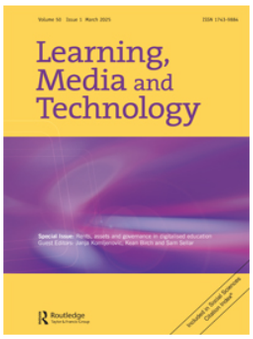

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Building data citizenship and learning to resist in the datafied society

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ABSTRACT

This paper explores what literacies people need to challenge big tech companies. We selected key digital rights practitioners, who mediate between policy and public awareness and have diverse experiences in working with people to critique and change the power asymmetries we have with big tech companies. Investigating how citizens can negotiate with big tech companies based on the experts' insights highlighted the inequalities involved and how data literacy stands as a collective and structural barrier. Four key themes emerged from the interviews: contextual awareness, real or imagined concerns, who is responsible for creating and solving problems, and resistance possibilities. Drawing on the Data Citizenship framework, we show how these findings can be translated into civic action which involve different actors: government, Big-Tech, media, NGOs, and society. Importantly, we found it was difficult to imagine what an 'ideal world' would look like. Therefore, we argue that once we can imagine and verbalize how we want our data-driven future to look like, it will be easier to proactively strategize and work towards it.

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Data citizenship; data literacies; data justice; digital rights; imagination; power asymmetries

Introduction

Across the world, people's lives have become inseparable from digital data. From health and education systems, to banking, transportation, work, romantic relationships, and family – different platforms are rendering our social lives into data in many ways (Carmi 2020). While governments argue that this is progress and the way forward to achieve innovation, citizens are not really given any other options. People from poorer backgrounds, such as low-income earners, older generations, refugees, and asylum seekers cannot even afford stable, private, and secure internet access and therefore, they are excluded from essential services and democratic participation altogether (Dixon 2022). This phenomenon has been called 'the digital/data divide' (Hargittai 2003) and 'data poverty' to demonstrate the perpetuation of social inequalities in the digital landscape (Dixon 2022).

People are more aware of power imbalances, specifically regarding the ways big technology companies (Big-Tech; referring to organizations such as Facebook/Meta, Amazon, Apple, Google/Alphabet) (ab)use their data. These include physical and mental health (self)harm, discrimination of life opportunities (jobs/mortgages/insurance), voter suppression, increased hate crimes/violence/

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harassment/bullying, and being influenced by mis/dis-information and conspiracy theories. However, while people get glimpses of the harms, many feel powerless against them and therefore the awareness does not always lead to effective change. In this paper, we interview digital rights experts about their experiences with campaigns their organizations ran with citizens to understand their views on how to turn awareness into meaningful action.

While some scholars argue that people have become resigned to Big-Tech spying on them (Draper and Turow 2019), others say that people feel apathy or cynicism, specifically about their online privacy and feel that things are 'inevitable' (Hargittai and Marwick 2016). This feeling of 'inevitability' has been described as *surveillance realism* (Dencik 2018), a situation whereby people have accepted and 'given up' trying to resist or create alternative narratives because the surveillance capitalism (Zuboff 2019) narrative has dominated our societies.

Our research on UK citizens' data literacies (Carmi and Yates 2023) shows that citizens care about the power asymmetries created by Big-Tech but do not know what to do about it. So, while these technologies and services harm individuals and societies, it is not always clear what can be done about these injustices. This relates to people's lack of data literacies, or more specifically data citizenship (ibid; Castañeda et al. 2024), that looks beyond functional actions and understanding and aims to equip people with civic knowledge about their data rights and participatory practices in the datafied society. Similar views are made by McDougall (2024) about digital citizenship whereby he argues that people need to convert media and information literacy into positive consequences for them and their communities, in order to be resilient, value democracy, and make a positive social change.

In this paper, we tackle this issue by asking digital rights Non-Governmental Organizations' (NGO) practitioners about their experience on what mobilizes citizens to act against Big Tech, and how data citizenship can offer possible ways forward for society to take. NGO practitioners work across legal, technical, and advocacy domains to expose and change the way digital technologies harm and exploit people. Their experience in running campaigns that are driven by people and communities' harms provide valuable insights and an opportunity to examine not just *what* people know and think about the datafied society, but also *how* this knowledge can be translated into actions meant to change the power asymmetries created by these companies.

Literature: digital rights and agency

In today's data-driven society, the integration of digital technology in daily life, specifically in the aftermath of the Covid-19 pandemic (Milan and Treré 2022), has given rise to new concerns and threats. With the increasing reliance on digital platforms and services, and the extraction of vast amounts of personal and collective data (Hintz et al. 2022), citizens' (re)actions have been examined within the frameworks of people's rights and agency. Our project sits at the intersection of three fields – data literacy, data justice and digital rights, and pulls a thread between them to weave a direction for the future of data citizenship. In this literature review, we offer a critical overview of the key debates in these fields, while identifying what is missing and explaining how data citizenship is the concept that can help us move forward.

Data literacy and data justice

Depending on data-driven technologies stresses the need for digital education which involves teaching people to understand the data ecosystem and respond in a way that fits them. Previously, this education received different names, based on the media technologies of the time, such as: 'media' (Aufderheide 1993), 'information' (Doyle 1994), 'algorithmic' (Katell et al. 2020), and 'data' (Carmi et al. 2020; Pangrazio and Selwyn 2019) literacy. We explain the difference between all these types of literacies elsewhere (Yates and Carmi 2024).

Data literacy is an often contested term (Fotopoulou 2021), which refers to the knowledge, skills, and abilities required to critically understand, analyze, and communicate with and about data. It can provide people with self-efficacy (Martens and Hobbs 2015), informed decision-making and civic engagement (Cohen et al. 2012; Polizzi 2025) in the datafied society. Data literacy may include formal, personal, and folk pedagogies of data, according to the types and uses of the data as well as the educational practices employed (Pangrazio and Sefton-Green 2020). In particular, formal pedagogies are applied in school or work environments, personal pedagogies concern everyday digital practices, while folk pedagogies operate in the context of public awareness campaigning.

Nevertheless, many approaches to data literacy adopt a 'transactional' perspective, assuming that once certain technical skills (such as installing an ad blocker) are learnt, data literacy is achieved (Mihailidis 2018). This neglects the fact that people need continuous learning to address, respond, and challenge social injustices (re)produced in the datafied society. Lacking ongoing support often leads to citizens' digital resignation (Draper and Turow 2019) and cynical attitudes towards data engagement (Mihailidis 2018). Most importantly, data literacy is frequently associated with individuals' responsibility to become literate which may create an unfair equation whereby people become responsible when things 'go wrong' (Kazansky 2015). In this context, data inequalities and power imbalances lead to the emergence of the concept of 'data justice' (Taylor 2017; Dencik et al. 2022) and the need to develop citizens' 'digital social capital' (Martens and Hobbs 2015).

Data justice has been extensively examined by the Data Justice Lab at Cardiff University in the United Kingdom, investigating issues around citizen scoring (Dencik et al. 2024), welfare services (Redden, Dencik, and Warne 2020), border control (Sánchez-Monedero and Dencik 2022), and others. Data justice is also linked with data literacy to enable citizens to 'think and act critically' and make responsible choices online (Martens and Hobbs 2015). To this end, data literacy goes beyond the individual to the networked societal level to inspire civic engagement. We call this *networks of literacy* (Yates and Carmi 2022), to describe how people engage with friends, colleagues, family, or any other network they belong to in order to gain digital understanding, skills and competencies in ways that fit them. Data justice corresponds with individual digital rights but also the 'capability of individuals to identify data (ab)uses and respond to them' (Carmi and Yates 2023).

Such abuses have occurred beyond Western countries, and global south scholars discuss data resistance practices conducted by citizens to counter data colonial epistemologies (Ricaurte 2019), and advocate for the development of technologies as well as targeted literacy programs designed for and by both marginalized communities and the programmers of technologies (Arora 2016). As Gutiérrez (2019) argues, people can proactively engage with data by generating data on their own terms, creating alternative maps, narratives or solutions that make sense to their communities and by doing so challenge top-down approaches. For example, Catherine D'Ignazio (2024), shows the Data Against Feminicide project which has provided a counter data archive for 'missing data' around women who are killed in Latin America, which involves monitoring media reports and advocating for changes in state data collection practices. Thus, the starting point for resistance can be achieved by providing citizens with data literacy skills such as critical thinking and justice-centered tools to resist existing technology-power asymmetries.

To explore the levels, forms, and opportunities for data literacy, considering social imaginaries is important. As Sally Wyatt (2004) argues, the future of technology is actively created in the present by using claims and counterclaims and are used by different actors to shape the future. Similarly, Kazansky and Milan (2021) argue that social imaginaries play an integral role in social and political life and operate as a mechanism for social representation. The construction and promotion of these imaginaries may rely on dominant actors and institutions such as the government and the media. But as Kazansky and Milan (2021, 377) suggest, the development of counter-imaginaries of what the 'datafied society' (Van Dijck 2014) can and should be, is crucial for civil society as resistance to dominant discourses. As they show in their analysis, civil society uses counter-imaginaries as a tactical response to what they perceive as threats to society's values

and ways of living, and these provide steps towards identifying responses and mobilizing publics into creating new ways of doing and being. Understanding how citizens interpret and imagine social justice over their digital data is important to determine and develop avenues to challenge existing hierarchies and inequalities, and that is a topic we examine further in this paper.

Digital rights social movements

Social movements and digital rights NGOs often rely on Big-Tech such as Meta (Facebook) and Twitter/X (and more recently Tiktok), as a place for digital assembling, documenting protests, and social mobilization (Barassi and Treré 2012; Breindl 2013). Those platforms enable citizens to assemble online to defend their rights, for example, the Indignados movement used platforms to mobilize, and the decidim.barcelona movement in Spain proposed a new participatory democracy platform for cities and organizations that empowers citizens to own and manage their data while contributing to policy-making (Peña-López 2019). Yet, there is a need to safeguard digital rights associated with using these same tools.

As Big-Tech expand their influence on multiple aspects of everyday life, protecting people's rights and liberties has become increasingly important. Digital rights NGOs have emerged as a response to growing concerns about online privacy, surveillance, censorship, data ownership, and other infringements on civil liberties in the digital era. These social movements, many of which stem from human rights movements (Franklin 2019), focus on promoting awareness about digital rights, and changing the current power asymmetries (Breindl 2013) to establish social justice through different forms of resistance.[1]

Developing cooperation among multiple actors and cross-sectors challenging Big-Tech relies on understanding their conduct and sharing imaginaries and values that inspire citizens to collectively imagine their world, change it, and shape their future (Wyatt 2004). According to the Data Justice Lab's report about civic participation (Hintz et al. 2022, 7), some of the imaginaries that were reflected in digital rights social movements concerned the treatment of data as a public good, the accountability of data processing actors, as well as the institutionalization of citizens' bodies and networks in policy-making. It requires critical thinking, doing, and participating in different aspects of the datafied society to be able to imagine alternative infrastructures or create avenues that benefit society rather than profit-driven rationale. In a way, it is a reimagination of what it means to be a citizen in a datafied society, or what we call data citizenship (Carmi and Yates 2023).

Data citizenship

Data citizenship is about what people can think and do about – and with – their data in democratic societies; it is about citizens' agency, rights, and responsibilities over their data and interactions. As we discuss elsewhere (Carmi and Yates 2023), *data-citizenship* draws on the work of democratic educators (Freire 1996), critical data studies (Van Dijck 2014) and digital citizenship (Isin and Ruppert 2015; Hintz, Dencik, and Wahl-Jorgensen 2017) scholars. The *data citizenship* framework we developed involves three dimensions: (1) *Data-Doing* – practical skills about handling and managing data; (2) *Data-Thinking* – critical skills as citizens view and analyze the world through data; (3) *Data-Participation* – proactive skills meant to enhance and improve citizens' everyday lives in their communities.

Citizens' digital rights are usually examined in the context of the digital surveillance they are constantly under (Kazansky and Milan 2021), the networked privacy they practice (Hargittai and Marwick 2016), and freedom of expression/access to information (Taylor 2017) while ensuring that citizens exercise their data rights democratically and effectively. Exercising digital rights can facilitate (pro)active civic participation that benefits individuals and their communities, and ethical engagement with data-related activities.

However, digital rights and their enforcement are often too focused on the individual, which is inspired by Western philosophies that center the individual as a 'rational' and 'informed' decision-

maker (Carmi 2021). This approach neglects to consider various social inequalities that prevent people from being 'informed', and the several manipulations, such as dark patterns (Narayanan et al. 2020), that are used to push people's emotional buttons. In other words, people's choices to make informed and rational decisions are engineered in multiple ways, and this produces another hurdle in challenging power asymmetries created by Big-Tech.

Although people say they care about their digital rights, they often adopt behaviors that contradict these claims such as clicking 'I agree' to all the cookie consent pop-ups they receive, a phenomenon called the 'privacy paradox' (Barnes 2006). This feeling of 'powerlessness' (Arriaga 2014) and 'digital resignation' (Draper and Turow 2019) reflects a wider societal concern in civic participation over the power imbalance Big-Tech creates and the inevitability of changing these unequal structures.

Yet, a legal framework to effectively protect citizens' rights is missing. While the European Union put forward the General Data Protection Regulation (2018), its ability to provide ordinary people with efficient tools for pushing back against Big-Tech practices has been questioned (Sanchez-Rola et al. 2019; Nouwens et al. 2020). Thus, citizens' capability to practice *data-thinking*, meaning critically understanding what is happening with their data and how the online ecosystem works, as well as *data-participating*, meaning investing time and effort to change this power asymmetry, remains challenging (Daskal 2018). One of the gaps in this area is understanding what skills, infrastructure, technologies, and institutions people need to be able to object to and resist Big-Tech. Thus, it is important to examine NGO practitioners' experience with digital rights campaigns and interactions with the public, especially what data literacies are required for people to try and challenge Big-Tech individually or collectively.

Methodology

The main objective of this study is to understand NGO perspectives on what mobilizes citizens to challenge Big-Tech companies based on virtual (via Zoom) semi-structured interviews with digital rights organizations during March-April 2023. Purposive sampling (Kelly 2010) was employed to identify and involve NGO practitioners with diverse experiences, roles, and interactions with the public over their digital rights. The sampling was intended to be illustrative and not representative of digital rights organizations. Affiliation with NGO organizations, professional expertise in promoting data citizenship and some levels of public engagement/advocacy were the vital inclusion criteria. Thus, key informants from Careful Trouble, Big Brother Watch, Witness, and Article 19 were involved in the study based on their differentiated professional encounters, responsibilities, and dialogue with the public. For example, one participant has been working on digital citizenship since 1997, while others have focused on specific issues associated with data rights such as security and governance in the Global South, e-democracy and policymaking to establish a healthy data ecosystem, activists' and defenders' engagement with digital platforms and whistleblowers' protection. These experts often operate in politically sensitive spaces, and work on legal cases and policy interventions that require discretion, which may discourage them from participation. Therefore, participants' names have been anonymized.

The transcripts were analyzed using Critical Thematic Analysis (CTA), which explores patterned meaning (Coffey and Atkinson 1996). We began with thematic analysis, following the phases outlined by Braun and Clarke (2021) and then interrogated the themes with a critical approach to capture the complexity of social attitudes and concerns around the operation of Big-Tech and how these construct ways to resist. For instance, the importance of the context in which public awareness around data is developed was a persistent theme. In our analysis, we also dive into the ways that citizens' reproduction of dominant knowledge is underscored by institutional forces, such as media power in shaping public opinion. CTA enabled the identification of specific 'typologies' in the data, for example, the variety of 'real' and 'imagined' risks, but also how these shape critical digital citizenship.

Ethics

Participants gave informed consent and could withdraw at any moment. All data was deleted from the devices of the researchers' laptops once the article was completed.

What mobilizes people against big data?

Four main themes emerged when examining the experiences of digital rights NGO experts around the types of literacies that are needed to mobilize people against Big-Tech: contextual awareness, real or imagined concerns, who is responsible for creating and solving the problems, and resistance possibilities. In this section, we explore each of these themes in relation to the literature.

1. Contextual awareness

The dependence on digital technologies requires the continuous development of literacies and skills to operate meaningfully and safely in the data ecosystem. Nevertheless, citizens tend to develop contextual awareness based on the visibility of issues that matter to them, which may result in spreading moral panics and/or ignoring digital citizenship abuse. In the interviews, NGO experts told us that people care about their data but often lack widespread knowledge about how their data may be used, which often causes anxiety and moral panic:

> The online world … I think things that have come out from that is a lot of anxiety and a lot of disempowerments of people feeling like they don't know what's going on.

Citizens are aware that they lack data literacies for informed civic engagement, which reduces their agency, while increasing the feeling of helplessness in changing this dynamic. Oftentimes, digital harms and abuse are seen as distant, complex, and abstract. However, as the experts observe, when people experience fraud or romance scam (e.g., catfishing) first-hand, then they become aware and concerned. Recognizing and understanding risks that correspond to concrete experiences enhances social imagination and mobilization, as the experts told us:

> For many people the harms feel quite abstract. The harms that people talk about like sort of data surveillance or, you know, serving up ads to most people, it feels like a harm that they've heard about.

The concept of social and counter imagination/imaginaries is crucial here (Kazansky and Milan 2021) as only those who manage to break from surveillance realism (Dencik 2018) and practice imagination, specifically around the fact that they might be at risk online – can think and act more critically in their datafied environments (Carmi and Yates 2023). Experiencing breaches of privacy, bullying, harassment, and other threats as part of people's everyday context mobilizes them to explore avenues to increase their data literacy and think critically about what they can do to object and negotiate Big-Tech power.

With the rise of specific social issues such as suicides (often linked to identity theft, online scams, cyberbullying, and privacy breaches) and sexual assaults (especially in the aftermath of the #MeToo movement) people have developed awareness around the uses of digital technologies and their data. As the NGO practitioners explain, when specific social issues gain media attention, they become more visible, real, and thus significant, which may motivate citizens' mobilization:

> I think the media has heavily guided where the attention towards tech comes in, and it's around free speech and privacy rather than some of the other really, really big risks.

Media outlets can support folk pedagogies by establishing awareness and informing *data-thinking* and *data-doing* around publicly acknowledged harms. Nevertheless, contextual awareness alone does not resolve the lack of widespread concern over data citizenship (ab)uses, which are at times neglected or ignored. Without robust and ongoing data literacies, responding to data rights violations remains a challenge.

2. Real or imagined concerns

The dominance of limited awareness around the use of data is linked with the ways citizens make sense of, construct, and respond to digital risks. NGO practitioners' interactions with people illustrated a new pattern of combined real and imagined concerns. Citizens may develop and share imagined concerns that do not reflect pragmatic dangers due to inadequate data literacies, which may contribute to widespread misinformation and distract attention from tangible threats. For example, often people assume digital technology to be able to resolve anything provided that Big-Tech invests enough money in the necessary tools, as explained by one NGO practitioner: 'There's a slight tendency towards the sort of magical technology thinking. If we've got a problem, then the algorithm fixes it, right?'

This example demonstrates the hopes and concerns that may be shared across the public and the lack of *data-thinking* to identify real digital threats (Hintz et al. 2022). Moreover, without *data-doing*, meaning the knowledge and confidence to use digital tools, citizens assume that technology is more powerful than them. Therefore, peope feel there is little to do about it and even less motivation to envision counter-imaginaries of empowered citizenship within the data ecosystem. But the types of concerns people have are also related to their lived experience. NGO experts collaborating with people in the Middle East expanded on citizens' distrust in Western Big-Tech. People in these regions are dissatisfied with the local regime and are worried that the government may control and manipulate their digital data. Here again, people's contextual everyday experiences, ideologies, and local politics shape how they understand these problems and respond accordingly.

At the same time, as the practitioners note, crucial risks regarding digital rights are being overlooked or ignored. The right to privacy has been shifted especially in the aftermath of the Covid-19 pandemic where people were expected to carry digital vaccine passports and scan QR codes to go to venues. Moreover, unprecedented situations like a global pandemic not only establish but also normalize a culture of surveillance (Marciano 2021) which appears to be necessary and inescapable:

> We found cases where thousands of phones had been tracked around vaccination centres, monitoring behavior. That's the kind of example where if there is some kind of future crisis, data and technology is suddenly used in ways that people weren't prepared for.

Failing to identify data abuses, specifically during times of crises, prevents people from *data-participating*, meaning exercising their data rights and achieving justice that matters to them and their communities. Not only citizens, but NGOs and civic organizations also find it difficult to avoid using these platforms. Importantly, when things go wrong, there is little power to challenge digital rights abuse through Big-Tech's mechanisms, which was a consensus shared by all the participants in our study.

In the 'post-truth' era and with the hesitance to believe what is on the internet, citizens struggle to distinguish real from fake news. This is further amplified by undermining the content produced by citizen journalists and human rights sources, who aim to increase *data participation*. Existing social wrongdoing shape the digital ecosystem and often not recognizing that this is a broader societal problem maintains current inequalities; an issue that NGO experts identify:

> So, targeting of activists, surveillance by the State, attempts to claim that the information of activists and human rights defenders is false. So, all of the concerns often actually bubble back to the same underlying concerns that impact activists and human rights defenders, right?.

These tangible threats can cause significant harm, impacting individuals, communities, and even entire societies and democracies. Imagined risks and underestimating real ones also looms large as misinformation and disinformation proliferate, giving rise to the erosion of trust, polarization, and social injustices. Thus, the need to develop personal data pedagogies and *networks of literacy* to critically interrogate the data ecosystem and manage data risks becomes a necessity.

3. Who is responsible for creating and solving the problems

Another key theme that emerged was the aim to identify who is responsible for creating *and* solving problems related to data harms and risks. Big-Tech, governments, media, NGOs, and society

were listed by the experts based on their respective levels of agency and the efforts demanded of them. First, most participants considered Big-Tech to be responsible for data abuses and misuses. The NGO practitioners used the term 'capitalism' as an umbrella term to describe threats online such as dataveillance and data extraction. They expressed disapproval of specific companies dominating the digital realm:

> You can get an apple phone, or you can get an android phone. But that's it. It is not kind of much beyond that. So, I think people are worried about it, and I think people do want it to change.

By prioritizing corporate profits, many feel that Big-Tech lack legitimacy and accountability, and raise suspicion across the public regarding the way they handle people's data. At the same time, Big-Tech were also considered instrumental in changing the landscape and establishing a fairer and safer data ecosystem. NGO professionals argue that Big-Tech should adopt a more transparent policy allowing citizens to make more informed decisions about the use of their data. Moreover, user-friendly policies and support mechanisms could work better for people while protecting their data:

> In the ideal world, these big tech companies would have support lines, for all their different user communities in the different languages. If Meta had its own support line in the Persian language, or in the Arabic language, where users could get in touch 24/7, to resolve an issue, or, you know, to get in touch to understand, I mean this is more for like the kind of governance and user level that's, I think that would be an extremely useful instrument.

Overall, NGO specialists suggested an inclusive, transparent framework in which citizens can be informed about companies' policies and negotiate different features that Big-Tech offer, while increasing corporate accountability. Others argue that Big-Tech should be held accountable for the harmful processes they create and their outcomes. In addition to companies' liability, many reflected on the government's responsibility in the lack of robust legislation to protect citizens. Although the role of governments in regulating Big-Tech was highlighted, the experts were concerned about the controlling power of governments and hesitant about them acting in the name of the citizens: 'In an ideal world, you would have governments holding tech companies accountable in a way that's accountable to their citizenry, but also attentive globally'.

Even when individuals have gained contextual awareness about potential online harms, they often do not know what to do about them. This is due to the complexity of online risks and how to stay critically informed and protected. Additionally, this means giving up the convenience, ease, and efficiency of relying on Big-Tech services. As one of the NGO practitioners noted:

> Everyone still uses it, you know nobody wants to have to pay to access Facebook and nobody, you know. There's not been some like me, you know. A few people, more people have started using Signal or whatever, because of the encryption stuff, but like it's not like a sort of mass giant movement that everybody is suddenly not using these services.

Some people would stop using specific platforms like Facebook/Meta in an effort to control the use of their digital data. However, completely abandoning the use of platforms is inconceivable given the heavy reliance on search engines such as Google or the use of Apple/Android phones due to their widespread use. Citizens may ignore the risks and continue using Big-Tech's services having reached a level of resignation (Draper and Turow 2019) and cynicism regarding their digital rights. Part of the problem is that citizens are expected to become knowledgeable in different and complex fields. This is not only an ambitious and unrealistic expectation but also an overwhelming process that may further exacerbate sentiments of fatigue over data citizenship, as one of our participants argues:

> It's like the culture of responsibilizing. You're now expected to have media literacy, data literacy, digital literacy, health literacy, financial literacy … There's no safety net of any kind that people can rely on.

Although increasing citizens' responsibilities seems to improve their control over their data, without the necessary education, tools and support, the power imbalances are maintained. To change

this power asymmetry, citizens' organizations can inform, navigate, and help individuals and groups to act against Big-Tech and safeguard their rights. Moreover, often digital rights NGOs, individuals and communities engage with, and educate the public on how to protect themselves (Daskal 2018):

> There's no reason we expect the average person, for example, to understand the progress around how do you make deep fakes. But we should understand that if there's starting to be a pervasive phenomenon in a particular country that the media is able to say: well, actually, probably they're not gonna face swap your neighbor, but you know it's not implausible that someone might try and, you know, show a video which looks like someone said something they never did, because it's, easier and easier, for example, to, you know, swap the lip movement. So, I think there's also a role for the media and us (NGO and citizens' organizations), not as dictating things to citizens, but as a valuable adjunct, particularly when it comes to technology and things that are shifting quite fast.

Apart from civic organizations, the media was mentioned by NGO experts as another important institution that could help raise citizens' awareness about digital harms and risks. This could be part of formal, personal, and folk pedagogies to promote and improve digital literacy but also to democratize the resources and networks that could be used to this end.

4. Resistance possibilities

People's sense of surveillance realism inspired a shared pessimism that was expressed when asked what can be done due to the power asymmetries that have been created over the years. Nevertheless, NGO practitioners felt that there are few avenues to challenge Big-Tech, namely: cooperation across different actors, strategic use of digital tools, investing in personal and community data literacies to raise awareness, but also considering (and creating) alternative non-commercial, citizen-driven mechanisms and infrastructures. This section illustrates that challenging Big-Tech depends on the necessity to develop data literacies (and *networks of literacy*), encourage data citizenship, and promote social imagination. Often citizens rely on NGOs to destabilize power hierarchies or resolve disputes due to their advanced literacies:

> But if you know what to do, if you have the high level of like legal literacy, then, for instance, you can raise the freedom of information requests with the Information Commissioner, which is great, that that's there. But that's not really a sort of generally available mechanism.

Other experts expressed sentiments of 'powerlessness' about their work in digital rights, focusing on the inefficiency of existing tools and mechanisms to confront Big-Tech. For example:

> What could I actually do around this? And if I didn't choose to participate in this commercial space, which I probably do need to in many ways, if I focus on you know, social justice and human rights goals, how can I do that in a way that's at least likely to bring the harms that might come from the kind of trade-offs of using that space in the real world in relation to other actors who have power in that real world space that includes the platform that actually also includes, you know, other viewers, authorities, activists …

Despite being pessimistic about achieving data justice in the near future, NGO practitioners highlighted the role of using tools provided by Big-Tech to challenge their very power. For example, it was noted that vulnerable groups such as young people (specifically women) and LGBTQI+ communities who are structurally oppressed have been finding ways to talk to each other about mental health, self-harm and anorexia using platforms. In this way, people's *networks of literacy* (Yates and Carmi 2022) can provide an environment of solidarity and support for those who need it and potentially increase the opportunities to act for their digital rights as a community. After all, the role of digital platforms has been crucial in social mobilization as we showed above in the literature (Breindl 2013), but this time, the objectives focus on calling into question data rights abuses. As another NGO practitioner argues:

> There have been some technical issues with WhatsApp, which has become a really big theme. There have been massive campaigns, especially against Meta and right now against Twitter, because apparently Twitter has suspended a bunch of monarchists accounts, and so there's a lot of campaigning and outcries.

Pressure for social justice can come from using Big-Tech to report issues around inequalities in the digital landscape and inform/motivate others to react in practical ways. Using the tools provided by Big-Tech such as reporting or blocking someone is known to citizens and should be used for self-protection of their rights:

> So things like reporting someone using their personal function on Twitter, or something like that. I think that's and again I haven't got like statistical research to be like 70% of people know to do that. But from my general employ of the world, I think that's a fairly common thing that people know that you can block people. You can report people. Do you know, stuff like that? I think privacy and security less so.

In some cases, these mechanisms are not sufficient to provide remedies or justice, but there is a need to experience and use evidence to report repeated incidents to learn how to use tools for mobilization, regardless of the result (e.g., D'Ignazio 2024). The more citizens 'shout about the issues on social media', as an NGO practitioner said, the faster these issues become perceived, visible, and experienced. In this way, data harms and abuses expand the public's (contextual) awareness and social mobilization. Although the experts described these reactions as more self-protective than mobilizing systemic change, they can generate collective forms of resistance through *networks of literacy* and help people to *data-participate* more frequently as a norm rather than an outlier *data citizenship* practice.

Extreme cases of data rights abuses and threats, such as the premature death of the UK teenager Molly Russell can promote and pressure legal, political, and social changes. Civil organizations' tools, such as Facebook/Meta's Oversight Board can help citizens and NGO practitioners to work together against Big-Tech, challenge their power, change, and enact specific policies. One of the interviewees argues that using the Oversight Board in their work to advocate and convince Meta to change their policy was useful. At the same time, using safer and private communication platforms like Signal was also considered everyday *data-doing* to challenge Big-Tech. Furthermore, some NGO professionals raised their concern about the overreliance on digital services that give limited options to people. For example, it was pointed out that we should think about alternative mechanisms and infrastructures that could react and respond to the harms Big-Tech create:

> I would love there to be alternative tools and infrastructures that Internet users could rely on. Perhaps this might arise out of the consumer movement, or civil society, rather than the regulatory one.

Although avoiding the use of digital platforms in our everyday life sounds inconceivable, efforts should focus on striking a balance between using Big-Tech and citizens' agency aiming to include or develop alternative tools to suit people's needs and preferences. As digital social imaginaries are conceptualized in the context of data justice and citizens' emancipation, and shared widely, people's resistance takes the shape of collective opposition and at times of mass campaigning and movements against Big-Tech.

Conclusion

In this article, we asked NGO practitioners what literacies people need to be able to negotiate, object, and challenge Big-Tech. We drew on three interrelated fields: data literacy, data justice and digital rights – which we argue are crucial to understanding data citizenship. It is important not to assume people have the appropriate literacies to claim their civic rights or to challenge Big-Tech. *Data-citizenship* is about what people can do, think, and participate in the datafied society, and these depend on multiple demographic criteria such as people's gender, age, socio-economic status, and education. NGO professionals raised four key issues: first, the importance of *contextual awareness* about the way(s) data can be (ab)used in their everyday life context, because knowing that harms are not abstract can facilitate *data-thinking* and *data-doing*. Second, distinguishing between *real or imagined concerns* around data can inform and push people into individual or collective action. Third, identifying *who is responsible* for these problems so that people know who to

demand accountability and scrutiny from, which can empower civic campaigns targeting Big-Tech and governments. Fourth, thinking and imagining *resistance possibilities* as alternatives to the current reality requires *data-thinking, data-doing* and *data-participating* to understand shortcomings, envision change and take transformative actions. From the experts' insights, we identified what are possible routes that can enhance citizens' *data citizenship*, by proposing what each actor can or needs to provide:

1. **Governments** – Need to create more robust legislation and enforcement that will enable people to *data-participate* more easily, create legislation that requires the inclusion of citizens in the decision-making processes of developing technologies, ban business models that rely on surveillance capitalism while encouraing ones that respect peoples rights, invest in data literacy programs and support that suit different groups of people in society, and require non-digital options for people from diverse backgrounds to be able to *data-do* what fits them.
2. **Big-Tech** – Provide more transparent policies which will enable citizens to evaluate and act critically about their services in ways that fit them, develop user-friendly policies and support mechanisms that will enable them to *data-think, data-do* and *data-participate* in issues that matter to them.
3. **Media** – Raise awareness through investigative journalism (such as the Snowden revelations) or fiction stories (such as the television show Black Mirror) about data ecosystems, harms as well as alternative uses and companies which will contribute to citizens' *data-thinking*, and their *data-doing* and *data-participating*.
4. **NGOs** – Raise awareness about the data ecosystem and harms as well as viable alternative uses and services and show possible negotiation power when confronting Big-Tech companies so that people can have better *data-thinking, data-doing* and *data-participating*.
5. **Society** – Develop communities and *networks of literacies* to use existing and trusted support mechanisms for various causes and encourage *data-thinking, data-doing* and data-*participating* such as reporting harms for evidence and mobilization. In addition, people can use existing mechanisms such as consumer protection and civic rights, or refuse to provide data for purposes they do not believe in. For example, the 2016 #BoycottSchoolCensus campaign in the UK (Bradley 2016) was led by a coalition of teachers, parents and civil society organizations that stopped schools from collecting data on children's country of birth nationality to avoid the risk of this information being shared with the Home Office for immigration checks. People can engage with NGOs who work on issues that matter to them, participate, and contribute to their campaigns. Also, people can actively look for alternative services while imagining the technological futures they want to live in.

Overall, we saw that everyone feels overwhelmed with what is expected from their part and powerless to make a difference on their own. Our reading is that a proactive approach from all actors involved as well as the continuous development of data literacy, tangible participation and collective mobilization are necessary to intervene in existing institutional inequalities, and being able to achieve significant social and political change. This could be done by establishing a new form of a social contract specifying the roles and responsibilities of different actors and stakeholders, as one of the experts suggested: 'we need a digital social contract about the role of technology and how we want to use it for, what we think is unacceptable'. Instead of Big-Tech CEOs creating a narrative for our realities as the only way possible, we need to imagine and create alternative narratives which outline the data society we want to live in.

The NGO practitioners involved in our study found it difficult to imagine how an ideal datafied world would look like. This is an important insight: if we cannot imagine what we want and how to create it, then we are still operating within the current possibilities without being able to identify viable alternative avenues and demand the future we want. Once we can envision and verbalize how we want our data-driven future to look like, it will be easier to start proactively strategizing

and working towards it. In this way, we will be able to imagine a data ecosystem that works for citizens while promoting data justice and democratic transformation.

Limitations and recommendations

This paper focuses on diverse NGO practitioners' experiences with the public to understand what literacies people need to challenge big-tech. Despite focusing on a specific small group of experts, our work considers citizens' concerns over data privacy and rights as these have been communicated to NGO professionals and informed by their professional roles, technical knowledge, and systemic awareness. Nevertheless, future research could elaborate more on citizens' attitudes towards Big-Tech and explore the differences across poorer and richer countries and regional contexts including the Global South. Furthermore, the power asymmetries between the people and big-tech are shaped by complex economic, legal, social, political and institutional frameworks that uphold them, which could be further explored in future work to explain this relationship.

Note

1. For a critical examination of digital rights movements' limitations please see: Milan and Beraldo (2024). Treré and Summer (2023).

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