pirate parties, *Movimento 5 Stelle*, *Podemos* and *BCNenComú*. However, the use of platforms in these parties has not eliminated political representation within the parties themselves and in some cases has even reinforced central leadership through the easy holding of online plebiscites (**Deseriis**; **Vittori**, 2019). From the opposite point of view, which is often neoliberal in nature, the possibility is raised that by extending the use of platforms and artificial intelligence systems such as algorithms or blockchain, the role of government, political institutions and public administration can be reduced to coordination and law and order. For example, *Government as a Platform* proposals conceive of government as an open-source technological platform where active users can make all political decisions, collaborate with each other and innovate, without the need for intermediaries (**O'Reilly**, 2011).

b) Large-scale, cross-level political participation and deliberation, that is where platforms broaden areas, spaces and topics for participation and deliberation and make it possible to gather numerous proposals and encourage multiple citizen discussions. The so-called complex participatory platforms[1] offer a wide array of functions, are highly flexible in terms of combining and organising processes, enable app and social media integration, and possess technical crowdsourcing capabilities. In this regard, these new technologies can push the limits of representative democracy where citizens only vote in elections or participate in specific processes that are restricted in time, topic and impact.

c) Open government, that is digitalisation focussed mainly on improving the performance of representative government through increased transparency, data circulation, accountability of the representatives and citizen collaboration in public policy (**Oszlak**, 2014). In this case, the perspective is top-down and technology serves to deliver better public services, develop better public policies through citizen participation and achieve greater legitimacy of representative institutions (**Fung**, 2015).

3. The case studies: Estonia and Catalonia

For our study, the cases of Estonia and Catalonia have been chosen as paradigmatic and revealing examples (**Yin**, 2019) of how technological innovations serve different models of democracy and how these models may eventually evolve over time. Our description of these cases is based on previous studies employing various quantitative and qualitative research techniques and on our review of how these technological innovations have developed in these two cases.

3.1. Methodology

Estonia and Catalonia have been chosen because they are both well positioned in indices concerning democratic quality[2] and their population's access to new technologies,[3] but they differ in terms of their use in the political system. As we shall see, Estonia has taken a mainly top-down, managerial approach to the expansion of e-voting to all levels of government and e-government, while in Catalonia technologies have been used more to facilitate and broaden local participatory processes with elements of deliberative and direct democracy. In Catalonia, the impetus for participatory platforms initially came from the urban social movements that emerged after the economic crisis, although many political institutions are now promoting their deployment (**Bua**; **Bussu**, 2020). This different use of technologies is in line with Spain's (and thus Catalonia's) much better results in the deliberative and participatory aspects of some democratic quality indices, such as the *V-DEM* (2020, p. 34).

For the case studies presented below, we have drawn on various studies and reports that have employed different quantitative techniques (e.g. analysis of the number of participants and other data from e-voting and participatory platforms) and qualitative techniques (e.g. interviews with officials from the public administrations involved, interviews with experts, and reviews of official documents and the prevailing legal framework).

The analysis of the Estonian data comes mainly from studies conducted to analyse the cost-efficiency of the Estonian online voting model (**Krimmer**; **Duenas-Cid**; **Krivonosova**, 2021), as well as from the contagion effect that ensued in other parts of the Estonian administration after the voting system was developed (**Krimmer**; **Duenas-Cid**, 2019). In both cases, the information gathered comes from in-depth interviews with experts, direct observation of the development of online voting, and the analysis of secondary data and applicable legislation.

Data on the Catalan case come from previous studies examining the number of registered citizens and the proposals and comments made on the *Decidim* platform in Catalan municipalities (**Borge**; **Balcells**; **Padró-Solanet** *et al.*, 2018; **Borge**; **Balcells**; **Padró-Solanet**, 2019) and have been brought up to date by observing the current development and expansion of this platform. In these studies, interviews and surveys were also carried out with the public officials in charge of the platform's deployment.

3.2. Estonia

Background

Estonia, the Digital Republic of the Baltic (**Heller**, 2017), has in recent years become e-Estonia, a benchmark in public administration's digitalisation (**Alvarez** *et al.*, 2009; **Kitsing**, 2011). The country's transformation from yet another post-Soviet republic to contemporary Estonia can be explained, according to **Kalvet** (2012), by

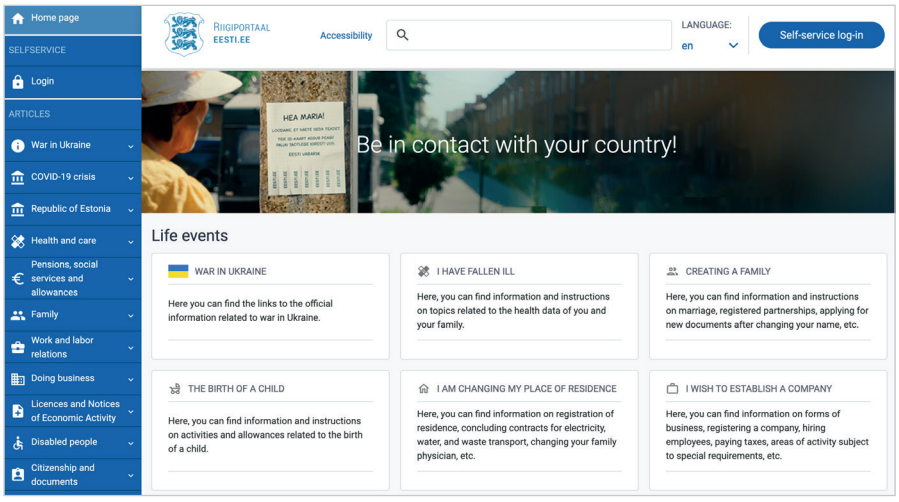
- the informal leadership of banks in developing the online business model;
- civil servants trained and motivated in the field of digital technologies;
- a political environment focussed on the development of an e-governance model as a driver of the country's development (**Ernsdorff**; **Berbec**, 2007);
- the legal framework's quick adaptation to the needs of the country's digitalisation process (**Drechsler**; **Madise**, 2004);
- the creation of a stable funding model to facilitate such development;
- the creation and widespread adoption of an electronic identity document (Digital ID); and
- public-private cooperation to legitimise and give substance to the e-government model.

Sarapuu and **Saarnit** (2020) add that this process ties in with the transformation of the Soviet public administration model and its replacement with one that is decentralised, privatised, neo-liberalised and in line with the predispositions towards independence and individualism that are so strongly rooted in Estonian culture.

The development of the Estonian e-government model and, thus, the online voting system, follows a clear top-down approach: it is proposed and promoted by the administration and ruling class and then accepted by the general public. Its capacity to transform administrative processes and generate time and resource savings, both for the administration and for citizens, is one of the factors that have facilitated its continued development and acceptance. The e-Estonia model rests on three pillars:

- the system where data are crossed between citizens and services, called *X-Road*, which ensures that data are delivered only once to the administration, which is then responsible for delivering them to the different services it offers, i.e. the once-only principle;
- the aforementioned Digital ID, which serves as an individual access key to the services; and
- the *eesti.ee* website, which is the point where the more than 2,600 digital services offered by the country are made available.

Within this e-government model, internet voting (i-voting) is one of the flagships, with Estonia being the only country in the world to use this system in all elections (local, national and European) continuously since 2005 (**Solvak**; **Vassil**, 2016).



https://www.eesti.ee

Characteristics and functioning

The Estonian online voting system displays a series of characteristics that make it interesting for our comparison.

Firstly, as discussed above, the project was developed by the government as part of its digitalisation process and subsequently adopted by the public (**Méndez**, 2010), which sets it apart from other models, such as the one in Switzerland (**Méndez**; **Serdült**, 2017).

Secondly, the success of the online voting system stands in contrast to the failure of other experiments in electronic citizen participation. The studies by **Toots**, **Kalvet** and **Krimmer** (2016) and **Toots** (2019) report up to three attempts in this field that did not achieve the desired success.

The first of these, *TOM* (*Täna Otsustan Mina* – Today I Decide) was a system created in 2001 to facilitate the submission of legislative and policy proposals by citizens that failed due to the small number of participants, the low quality of the proposed ideas, their limited impact and the administration's unwillingness to engage in dialogue, which led to the project's cancellation.

The second, *Osale.ee*, was an iteration of the previous project created in 2004 as part of a policy to encourage citizen involvement in government and involved the creation of an e-participation portal to improve the transparency, openness, quality and legitimacy of decision-making processes (**Hinsberg**, 2007). Although the portal is still in operation, its limited use is due to a number of problems, as identified by **Toots** (2019), ranging from project management failures to user resistance.

The third case that falls along these lines is that of *Rahvakogu* (Citizen assembly), a participatory democracy tool created in 2013 to reverse the trend towards a lack of trust in the political class. The tool was linked to an online platform to allow people to discuss proposals for reforming laws relating to the development of political life and democracy. The participatory process concluded with 15 proposals being submitted to parliament, three of them being accepted and others being partially implemented or transformed into suggestions for developing the role of government. However, according to **Toots** (2019), the process did not succeed in improving levels of trust in institutions as intended.

In contrast to the above, and circling back to the characteristics that make the Estonian model an interesting case for comparison, this paradox between the success of the internet voting model and the failed attempts to promote electronic citizen participation systems has led internet voting to be considered a possible solution. In recent years, the use of i-voting has spread to other levels of government and society (**Krimmer**; **Duenas-Cid**, 2019), for example in participatory budgeting to bring political decision-making to the people (**Krenjova**; **Raudla**, 2018). The use of online voting systems designed specifically for use at the local level sometimes entails technological limitations that may violate data privacy. As a result, and in order to increase the security of online voting at the local level, the electoral office is working to allow the electoral system used throughout the country to be deployed at other levels of government. Access to the population census makes it possible to segment the electorate that may be eligible to vote, facilitating, for example, its use in decision-making processes at the urban level (only those registered in a given city) or segregating the electorate in other ways (e.g. only those in certain age groups).

In search of efficiency

Many of Estonia's e-government development measures carry the idea that they enable more efficient resource management, which saves time and money for both the public administration and citizens, and allows for a move towards a thin administration model (**Kitsing**, 2011). The online voting system falls into this category. While it adds complexity to election administration (**Krivonosova**, 2021), Estonian online voting is much more cost-efficient than the other face-to-face voting methods offered to Estonian citizens (**Krimmer**; **Duenas-Cid**; **Krivonosova**, 2021). Efficiency is also intended to make voting easier for voters; implementing measures to make the voting process more convenient is assumed to increase voter turnout (**Celeste** *et al.*, 2006). Studies in Estonia show interesting results in this regard. Firstly, internet voting has not led to a significant increase in turnout, initially being adopted only by already politically mobilised groups of citizens. However, it has maximised the chances of electoral activation among traditionally excluded groups, as at least a small portion of them has started to vote online (**Vassil**; **Weber**, 2011). Secondly, convenience in voting is habit-forming, and voters who use the internet do not return to other voting systems, gradually expanding the number of people who use this system (**Solvak**; **Vassil**, 2018).

This model, following the logic of other examples of innovation in election technology, clearly seeks efficiency for the administration and assumes a number of positive impacts for citizens (**Goodman**; **Smith**, 2017). Nevertheless, many voices have been raised in Estonia against this form of voting due to security risks (**Springall** *et al.*, 2014), but also in other places where similar systems have been or are used, such as the Netherlands (**Oostveen**, 2010; **Oostveen**; **Van-den-Besselaar**, 2004), Norway (**Gjøsteen**, 2012) and Australia (**Halderman**; **Teague**, 2015). The argument of the risks associated with an online voting system in national elections is often cited as one of the reasons why the system fails to spread to other countries (**Licht** *et al.*, 2021). However, online voting is finding a foothold for expansion at other electoral levels (regional, local), to facilitate voting for certain groups of voters (expatriates) or to support decision-making in participatory processes. Several factors explain this uneven distribution, including the lower security requirements associated with such elections or the less politically charged nature of the results.

3.3. Catalonia

Background

Catalonia stands out for its tradition of participatory processes at the local level and for the decisive support given to them by various public bodies (government, provincial councils, the *Localret* consortium of municipalities, etc.). Since the 1990s, as has been the case in other Spanish autonomous communities such as Andalusia, the Basque Country, Madrid, and Valencia, citizen participation at the local level has been promoted through collective bodies such as city and neighborhood councils, and initiatives for individual participation such as citizen juries or participatory budgeting (**Gomà**; **Font**, 2001). Moreover, at the beginning of the 21st century, there were notable online experiences such as *Democracia.web*, a website run by the *Catalan Parliament* to collect citizens' proposals and amendments to the laws debated in *Parliament*, and *Consensus*, another website with numerous participatory channels including online voting, online mailboxes for communication with the mayor and councillors, forums for citizen debate and the possibility for communities to organise online.

The economic crisis in 2008 and the ensuing budgetary restrictions in local public bodies put an end to many of these initiatives, but they made a strong comeback in the second decade of the 21st century. A key moment was the municipal elections of 2015, which saw the victory in Barcelona of a new left-wing coalition –*Barcelona en Comú*– heir to the *Indignados* or *15 May* protest movement. The main channels of communication and organisation of the *Indignados* were online platforms and social media. Many of its members supported the free software movement and the hacker ethic and advocated direct, technology-mediated democracy without intermediaries. After the election victories of the parties and confluences inherited from the *15 May* movement in cities such as Madrid and Barcelona, many of these activists reached local governments and began to deploy the open-source, free-software participatory platforms *Consul* and *Decidim*.

Expansion

In 2016 *Barcelona City Council* implemented the *Decidim* platform to channel the city's participatory processes. In 2017, the platform was launched in six more municipalities in the Barcelona metropolitan area and in five more municipalities, mainly in the province of Barcelona. In 2018, a new wave of municipalities, many of them small and belonging to other Catalan provinces, deployed *Decidim* with the help of their provincial councils. From 2018 onwards, the Government of Catalonia and the provincial councils of Barcelona and Girona embraced the platform for their participatory processes. As of April 2020, 62 Catalan municipalities use the platform, reaching 53% of the Catalan population, with a total of 289 participatory processes carried out. More than 400 cities, governments, parliaments, associations and cooperatives in 40 countries around the world use the platform, reaching more than 1 million registered citizens worldwide.[4]

Characteristics and functioning

The *Decidim* platform is used to enable all sorts of participatory processes in Catalonia. It is an example of many countries' new government trend towards using open-source, free-software civic technologies for the mass participation of citizens, associations and collectivities in a wide variety of processes (**Aragón** *et al.*, 2017; **Kankanhalli** *et al.*, 2017; **Mergel**, 2015). The platform has mainly been used for participatory processes with a high decision-making impact, such as municipal action plans or participatory budgeting. In fact, many councils have turned to the platform to carry out participatory budgeting for the first time. The result has been a massive influx of citizen proposals that municipalities have been able to group, filter and respond to in a more organised and visible way through the platform, although sometimes they have been overwhelmed by the sheer number of proposals and have failed to give adequate feedback. To a lesser extent, citizen consultations or referendums have been organised and citizen initiatives or petitions have been allowed. The platform's various participatory capabilities can be activated or deactivated at the discretion of each municipality. Many of them have focussed on long, complex and deliberative participatory processes, while petitions, and referendums are not usually activated due to prevailing legal restrictions and political reluctance.

Another aspect to highlight is the existence of the *Metadecidim* network and the *Decidim* Association, which form a community of local and international users, IT specialists and managers who supervise the need-based updates that should be made to the platform. Many of its members come from the *15 May* protest and the free-software movement, forming a kind of vanguard that defends free and open-source programs and direct and deliberative democracy in the platform's implementation.

https://decidim.org/es

The deliberation approach

Among the *Decidim* platform's innovative features are the comments and debate modules, which are similar to chat rooms or social media and are inspired by the structure of *Reddit*, allowing for asynchronous interaction among a large number of participants. The comments module is usually activated to allow discussion for or against proposals put forward by citizens, while in debates, policy-makers answer citizens' questions. The debate module has not actually been activated in most municipalities, but comment sections have been opened in 47% of the municipalities (April 2020) as part of various participatory processes. There have been participatory processes such as the *Barcelona municipal and district action plan* (2016-2019), which drew thousands of comments (18,192) and proposals (10,860). There have also been hundreds of comments in large municipalities such as Terrassa (Municipal action plan 2017) and Badalona (Municipal action plan 2016) and in medium-sized municipalities such as Sant Cugat (participatory budgeting in 2018) (**Borge**; **Balcells**; **Padró-Solanet** *et al.*, 2018). The number of comments in participatory budgeting debates in smaller municipalities such as Calafell and Salou is also noteworthy.

However, while there may be many comments, this does not necessarily equate to dialogue between citizens who express their opinion on proposals presented by other citizens. Analyses of the comments posted about the *Barcelona municipal action plan* show that 89% are merely reactions or responses to the initial proposal and do not lead to conversations that could be described as deliberation (**Aragón** *et al.*, 2017). Conversely, when a response is made against a first comment, this is very likely to trigger long conversations with deliberative characteristics, including rational arguments using data and facts or more personal and emotion-driven arguments (**Aragón** *et al.*, 2017; **Borge**; **Balcells**; **Padró-Solanet**, 2019).

In any case, face-to-face deliberation is often combined with online deliberation. In the usual participatory processes, such as participatory budgeting or municipal action plans, proposals and comments are first collected through the platform and then the proposals are debated and improved in face-to-face workshops and meetings. Finally, in the case of participatory budgeting, proposals are voted on by citizens through the platform. However, the pandemic has disrupted these procedures, with workshops and meetings being held via videoconferences (including their associated chats) hosted on the *Decidim* platform or other platforms. Hybrid formats that combine face-to-face and online methods are also being used for participatory bodies with a deliberative component, such as public hearings or neighbourhood councils. These online or hybrid set-ups are likely to continue in the future, as digital technologies are consolidated in deliberative processes. In addition, one of the most recent technological innovations is the creation of an online voting system which, as the coordinator of *Decidim* himself states in the system presentation, aims to deepen democratic radicalism by creating more possibilities for and instances of citizen voting.[5]

4. Discussion

The aim of this text is to discuss the positions of the Estonian and Catalan experiences in relation to the who and how of decision-making processes. If we take the framework described above (Table 1) and plot the Estonian and Catalan cases, we can see how markedly different their starting point are (Figure 1).

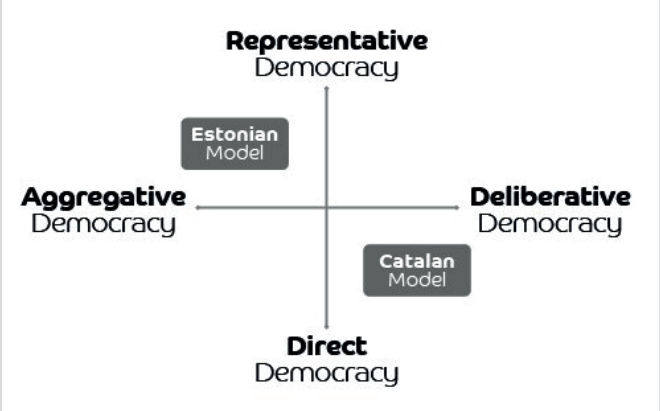


Figure 1. The Estonian and Catalan cases according to the democracy models

In the Estonian model, as mentioned above, the predominant objectives are the search for efficiency in public administration and the improvement of representative government by facilitating easier and greater citizen participation through online voting. In the Catalan case, the original objective was to enhance citizen participation both quantitatively (number of participants, more spaces for participation) and qualitatively (spaces for deliberation). These initial differences are due to the different driving forces behind the use of technologies for decision-making. In the first case, the model follows a clear top-down approach: the administration proposes, the citizenry disposes. In the second case, the model is institutionalised from the bottom up, starting with the *15 May* movement as a critique of political intermediation and to achieve greater citizen influence in decision-making. However, the initial models have not remained static and have evolved throughout their implementation, leading to a new scenario that we will now outline by analysing the two axes separately.

4.1. Aggregation – Deliberation: meeting in the middle

The discussion between aggregation and deliberation is defined by the potential of each model to draw a greater number of participants, to raise the number of issues and areas in which citizens can decide, and to foster a higher quality of decision-making among citizens themselves. If we approach the discussion from the aggregation side, internet voting systems, as electoral innovation processes intended to facilitate voting for the electorate (**Gronke** *et al.*, 2008), seek to

enable greater turnout. While the first aspect is evident in that internet voting reduces the cost of voting for citizens by making it easier for them, studies are inconclusive with respect to the claimed increase in voter turnout (**Germann**; **Serdült**, 2017). However, the data from the Estonian case do suggest that online voting allows people to access the decision-making process more equally,

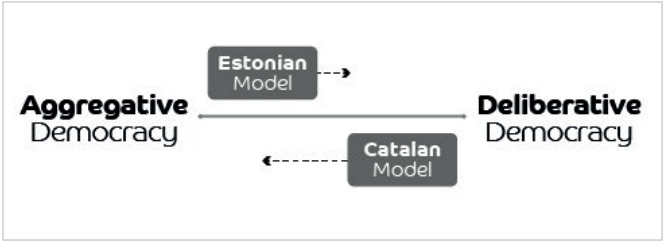


Figure 2. Estonia and Catalonia on the aggregation/deliberation axis

> "not only for the already connected and resourceful, but also for the less privileged, who have fewer resources and remain at the periphery of using modern technologies" (**Vassil** *et al.*, 2016, p. 458).

The advantages of the Estonian model thus centre on facilitating voting for the aggregation of the electorate's decisions. In contrast, a recurrent criticism of citizen deliberation and participation systems is their difficulty in involving broad spectrums of the population and in diversifying the socio-economic profile of their participants (**Rottinghaus**; **Escher**, 2020), with the consequent loss of democratic legitimacy of the decisions that are made, insofar as it cannot be ascertained that they represent the majority will of the people.

If we approach it from the perspective of deliberation, the potential of the Catalan model is much greater, insofar as digital platforms for participation have made it possible to collect numerous citizen proposals and increase collaborative initiatives among citizens, as well as encourage debates on proposals and initiatives. The result of this is an increase in the spectrum of perspectives or visions that exist around any given topic of debate and an improvement of the information available to facilitate political decision-making. This potential, by contrast, is not associated with online voting systems which, by definition, only allow for a choice between a number of pre-agreed options (whether two, as in referendums, or more, as in ballots) and do not allow for the emergence or discussion of new ideas or options.

However, as illustrated in Figure 2, both positions are moving towards a middle ground, as both projects are making converging decisions: Estonia's projects to extend participatory budgeting and the use of online voting in such budgeting, as well as the online petition system that includes spaces for comments and debate,[6] are in line with adding deliberation to decision-making. Meanwhile, the incorporation of online voting methods in the Catalan participatory system seeks to broaden the participant base both numerically and inclusively. This convergence at the mid-point is the result of a two-fold process. On the one hand, the aggregative proposal is attractive because it simplifies problems and allows citizens direct access to decision-making. Although this simplification is problematic because it means reducing complexity to positions that can be voted on in a plebiscite, the addition of deliberative components allows the approach to be broadened once again. On the other hand, from the deliberative position, incorporating voting systems enhances the already existing capacity for exchanging arguments among informed and motivated citizens by adding the possibility of involving broad sectors of the population. To this end, it is already customary in Catalonia's participatory budgeting processes for the final phase of voting on proposals to be carried out through the platform, in order to try to reach a larger number of citizens than just those who have taken part in deliberating and presenting the proposals. Moreover, in some municipalities such as Barcelona, democratic innovations have been proposed, such as the *Citizen Initiatives Review*, where a final vote open to all citizens would be held on proposals previously discussed in deliberative meetings.

4.2. Representation – Direct democracy: the complexity of changing the system

In relation to the second axis, the debate focusses on the genuine ability to propose a realistic alternative to the well-established representative democracy. The original promise of the *15 May* protests to implement direct democracy through participatory platforms has not been consolidated during *Decidim*'s institutionalisation in Catalonia, as it has proved impossible to move away from the logic of representative democracy. What has certainly been achieved in the Catalan model is the addition of deliberative components and the massive collection of proposals and inputs from citizens, which can improve representatives' decision-making by adding information, perspectives and solutions. On the representative side, the Estonian model is becoming more established, according to voter usage data, and this is facilitating its introduction at other levels of government and other forms of election, which feeds the idea of opening the door to more direct forms of democracy, in which citizens can be consulted beyond electoral contests.

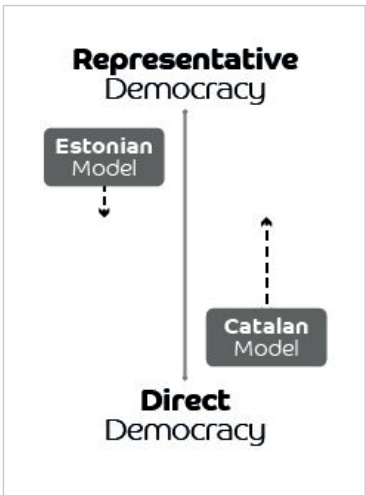


Figure 3. Estonia and Catalonia on the representative/direct axis

Despite the fact that the representative system is consolidated in a significant part of the world, there is no shortage of voices calling attention to the growing distance between those who govern and those who are governed (**Mair**, 2013), and it is precisely this need to create channels of continuous connection with the public and to legitimise political decisions that opens the door to forms of more direct, citizen-led management of democracy. These are technically feasi-

ble through digital platforms or online voting systems, but, as we have seen in the Catalan and Estonian cases, they will only be deployed if there is a political will to cede more sovereignty to citizens and propose new paradigms of public governance (**Peña-López**, 2020).

5. Conclusion: Toward a mixed model?

All of the above leads us to move both models to similar positions and lower expectations, in order to form a mixed model that feeds back on accumulated experiences. Thus, both the Estonian model's approach to participatory decision-making processes and Catalonia's adoption of online voting systems fall within the quadrant of representative-aggregative democracy, but approach central positions in relation to deliberation and direct democracy, creating a scenario that is probably more realistic about the possibilities of ICT-based democratic innovation.

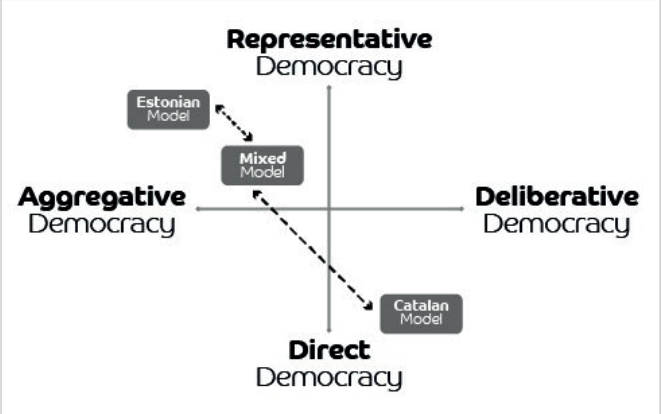


Figure 4. Mixed model

The combined use of online voting and participatory digital platforms can, at the same time, facilitate discussion and decision-making processes. Specifically, it can make it possible to organise a greater number of consultations and elections and to do so more efficiently, increasing the possibility of collecting proposals and inputs from citizens and allowing citizens and groups to self-organise, as well as making participatory processes more visible and transparent. Moreover, it can facilitate the creation of new political habits both for citizens and for the political class and public administration.

This potential mixed model would rest on three basic pillars:

a) It must be able to combine its different objectives without setting them against each other, as it is just as important to encourage citizens' involvement as it is to improve representation. The who and the how, more direct or more deliberative, can be combined depending on the occasion.

b) Technology can be used to simultaneously make advancements on the various fronts outlined in the theoretical section:

- improving representation through participatory platforms (efficiency and legitimacy);
- incorporating more online spaces for deliberation and citizen participation in decision-making; and
- experimenting with relevant instances of direct democracy by combining platforms and e-voting rather than a generalised implementation of the direct model of democracy.

c) It should be technically demanding in order to reduce the potential risks that technology deployment entails. In particular, a security standard must be implemented both in elections and at all levels of decision-making. Neglecting this dimension would have a negative impact on the model as a whole.

The choice is not between representative or direct democracy, or between aggregative or deliberative democracy, but between a minority democracy with certain authoritarian overtones and a mixed model that bases its strength on both citizen participation and the recognition of its fragility. Technology, as we have described, can serve different aims, but its transformative role will only be realised if it bolsters the democratic values of our societies, encourages citizen involvement and helps to improve political management.

Democracy has been defined by the classics as eunomy, that is, balance. Balance between differing interests and preferences, but also balance between the multiple dimensions of democracy itself (representative, direct, aggregative, and deliberative). **Canovan** (1999) reminded us of the need to balance the two souls of democracy. On the one hand, a pragmatic soul that must efficiently solve everyday problems and, on the other, a redemptive soul that proposes values and projects for the future. Through the cases of Estonia and Catalonia we have observed how, from different positions, the multiple dimensions of democracy appear and balance each other out. Although this balance is always unstable and under threat, it is also the basis on which democracy's strength to govern the complexity of human societies rests.

6. Notes

1. See: *https://es.peoplepowered.org/digital-participation-platforms*

2. According to the *V-DEM 2020 index* (p. 32), both Estonia and Spain (and therefore Catalonia) are among the top 10% of countries in the *Liberal democracy index*. Other similar indices, such as the *World electoral freedom index 2020* (**Peña**, 2020), place Spain in a worse position, but always in the high electoral freedom band (pp. 34-35).

3. Check figures close to or above 90% of the population having access to the internet at home and using the internet on a daily basis in both Spain and Estonia (*Eurostat*, 2021).

4. See: *https://decidim-census.digidemlab.org*

5. Live presentation of the online voting systemin streaming.
https://meta.decidim.org/assemblies/eix-comunitat/f/149/meetings/1576?commentId=24098

6. See: *https://petitsioon.ee*

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