

# Challenges and Opportunities of Democracy in the Digital Society

Abraham Bernstein<sup>\*1</sup>, Anita Gohdes<sup>\*2</sup>, Cristina Sarasua<sup>†3</sup>,  
Steffen Staab<sup>\*4</sup>, and Beth Simone Noveck<sup>\*5</sup>

1 Universität Zürich, CH. [ernstein@ifi.uzh.ch](mailto:ernstein@ifi.uzh.ch)

2 Hertie School – Berlin, DE. [gohdes@hertie-school.org](mailto:gohdes@hertie-school.org)

3 Universität Zürich, CH. [sarasua@ifi.uzh.ch](mailto:sarasua@ifi.uzh.ch)

4 University of Stuttgart, DE. [steffen.staab@ipvs.uni-stuttgart.de](mailto:steffen.staab@ipvs.uni-stuttgart.de)

5 New York University, US. [noveck@thegovlab.org](mailto:noveck@thegovlab.org)

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## Abstract

Digital technologies amplify and change societal processes. So far, society and intellectuals have painted two extremes of viewing the effects of the digital transformation on democratic life. While the early 2000s to mid-2010s declared the “liberating” aspects of digital technology, the post-Brexit events and the 2016 US elections have emphasized the “dark side” of the digital revolution. Now, explicit effort is needed to go beyond tech saviorism or doom scenarios.

To this end, we organized the Dagstuhl Seminar 22361 “Challenges and Opportunities of Democracy in the Digital Society” to discuss the future of digital democracy.

This report presents a summary of the seminar, which took place in Dagstuhl in September 2022. The seminar attracted scientific scholars from various disciplines, including political science, computer science, jurisprudence, and communication science, as well as civic technology practitioners.

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## 1 Executive Summary

*Abraham Bernstein (University of Zurich, CH)*

*Anita Gohdes (Hertie School, DE)*

*Cristina Sarasua (University of Zurich, CH)*

*Steffen Staab (University of Stuttgart, DE)*

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In this Dagstuhl Seminar, we aimed to have interdisciplinary discussions on the *challenges* and *opportunities* of online platforms, online participation, and online deliberation, including experts in politics, law, technology, governance, and policy-making.

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\* Editor / Organizer

† Editorial Assistant / Collector



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In order to achieve a thorough integration of perspectives, we started the first day of the seminar with several keynote talks by scholars from political science, computer science, communication and law. The keynote speakers were Fabrizio Gilardi (Universität Zürich), Anna de Liddo (Open University), Pablo Aragón (Wikimedia Foundation), Eleni Kyza (Cyprus University of Technology), and Felix Uhlmann (Universität Zürich). After these talks, the seminar organized a brainstorming session to identify key discussion topics related to democracy in the digital society. Based on these discussion topics, the participants worked on six breakout sessions: *Goals, Actors, Narratives and Bias, Structure, Technology, and Success Metrics*. Additionally, throughout the seminar, Markus Brill (Technical University of Berlin), Abraham Bernstein (Universität Zürich), Róbert Bjarnason (Citizens Foundation), Gefion Thürmer (King's College London), Gianluca Demartini (University of Queensland), and Harith Alani (Open University) gave short presentations on various topics including computational social choice, diversity in news recommender systems, citizen science, and misinformation.

The remainder of this report provides the abstracts of the talks and the group discussions.

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## 3 Overview of Keynote Talks

### 3.1 Problem Definition in the Digital Democracy

*Fabrizio Gilardi (Universität Zürich, CH)*

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Digital technology is widely perceived to cause important problems, such as fake news, hate speech, and political polarization, which call for policy responses. However, there is no consensus on the specific nature or intensity of those problems nor, therefore, what kinds of actions would be appropriate. On the one hand, there is nothing special about this lack of agreement. The contestation of the nature of problems and solutions is a key feature of politics, in any area. On the other hand, the tension is particularly significant in the area of digital technology: policy-makers often struggle to fully understand the issues, and problem definition is subject to a high degree of political contestation enabled by digital technology itself. The talk discussed these questions and illustrated them through three specific analyses: (1) the emergence of content moderation as a political issue, (2) the effects of decentralised social media on user sharing behavior, and (3) the role of media coverage for platform policy change.

### 3.2 Harnessing the Power of Constructive Disagreement to Enable Healthier Public Deliberation

*Anna De Liddo (The Open University – Milton Keynes, GB)*

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There are no simple solutions to complex societal challenges. Whether it is climate change or dealing with the devastating impacts of the coronavirus pandemic, the questions these problems pose to humanity have no single correct answer. Addressing them requires the collaboration of governments, charities, businesses and individuals. However, at a time when society seems to be dominated by dogma and discord, building consensus on what action to take may seem like the biggest hurdle to overcome. We cannot overlook the role of the Internet in fomenting divisions. Fake news and social media bubbles filter our reality and have the power to entrench us on one side of the argument, preventing us from understanding the views of others. However, research on Collective Intelligence also notes that technology can be a powerful tool to help us find common ground, even in cases where it seems we could not be further apart.

For more than a decade, I have argued for a new kind of collective intelligence, elsewhere referred to as Contested Collective Intelligence (CCI), which is mediated by new technologies for dialogue and argumentation and specifically aims to help people make sense of and co-create innovative solutions to complicated challenges. The CCI tools that we have developed harness the power of technology to enable people around the world to construct shared understandings, even when, at first glance, they disagree. Combining advanced computational methods, such as natural language processing and machine learning, with intuitive multimedia

interactions, these user-friendly tools harness and structure online conversations to identify stated and unstated points of agreement within a discussion group and in this way help the group better understand and address complex problems.

In this talk, I provided a brief overview of Contested Collective Intelligence research and presented two of our CCI tools: [bcause.app](#) and [democraticreflection.org](#).

### 3.3 Decidim: Technopolitical Networks for Participatory Democracy

*Pablo Aragón (Wikimedia Foundation – Barcelona, ES)*

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strategicDecidim ([decidim.org](#)) is a digital platform for participatory democracy, built entirely and collaboratively as free open source software. More specifically, Decidim is a web environment that allows anyone to create and configure a technopolitical network. The platform can be deployed by any organization (local/regional/national governments, universities, nonprofits) to host large-scale citizen participatory processes for strategic planning, participatory budgeting, public consultations and collaborative policy-making. The project was launched in 2017 in Barcelona and, 5 years later, there are hundreds of active instances around the world. In this talk, key lessons from research and practice with Decidim were shared, including the impact of its deliberative platform design and the technopolitical principles that guide the participatory development of the project.

### 3.4 Challenges and Opportunities of E-democracy from the Perspective of Communication Studies

*Eleni Kyza (Cyprus University of Technology – Limassol, CY)*

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This talk was organized in three parts. The first part revolved around communication studies and the calls for a need to re-define core definitions and operationalizations of communication studies, so that the pivotal role of AI technologies is acknowledged and examined. Towards this end, there is increasing discussion about examining the agentic role of AI, in addition to the traditional anthropocentric conceptualization of the study of communication. In the second part of my talk, I presented some examples from a recently concluded work from the Horizon 2020 project Co-Inform (Co-Creating Misinformation Resilient Societies, proposal 770302). Our focus in this work was on investigating how a co-created browser plugin influenced citizens' perception of misinformation and their subsequent actions. As part of this talk, I also briefly discussed the media and information literacy implications of such work for learning, education, and the design of such interventions. I concluded the talk with a summary of open areas of inquiry, informed by the Co-Inform work on how to combat misinformation on social media.

### 3.5 What is Democracy from a Legal Perspective and What Can Computers Do for It – Again, from a Legal Perspective?

*Felix Uhlmann (Universität Zürich, CH)*

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Democracy is more than a decision by the majority. It is also the rule of law, encompassing fundamental rights such as freedom of expression, property, access to courts etc. on the individual level and institutions with defined competencies such as parliament, government etc. on the institutional level. Democracy is also a process. The involvement of citizens in the legislative process, the transparency of the debate as well as on financing are essential for the functioning of a modern democracy. Switzerland has opted for quite a radical system allowing popular initiatives to amend more or less any article of the Swiss constitution.

Access to large quantities of data, artificial intelligence or both elements combined may fundamentally influence democracy. They may enhance the consultation process initiated from the authorities as well as bring together like-minded people to draft and launch a popular initiative. These possibilities are still unexplored both by private and state actors.

## 4 Overview of Short Talks

### 4.1 Computational Social Choice and Digital Democracy

*Markus Brill (TU Berlin, DE)*

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The successful design of digital democracy systems presents a multidisciplinary research challenge. In this short presentation, I explained what computational social choice is and I argued why tools and techniques from this field are relevant for the design of online decision-making platforms and other digital democracy systems.

### 4.2 Escaping the Echo Chamber: The Quest for the Normative News Recommender Systems

*Abraham Bernstein (Universität Zürich, CH)*

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Recommender systems and social networks are often faulted to be the cause for creating Echo Chambers – settings where people mostly encounter news that match their preferences or those that are popular among similar users, resulting in their isolation inside familiar but insulated information silos. Echo chambers, in turn, have been attributed to be one cause for the polarization of society, which leads to the increased difficulty to promote tolerance, build consensus, and forge compromises.

To escape these echo chambers, we propose to change the focus of recommender systems from optimizing prediction accuracy only to considering measures for social cohesion. The talk also succinctly presented some results from an empirical study investigating if such a recommender system would actually have the desired results (see [1] for details).

## References

- 1 Lucien Heitz, Juliane A. Lischka, Alena Birrer, Bibek Paudel, Suzanne Tolmeijer, Laura Laugwitz, and Abraham Bernstein. Benefits of diverse news recommendations for democracy: A user study. *Digital Journalism*, pages 1–21, 2022.

### 4.3 Citizens Foundation. Connecting Governments & Citizens

*Róbert Bjarnason (Citizens Foundation Iceland – Reykjavik, IS)*

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 Róbert Bjarnason

Many believe technology has undermined our faith in debate online; instead, our work shows non-profit innovations in technology restoring trust in democratic deliberation and institutions. Our partners, like Reykjavík city, the State of New Jersey, the Scottish Parliament, and World Bank, have used our solutions, making better decisions in thousands of projects in 45 countries since 2008. Your Priorities offers open-source idea generation and deliberation. Connecting governments and citizens by bringing people together to debate and prioritize innovative ideas to improve their communities. The Better Reykjavik project was started in 2010 and has now become institutionalized in Reykjavik. It is an example of mass online community participation with 70,000 citizens engaging out of a population of 120,000; over 40,000 registered users submitted 11,000 ideas and 25,000 debate points. Another example is the Scottish Parliament using Your Priorities to engage with citizens in Scotland. The challenge addressed is that the Scottish Parliament committees must better understand the needs of Scottish citizens concerning various subjects.

### 4.4 Addressing Misinformation through Innovation, Arts, and Citizen Science

*Gefion Thürmer (King's College London, GB)*

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 Gefion Thürmer

Misinformation can be addressed in different ways. The MediaFutures project does so by engaging with start-ups and artists (separately and together) who create products and artworks that improve fact-checking, increase media literacy, or raise awareness in society. The Action and Impetus projects support citizen science initiatives. They seek ways to engage citizens in the entire scientific process, from asking questions through collecting data to confronting policy makers with their results – which in turn raises scientific literacy and awareness.

## 4.5 The Anatomy of an AI System for Misinformation Detection, and Where Humans Fit in It

*Gianluca Demartini (The University of Queensland, AU)*

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Information warfare instruments have recently been used to weaponize misinformation to foster propaganda and to reach political goals by influencing populations at scale. In this talk, we discussed how human-in-the-loop AI technology can support expert fact-checking efforts that have been increasing substantially due to the rise in the spread of misinformation. We first described the general fact-checking process and then discuss at which steps AI and humans can help. We looked at how Twitter has been crowdsourcing fact-checking, as an example of fact-checking on social media. Finally, we reflected on the human bias dimension in fact-checking, and at how the concept of truth may change over time and over different definitions of truthfulness.

## 4.6 Have You Been Misinformed?

*Harith Alani (The Open University – Milton Keynes, GB)*

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As long as there has been information, there has been misinformation. During the last few years, a lot of attention has been paid to developing tools that can detect which information is reliable and which is likely to be fake or misinforming. However, we are still learning how, when, and where such advanced technologies or the work of fact-checkers around the world can help in stopping misinformation from spreading. My goal in this talk was to demonstrate that we also hold false or unreliable beliefs and argue that we need technologies that can assess the information we and others share over time. Additionally, I discussed the benefits, challenges, and risks of using automated methods for correcting people when they share misinformation.

# 5 Working Groups

## 5.1 Goals

*Lynda Hardman (CWI – Amsterdam, NL & Utrecht University, NL) and Abraham Bernstein (Universität Zürich, CH)*

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We discussed possible audiences for publications inspired by the seminar. These include policymakers, funding agencies, research evaluators, academics, citizens (in general) and

activists.<sup>1</sup> We recommended that addressing policymakers and academics would have the higher priority.

The goals we discussed were aimed at the stages of the democratic process for which (computational) support could be provided. At a high level, the goals we identified were:

1. Citizens
  - Inform, as a basis for forming an opinion
  - Ensure that citizens (and other actors) have appropriate and verifiable information for their decision making
  - Deliberate, as a basis for forming an opinion
  - Ensure that citizens have sufficient opportunities to expose themselves to different opinions and deliberations (incentives for) engagement (with both politicians and administrations/civil servants)
2. Procedural/Institutional
  - Improve the democratic processes through appropriate technology
  - Protect individuals from repercussions due to their political activity

In addition to developing the goals of technological support for democratic processes, we identified the common goals with a complementary initiative: the “Vienna Manifesto on Digital Humanism”.<sup>2</sup>

## 5.2 Actors

*Marco Steenbergen (Universität Zürich, CH), Fynn Bachmann (Universität Zürich, CH), Eleni Kyza (Cyprus University of Technology – Limassol, CY) and Cristina Sarasua (Universität Zürich, CH)*

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With floundering trust in politics and declining electoral participation rates in many of the world’s democracies, the call for efforts to re-engage citizens grows ever louder. Over the past two decades, this has resulted in a large number of different participatory formats, including participatory budgeting, citizen juries, and minipublics. In nearly all cases, the number of participants in those formats has been limited. Digitalization offers new opportunities to create large-scale deliberations and co-creation projects for citizens. Scale is important because public acceptance of new participatory forms is enhanced when large segments of the public are represented. There have already been excellent experiments with large-scale technology-aided deliberation (see the keynote by Pablo Aragón).

Just because one builds platforms, however, does not mean that all problems of participation are resolved. It is very clear that unequal participation from different groups in society remains an urgent problem. These problems start with recruitment but do not end there. Citizens may not be active participants, they may not be heard because they are less well equipped expressing their views, and they may ultimately drop out, perhaps more frustrated than they started. A major challenge in the digital age is to engage citizens, to retain them, and to ensure that they find an effective voice in deliberative and co-creative platforms. We

<sup>1</sup> Representatives of organisations active in promoting higher citizen involvement in democratic decision-making had been invited to the seminar but were unfortunately unable to join.

<sup>2</sup> Vienna Manifesto on Digital Humanism <https://dighum.ec.tuwien.ac.at/dighum-manifesto/>

think here of automatic moderation, which detects when certain individuals have fallen silent or have made inputs that have gone unanswered. We can also think of assistive technologies that help citizens sort and formulate their ideas and arguments in order to enhance their impact.

While citizens are key actors in democratic society, we cannot lose sight of other actors, including political parties, representatives, and bureaucrats. We still find that parties and representatives have a tenuous grip of digital technology. Opportunities are missed and risks under-estimated. Enhancing digital skills within the representative and executive institutions is essential if democracy is to flourish in the digital age. Here, the principles laid out in the goals should be a guiding light.

### 5.3 Narratives and Bias

*Fabrizio Gilardi (Universität Zürich, CH), Anita Gohdes (Hertie School of Governance – Berlin, DE), Farane Jalali (Max Planck Institute for Informatics (MPI), DE), Jörn Lamla (University of Kassel, DE), Catarina Pereira (Universität Zürich, CH) and Miklovana Tuci (Universität Zürich, CH)*

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The group discussed the relevance of narratives about digital technology and democracy, and how they are lined to perceived dangers such as misinformation, echo chambers, and the reproduction of bias through algorithmic decision-making. Importantly, there may be a significant mismatch between the discourse around those dangers (e.g. in the media) and their actual importance. An example is “fake news,” which were widely discussed as a main driver of political events such as Brexit and the election of Donald Trump. Verification of those claims by independent researchers was initially very difficult due to problems of access to social media data, which platforms (in particular Facebook) obstructed with arguments linked to privacy and data protection. When reliable research findings became available, they tended to disconfirm many of the ideas around fake news. For example, several independent studies, using different data and methods, concluded that the consumption and sharing of fake news is – on average – very low. Instead, they are concentrated among a specific subgroup of people who tend to be older and very conservative. While these findings do not imply that fake news are not a problem, they point to different policy responses than the initial narrative did.

Against this background, the group discussed specific issues driving the power of narratives about digital technology and democracy and inhibiting research that could challenge them, namely, the ground truth problem. The ground truth problem means that agreeing on categories (e.g., what is “fake news”?) is inherently contested, which makes it very difficult to monitor them. Moreover, there is often a denominator problem, that is, the lack of a benchmark to assess the prevalence of behaviors. By contrast, the media have no trouble finding examples: there is a lot of everything on the internet. Furthermore, both ground truth and denominators are moving targets, because of potentially rapid change in underlying problems (e.g., COVID and the Ukraine war) as well as the relevance and user base of different platforms (e.g., the rise of TikTok).

The group discussion concluded with a brainstorming session regarding possible solutions as broader recommendations.

## 5.4 Structures in Digital Democracy

*Steffen Staab (University of Stuttgart, DE), Markus Brill (TU Berlin, DE), Martin Emmer (FU Berlin, DE), Jörn Lamla (University of Kassel, DE), Libor Pavlíček (Charles University – Prague, CZ), and Gefion Thürmer (King’s College London, GB)*

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A common way to break down the policy life cycle results in the following five stages:

1. Agenda setting
2. Policy formulation
3. Decision making
4. Policy implementation
5. Policy evaluation

Usually, this process is a loop, as after policy evaluation the policy may be terminated and a new agenda might be set or discussion about the existing policy may continue. The reader may note that the process does not need to be strictly sequential and stages may be skipped or repeated.

The working group discussed whether and how the digitalization of democracy means changing these existing stages by rethinking and restructuring process steps, or whether the overall process is stable and the speed and the agility of the process change. We addressed this question by discussing the past, the present and the desired future execution of policy life cycle stages as follows:

Considering stage 1, digitalization has profoundly changed the means for agenda setting. In the past, media gatekeepers have hugely influenced agenda setting and were not easily swayed by activists. Nowadays, traditional media still play a major role, but social media enlarge the set of voices that are heard, which may help minorities, but which increasingly often leads to information overload of the public. As a consequence, few topics are high on the agenda and many lower ranked topics tend to be forgotten. Specific tools like Decidim may help to spread the valuation of importance more evenly among a broader range of topics and, hence, their regular use should help in the future. A core objective for the future would be to “make uncertainty productive”. Current discussions often lead to overly simplistic solutions, where only few aspects are considered because of information overload. If future tools and processes could help to manage a multiplicity of uncertain dimensions, agenda items could be managed in ways that would improve the joint satisfaction of multiple goals.

Considering stage 2, in the past policy formulation could be characterized by tight control by executive and legislative powers who oversaw control of relevant knowledge. Political parties and lobby groups were highly active and only in a minority of cases activism and street protests would contribute. Today, there is a tendency towards increased transparency. Social media-supported activism has led to new kinds of protests that increased the number of actors, while political parties exhibit declining numbers of members. Because of digitalization, knowledge can and is more broadly shared allowing the broad public to know about details of formulated policies.

With regard to the future, we argue in favor of increased transparency about lobbyism and specifically transparency of the policy formulation process. Because of increased complexity of regulations, it is not only important what is written, but who wrote it. Overseeing implications of policies seems only possible by stronger collaborations between politicians and professionals in order to achieve evidence-based policy formulation. Many questions

remain open about such co-design of policies: who has access? Who has the right to be heard by their representative? How is consultation fed back to the public commenters?

Considering stage 3, decision-making may change more slowly than other aspects of the policy life cycle. Thereby, the success of novel means of e-voting or liquid democracy does not only depend on the process, but on the assumptions underlying this process. When voting is strictly confidential (as it is in Germany), there does not seem to exist a technology that makes e-voting as sound proof as traditional voting with paper ballots. This is different, if votes can be made public, because then it becomes easy to monitor the soundness of an electronic voting process.

Considering stage 4, in the past policy implementation focused on guiding people by giving or taking money and imposing court orders. Today, we observe a digital turn in connection with a behavioral turn trying to nudge people using behavioral politics and behavioral economics or appealing to citizens as an alternative or complementary means to imposing laws.

For the future, we would wish for governmental processes to be streamlined by digitalization for efficiency and effectiveness as well as an administration that seamlessly serves the citizens rather than imposing heavy administrative burdens on citizens and organizations. A key ingredient to such support may be the real-time observation of individuals and organizations, which, however, bears the dangers of ubiquitous surveillance and manipulation, as they have become obvious in experiments with social credit systems. It remains an open question how to take advantage of benefits while avoiding these heavy drawbacks – and whether this is possible at all.

Little progress has been seen regarding stage 5, policy evaluation. In the future, we might perhaps see more comprehensive consultation and feedback by the public. It would be desirable to formulate key performance indicators that can be reported automatically already during policy formulation. Also, open data might help to judge appropriateness of policies.

Finally, these structures need to be understood and elaborated in terms of overarching or meta perspectives of these process stages. As illustrated by the overarching objective of (non-)anonymity of voting, these meta perspectives may deeply affect the working of the digitalization-enhanced policy life cycle.

## 5.5 Technology: Challenges and Opportunities of Technology for Democracy

*Anna De Liddo (The Open University – Milton Keynes, GB), Harith Alani (The Open University – Milton Keynes, GB) and Pablo Aragón (Wikimedia Foundation – Barcelona, ES)*

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Within the technology group, we first examined what technology can do for democracy. We tried to ask ourselves which democratic challenges we think are particularly well suited to be addressed by a technology-mediated approach, and we asked what are the main challenges and opportunities we see emerging in the near future in the field of technology research for democracy. These challenges and opportunities are summarised below. We propose them as key points of focus for the fields of computer, social and political sciences interested in the study, design and application of technology for democracy.

### 5.5.1 Challenges

1. **Fair and inclusive technology design.** How can we make fairness and inclusion the key values not only behind technology design but also behind tech governance, regulation and applications?
2. **Testing, experimentation and evaluation at scale and in the wild.** Advancing scientific knowledge on technology for democracy requires solid testing in, often, controlled environments. But democracy experiments are often very costly or impossible to carry out in the wild. How can we enable testing, experimentation and evaluation at different (smaller) scales that leads to solid scientific insights?
3. **Online social dynamics and influence of existing digital practices.** In a blended socio-technical system as our society is nowadays, digital practice have proved to radically influence real world practice, organisations and even power. On that account, it is a fundamental question to ask: How can we study the influence of the digital world on the analog world and vice versa? How do we account for, monitor, and counteract negative influences, while leveraging the positive ones?
4. **New economic models for neutral/open sustainability.** Digitally mediated democratic research, technologies and experiments need political endorsement and financial support to become self sustainable and survive the research project lifespan. But such support and endorsement can hardly come from economic systems of models which brake fundamental values such as equity, inclusion, fairness and democracy. Hence a key challenge for this research to thrive is: what Economic models, based on democratic values, can be designed and devised to support, enable research in technology for democracy?

### 5.5.2 Opportunities

5. **Re-engage people in public and civic life.** Citizen disengagement from politics and public life is one of the fundamental reasons for the systemic failure of our democracy (see, for example, the result of the last Italian general elections, which saw only slightly more than 50 percent of Italians go to the polls). The public has difficulty relating to politics and often believes that it is only a context of victories and defeats that cannot be influenced by individual action (much less individual voting). New technologies can be used to make politics more interesting, fairer, more engaging, and even more fun. Improving participation can be the first step and the way to solve the dangerous problem of political disempowerment.
6. **Improve minority representation in public choices.** New technologies to improve representation in decision-making contexts can be key to enabling minority voices to be represented in democratic realities.
7. **Improve trust in politics by enhancing fairness, transparency and accountability.** Citizens are increasingly concerned about transparency and accountability in the functioning of any democratic institution, but at the same time they have become increasingly aware of the issue of data privacy. New decentralized technologies and distributed ledger systems can provide transparency without endangering individual privacy.
8. **Improve sharing of resources and expertise across geographical barriers.** The Open Science, Open Data, and Open Education movements have demonstrated that technology can improve access to science, information, and education for communities around the world that lack the infrastructure, money, or human resources to obtain them. These technologies are inherently suited to democratize access to knowledge across geographic, economic, and social barriers.

9. **Informing new democratic models, social justice and redistribution of power.** Successful examples of digital democracy projects have shown that technology can be used to disrupt power, protest and mobilize the masses. These examples show the opportunities that technology can offer to bring democracy to places where it is not taken for granted.
10. **Increasing the reach of participation.** Social media have shown that ICT tools can radically broaden participation in many social processes such as commerce, education, work and socialization. Building on this potential, we ask: What does new technology need to grow democracy?

### 5.5.3 Definition of Technologies in/for Democracy? (Technology as a Medium and Actor)

What are democratic technologies? We have been reflecting on the difference between “Technologies in Democracy”, that is, technologies used to promote, mediate, or participate in democratic processes in general, and “Technologies for Democracy”, that is, tools designed, repurposed, or adapted specifically to improve democratic processes. “Technologies for democracy” are intended to influence and change the way democratic processes take place. This distinction is useful for classifying different types of technologies and studying the contexts in which they are applied. We examined the current classification of democratic technologies in the HCI and CSCW fields and found the focus on civic technologies as tools for enhancing democratic participation particularly inspiring. Civic technology has been defined by Saldivar et al. “as technology (primarily information technology) that facilitates democratic governance among citizens.” [1] Government- and citizen-centered definitions of civic technology for democratic participation are useful in focusing attention on the role of governments in democratic technology research.

A government-centered view of civic technologies, for example, would include all ICT tools used “by cities for service delivery, civic engagement, and data analysis to inform decision-making (Living Cities 2012)” (Saldivar et al. 2019). These could be ordinary social media or data collection and integration services. While a citizen-centric definition of civic tech presents it as “platforms and applications that enable citizens to connect and collaborate with each other and with government [2]” [1].

Both definitions mention government involvement, but the second only tangentially. This means that democratic technology research also takes place outside existing government structures and institutions. A citizen-centered view of democratic participation tools looks at democratic governance rather than formal democratic institutions, and thus includes a variety of democratic practices that emerge and flourish outside formal institutions.

However, an important question to ask is: To what extent should civic technologies aim to influence and change the way governance processes take place in order to be classified as democratic technologies (or technologies for democracy)?

The need for future research to clarify existing definitions and classifications of democratic technologies is identified.

### 5.5.4 Stories of Success, Failure and Disruption

Reflecting on the most recent stories of success, failure and disruption of technology applications in real-world democratic contexts, we have come to two main reflections, which we offer for further discussion and insight.

- **We cannot solve technology when the problem stems from the economic model**

A famous case in which technology was used to undermine (rather than improve) democracy was Cambridge Analytica’s use of Facebook data to influence the 2016 U.S. election. Every effort on the part of the company (Facebook) to “fix” the problem seems to have gone in vain, as the use of social media data and the spread of disinformation is now an unstoppable social phenomenon that has become “a problem” in its own right and, most importantly, as the economic model behind the technology remains profit.<sup>3</sup> We ask ourselves: Do democratic technologies have a “hidden” requirement, a design value of any democratic tool, namely the need for such tools to be based on economic models that are democratic in themselves and do not pursue the profit of the few?

- **Digital democracy seems to work when technology is used to distribute power.**

Successful digital democracy projects with democratic technology at their core seem to emerge in power structures that are open and, in some ways, conducive to changing existing democratic structures and practices. This cultural and political engagement, together with concrete public and financial support from official local institutions, seems to have been a key success factor for digital democracy projects such as “Better Reykjavik”, “e-Democracia”, and Decidim.Barcelona.<sup>4</sup> These projects have grown and sustained due to the strong support of local councils and official government institutions. These institutions have provided approval, continued funding, and a platform to proactively change democratic practices at the local level. We ask: to what extent can democratic technologies and digital democracy projects succeed without such a framework and institutional support?

### 5.5.5 Fields of Interest

Finally, we have attempted to list a number of issues and research questions that require urgent attention from the interdisciplinary research community on democratic technologies or technologies in/for democracy, as we conceptualized them above. The list is by no means conclusive and is intended as a source of inspiration for future research.

- Explainability/Intervention
  - Explainability: Identifying why a claim or argument that is misleading or incorrect is key to changing perception and opinion. It remains unclear how to do this effectively.
  - Measuring success/impact of intervention should not be limited to changing the opinion of the target individual. Audience matters, too.
- Collective Intelligence
  - Computational social choice can provide mechanisms for the aggregation of individual preferences.
  - In the field of deliberation, it is not clear what the best way to aggregate/summarize discussions is.
  - Visual analytics to support deliberation processes
  - Can AI improve CI and vice versa?
    - \* Machine-in-the-loop vs. human-in-the-loop

<sup>3</sup> <https://www.technologyreview.com/2021/03/11/1020600/facebook-responsible-ai-misinformation>

<sup>4</sup> <https://www.theguardian.com/public-leaders-network/2017/feb/23/democracy-digital-lessons-brazil-iceland-spain>

- Misinformation
  - Multilinguality
  - Multimedia: current tech is very text focused.
  - Bias: most models are trained on misinformation in particular topics / platforms.
  - Long-term impact: tools/methods to capture and process the long term impact of collective misinformation are needed (e.g., tracking misinformation towards the EU over many years).
  - Accountability: holding politicians/influencers accountable
  - Economic disincentivization of disinformation
  - Changing policy, business model, and practice towards promoting “good” information and behavior.
- Polarization
  - Tech to (a) measure polarization on given topics, and (b) identify the main sources that are feeling this polarization (e.g., newsmedia, politicians, groups, bots?)
  - Capturing cross-polar argumentation
  - Detecting ideas/arguments bridging polarized scenarios
  - To what extent diversity and disagreement can help reduce polarization and build common ground?
- Sensemaking and critical thinking
  - Technology for slowing down
  - Slow tech for a better digital democracy <sup>5</sup>
  - Technology for sensemaking
  - Technology for stability vs agility
- Experimentation
  - Resource inequality (big tech vs civic tech)
  - Experimentation design challenges (costs, large-scale, in the wild)
  - Who is responsible for designing experiments?
  - Inclusiveness of experimentation and testing of relevant tech

## References

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## 5.6 Success Metrics

Marco Steenbergen (*Universität Zürich, CH*), Harith Alani (*The Open University – Milton Keynes, GB*), Abraham Bernstein (*Universität Zürich, CH*), Cristina Sarasua (*Universität Zürich, CH*) and Gefion Thürmer (*King’s College London, GB*)

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Democracy serves many purposes. It lends legitimacy to authority and decisions, it solves problems, and it engages citizens, to name a few. These purposes should be reflected in our metrics. Depending on the function, however, not all metrics are equally relevant. For

<sup>5</sup> <https://medium.com/qleek/the-slow-tech-manifesto-1b39fbc1c48>

instance, creating respectful discourse of all claims, no matter how outlandish, is important when the goal is engagement. On the other hand, it likely introduces many inefficiencies when the goal is to solve an urgent problem. All functions should find a place somewhere in democracy, but they do not necessarily have to be satisfied all at once.

When building technologies that assist democratic processes, it is important to keep an eye on function: what specific goal should this solution cater to. The measure of success is then defined in terms of that goal. This functionalist logic is increasingly found in normative theories of (deliberative) democracy.

That said, we can specify a series of general metrics, a subset of which may be crucial for a specific purpose. We list them here in several rubrics.

1. **Representation:** Is a technology capable of bringing in all of the stakeholders in a topic? Metrics include a comparison of those formally partaking to the public. Beyond this, one can also look at *active* participation and reciprocation (are all the arguments of all stakeholders heard?).
2. **Respect:** Does a technology enhance respectful interaction among citizens? In an age of affective polarization across political parties and groups, respectful discourse often seems in short supply. A minimum standard for technology is that it cools down discourse to the point that hate speech is eliminated. Higher bars can be set, however, such as the degree of perspective-taking: even if person A continues to disagree with B, can they at least understand and respect where B is coming from?
3. **Output:** Does a co-creation or deliberative process yield an output that is helpful, for instance, to policy-makers? Here, one can think of the legal quality of a proposed law or the factual accuracy of an epistemic discussion. Digital technologies should help citizens and policy-makers to reach high-quality outcomes, as judged by experts.
4. **Legitimacy:** Are the outcomes of human-in-the-loop or computer-in-the-loop deliberative and co-creative processes acceptable to those who did not participate? Metrics here include survey-based measures of acceptance.

## Participants

- Harith Alani  
The Open University –  
Milton Keynes, GB
- Pablo Aragón  
Wikimedia Foundation –  
Barcelona, ES
- Fynn Bachmann  
Universität Zürich, CH
- Abraham Bernstein  
Universität Zürich, CH
- Markus Brill  
TU Berlin, DE
- Anna De Liddo  
The Open University –  
Milton Keynes, GB
- Martin Emmer  
FU Berlin, DE
- Fabrizio Gilard  
Universität Zürich, CH
- Anita Gohdes  
Hertie School of Governance –  
Berlin, DE
- Lynda Hardman  
CWI – Amsterdam, NL &  
Utrecht University, NL
- Farane Jalali  
Max Planck Institute for  
Informatics (MPI), DE
- Eleni Kyza  
Cyprus University of Technology  
– Limassol, CY
- Jörn Lamla  
University of Kassel, DE
- Libor Pavlíček  
Charles University – Prague, CZ
- Catarina Pereira  
Universität Zürich, CH
- Cristina Sarasua  
Universität Zürich, CH
- Steffen Staab  
University of Stuttgart, DE
- Marco Steenbergen  
Universität Zürich, CH
- Gefion Thürmer  
King's College London, GB
- Miklovana Tuci  
Universität Zürich, CH
- Felix Uhlmann  
Universität Zürich, CH



## Remote Participants

- Róbert Bjarnason  
Citizens Foundation Iceland –  
Reykjavik, IS
- Soon Ae Chun  
CUNY College of  
Staten Island, US
- Gianluca Demartini  
The University of Queensland –  
Brisbane, AU
- Karsten Donnay  
Universität Zürich, CH
- Andreas Jungherr  
University of Bamberg, DE
- Valeria Vuk  
Universität Zürich, CH