Soberania Digital entre os perigos das agendas hegemônicas e as possibilidades de abordagens alternativas

Digital Sovereignty between perils of hegemonic agendas and possibilities of alternative approaches

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RESUMO: Embora esteja na agenda há mais de uma década, as demandas por soberania digital aumentaram recentemente. Estados-nações em todo o mundo desenvolveram políticas ou expressaram por meio de discursos a necessidade de salvaguardar seus interesses no reino digital. Este artigo explora discursos contemporâneos sobre soberania digital, destacando como diferentes posições ideológicas moldam essas conversas. As discussões atuais revelam um campo multifacetado onde a soberania é interpretada por meio de lentes variadas. As perspectivas predominantes geralmente se concentram na soberania estatal, de mercado ou individual sobre dados, infraestrutura e algoritmos. No entanto, por meio da análise de documentos, o artigo examina abordagens alternativas, como soberanias digitais sustentáveis, feministas e aquelas lideradas por comunidades ou povos indígenas, a partir de organizações específicas. Essas visões desafiam o mainstream ao enfatizar autonomia, inclusão e sustentabilidade no gerenciamento de bens digitais críticos. Ao analisar essas abordagens, o artigo identifica princípios que podem promover futuros digitais mais diversos, democráticos e virtuosos. Por meio de uma análise exploratória, resultados apontam que a governança participativa e o desenvolvimento de tecnologias emancipatórias são essenciais para navegar nas questões éticas e práticas que emergem de diversas reivindicações de soberania digital. De forma normativa, o artigo conclui refletindo sobre como esses discursos alternativos podem ser considerados em vez de agendas hegemônicas, apontando caminhos que podem levar a um "desenvolvimento digital" mais inclusivo e participativo alinhado com valores ambientais e de autodeterminação digital coletiva.

Palavras-chave: Soberania Digital; Soberania Digital Sustentável; Soberania Digital Popular.

ABSTRACT: Although it has been on the agenda for over a decade, the claims for digital sovereignty have recently increased. Nations-states worldwide have developed policies or expressed through speeches the need to safeguard their interests in the digital realm. This article explores contemporary discourses on digital sovereignty, highlighting how different ideological positions shape these conversations. Current discussions reveal a multifaceted field where sovereignty is interpreted through varied lenses. Predominant perspectives often focus on state, market, or individual sovereignty over data, infrastructure and algorithms. However, through document analysis, the article examines alternative approaches such as sustainable, popular, and feminist digital sovereignties and those led by community networks and indigenous peoples, from specific organizations. These visions challenge the mainstream by emphasizing autonomy, inclusion, and sustainability in managing critical digital goods. By analyzing these approaches, the article identifies principles that can foster more diverse, democratic, and virtuous digital futures. Through an exploratory analysis, finds points out that participatory governance and the development of emancipatory technologies are essential to navigating the ethical and practical issues that emerge from diverse digital sovereignty claims. In a normative way, the article concludes by reflecting on how these alternative discourses can be considered instead of hegemonic agendas, pointing to paths that could lead

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Recebido em/*Received*: 15/10/2024; Aprovado em/*Approved*: 09/12/2024.

to a more inclusive and participatory "digital development" aligned with collective, environmental values and collective digital self-determination.

Keywords: Digital Sovereignty; Sustainable Digital Sovereignty; Popular Digital Sovereignty.

INTRODUÇÃO

Although the term is often ambiguously used, digital sovereignty is on the global political agenda as a goal for securing national interests. It seems to continue in recent years as a very powerful concept with multiple visions and goals (Couture and Toupin 2019; Pohle, 2020; Süß, 2021; Herlo et al. 2021). From a normative perspective, aiming at providing possible and desirable digital futures, it is time to bridge them to avoid the negative aspect of that double-edged concept: Sovereignty has been used controversially for authoritarian control or mere protectionism, but it is also essential to boost collective and individual self-determination (Litvinenko, 2021; Belli et al., 2023; Chander and Sun, 2023).

The United Nations Internet Governance Forum (IGF), the main multi-stakeholder discussion space for discussing digital-related policy issues, indicates that. Recently, there has been an increasing focus on digital sovereignty workshops and sessions. On the one hand, it has aimed to identify the risks for internet fragmentation due to national digital policies; on the other hand, it has also enabled actors from worldwide to manifest their internal concerns regarding digital developments within their boundaries. For instance, the Brazilian Internet Governance Forum had no session regarding digital sovereignty back in 2022, but it had three workshops and a main session in 2023.

However, this "brand new wave" of digital sovereignty did not start in the Global South. In 2019, IGF took place in Berlin. When Angela Merkel (2019), then Germany's chancellor, said that "digital sovereignty does not mean protectionism… but rather describes the ability to shape the digital transformation in a self-determined manner…". Right after, in 2020, the Commissioner for Competition and Digital Transition and Vice-President of the European Commission, Margrethe Vestager, defended the need to "take (back) control of our data." (Gill, 2020). It was an indication that despite the European Union embracing digital sovereignty, it was not the same as the Chinese Cyberspace Administration policies or the RuNet, the Russian intranet program (Litvinenko, 2021; Belli et al.m 2023).

The Internet Society (ISOC, 2022) released a report that points out that in some cases, governments use the term that wish to control Internet operations and resources; in others, local companies use it to refute the penetration of foreign technological platforms in the territory. ISOC's mapping clearly demonstrates that digital sovereignty is policy agendas not only in those aforementioned countries, but also in Asia, Africa and Latin America to a larger extent. In addition, from 2026 on, mobile network providers such as Deutsche Telekom or Vodafone are not allowed to use

Huawei`s hardware components in their infrastructure. It is argued that the use of this specific Chinese technology would violate the interests of the national security strategy and therefore foster technological dependence in a critical infrastructure. At the same time, it might open a backdoor for surveillance and espionage, according to German government representatives.[1] In addition, the first German Strategy for International Digital Policy (2024) adds the development of open-source foundational technologies as key to promote digital sovereignty. It reminds of what Brazil and other Latin American countries did in the early 2000s through state-led open-source software policies.

The debate about national sovereignty as such and, more specifically, about digital sovereignty, started much earlier. Although with different meanings and a wide margin of interpretation, digital sovereignty has already become a principle in several political agendas worldwide, whether in democratic or authoritarian contexts. Besides those mentioned, there are also individual-oriented digital sovereignty claims, mainly associated with one's agency and autonomy over their data and bodies. Nonetheless, that approach must be more comprehensive and include communitarian, collective, and inalienable aspects of sovereignty.

Sovereignty is a concept that accompanies the emergence of modern national states and is associated with supreme authority over territories, hence somehow embedded in the process of coloniality and racialization by default. Méjias (2023) indicates, for example, that the power one exerted by black slaves revolutionaries in Haiti was not legitimized by that international order. Moreover, it was only in the 20th century, above all, that the idea of sovereignty broadly adopted a pluralistic approach (Wilson, 1934) based on the diversity of social groups and respective representations, arriving at the concept, for example, of food sovereignty from *La Via Campesina*, , a global coalition of farmers movements in the late twentieth century, in the mid-nineties during a FAO's summit.

Positively, digital sovereignty helps diagnose the state of digitalization worldwide, but in a normative way, it helps shape rationals and imaginaries for the future of the Internet and digital affairs as a whole. Based on that, some alternative digital sovereignty interpretations have arisen considering the perspective of social movements and indigenous communities, as well as through a sustainability focus. For instance, the Homeless Workers Movement (MTST, 2023) in Brazil has developed the idea of "Popular Digital Sovereignty", focused on the technology appropriation by the working class. Although the social movement's manifest does not explicitly refer to theoretical "popular sovereignty" means, it is based in Latin America, thus assuming that it builds on the specific roles that "popular" has played in the region to also refer as "massive" and not only *folklore*-related issues (Martín-Barbero 1991; Parducci 2023). There are also indigenous communities who fight to safeguard local knowledge and

[1] A current example is the debate about the use of Huawei's technology in Germany's 5G networks. Available at <https://www.handelsblatt.com/politik/deutschland/mobilfunkstandard-5g-harte-linie-gegen-huawei-berlin-will-zweiten-fall-nord-stream-verhindern/29397214.html>

resources, as well as individuals and activists who highlight the need for autonomy in using applications across devices and platforms and in controlling their data (Caranto Morford and Ansloos, 2021). These frameworks are also "decolonial options" for digital sovereignty (Lehuedé, 2024). Despite diverse theoretical backgrounds and even epistemologies, they share similar goals and principles. For instance, sustainable digital sovereignty has been conceived as a way of linking the discourses on sustainable digitalization with concepts of digital sovereignty that highlight pivotal elements for the pursuit of a fair and inclusive digital transformation, such as digital competence and education, social and digital inclusion, the mitigation of global inequalities, and a shared focus on the common good (Herlo et al., 2023).

The research questions that drive this article is: *How do alternative digital sovereignty approaches correlate with each other? What are recurring patterns and claims of these alternative approaches that enrich the discourse on digital sovereignty?*

To explore the approaches to digital sovereignty beyond those state-centric or market-centric, we will identify the demands and principles from alternative claims and map their central elements. After a critical analysis, we will outline some consensus around the identified principles and goals. The objective is to promote digital sovereignty or digital sovereignties discussions that support a sustainable digital transition, enabling the promotion of equity and equality regarding access to digital infrastructures and counter-balancing current concentration of power and global digital inequalities (Ávila, 2018).

We emphasize a digital sovereignty that enables a country or community to understand digital technologies and take decisions about their uses and developments. One example from Germany, embedded in the Weizenbaum Institute, is that idea of sustainable digital sovereignty.

THE CURRENT DEBATE AROUND DIGITAL SOVEREIGNTY

It seems that the digital sovereignty debate is going through a break-even point, since it became globally adopted and has enabled positive and negative impacts. On the one hand, there is the view that digital sovereignty claims are an opportunity to condemn the current negative status of Internet development and build imaginaries for emancipatory agendas. On the other hand, it may also instrumentalize actors in power to increase domination and jeopardize human rights, through surveillance, discriminatory algorithms and models and censorship.

Nonetheless, the debate on digital sovereignty is - at least - as old as the rise of commercial Internet. A debate emerged with John Perry Barlow's "Declaration of independence of cyberspace", presented at the World Economic Forum in 1996, after the American government enacted its Telecommunications Act in the same year (Pohle and Thiel, 2020). Paradoxically, it demonstrates the United States as promoting "digital sovereignty by default", as labeled by Chander and Sun (2023). It clearly illustrates the battle over who should exercise power in the digital sphere as well as the cyber

exceptionalism that still permeates the Internet Governance agenda, multi-stakeholder discussion fora without any binding decision and few protagonism within the United Nations framework.

Governments have used the concept of sovereignty to exercise power over other sectors and organizations (Adler-Nissen and Gammeltoft-Hansen; 2008). Indeed, despite that American "digital sovereignty by default" approach, it was China, followed by Russia, that initiated the use of the term so as to enable a state-centric Internet development and governance, also encompassing India's ban of "zero rating" and Brazil's NetMundial after Snowden's revelations (Litvinenko, 2021; Belli et al., 2023; Chander and Sun, 2023). The Chinese "Great Firewall" created an Intranet that secured the Domestic market and led to a flourishing economic driver for the Chander and Sun (2023) argue that digital sovereignty is special because the Internet is global by nature and ruled by governments and corporations to legitimize its public-private management. The authors emphasize the risks of state surveillance and enable protectionism that derives from the agenda but ignores the state measures that led the extractivist business models of large technology corporations to flourish.

The majority of claims regarding digital sovereignty can be categorized into at least three primary classifications (Pohle and Thiel, 2020). One pertains to the government's control over digital infrastructures and "whose sovereignty" is meant to be strengthened. Another is associated with the broader digital economy, encompassing the involvement of national digital technology firms and the government in devising effective industrial policies. Lastly, there is the individual or personal facet of digital sovereignty, primarily linked to an individual's digital self-determination, agency, and capacity to make decisions concerning personal data. In any case, what seems to be neglected is the societal or community-oriented digital sovereignty claims, as well as their potential to enable visionary digital agendas.

The possibilities of (alternative) digital sovereignty

As noted, digital sovereignty has also been about setting imaginaries for the increasingly and faster datafied society and platform society (Van Dijck et al., 2019), however it has also been co-opted by authoritarian regimes and oligopolies. That is, even though there is a strong link to the role of the State, companies, non-profit organizations and social movements are also claiming digital sovereignty agendas.

Moreover, Big Tech companies such as Amazon, Microsoft and Alphabet - the major cloud computing providers - launched their digital sovereignty programs in the past years, promoting the idea of "Sovereignty-as-a-Service" (Barbosa and Grohmann, 2024). Big Tech's digital sovereignty approach is closely tied to that individualistic approach facilitated by technological design (Microsoft, 2022; Amazon, 2022; Alphabet, 2022). Despite facilitating data protection and advancing citizens' rights to privacy and security, it can be argued that these platform companies have at least two primary objectives. Firstly, Big Techs advocate for digital sovereignty as an effort to comply with digital and data regulations, especially within the European Union.

Secondly, they aim to ensure that local companies do not pose a competitive threat to their provision of infrastructural services.

That market-centric approach also applies to local companies that push protectionist digital industrial agendas, sometimes with neo-imperialist connotations, especially within the European Union. For example, the Digital Services Act (DSA) aims to establish a rights-based regulation for digital content - mainly - and thereby strengthen the so-called Brussels Effect within the digital realm, that is, an European-led global standardized regulatory approach to digital affairs. The Digital Markets Act (DMA) aims to 'level the playing field', imposing some rules for gatekeepers that mostly come from the US and some from China and allowing a higher degree of competition in European digital markets (European Commission, 2024).

In addition to protectionist agendas, the concept of sovereignty is intrinsically related to colonial power and domination (Méjias, 2023). However, there are diverse approaches to digital sovereignty, despite the historical state-centric one, which are based on the diversity of social groups and respective representations. For example, Inspired by the historic "popular sovereignty" of the Paris Commune and the idea of "people power" (Harvey, 2012), the Landless Workers Movement (MST) and other organizations within La Via Campesina came up with the concept of food sovereignty in the mid-nineties (Samary, 2016). In the case of digital sovereignty, there have been some approaches that demonstrate those different claims, from different societal groups. As Werner and De Wilde (2001) stated, instead of asking which "state of affairs" really corresponds to the idea of sovereignty, one should ask in what context a claim to sovereignty is likely, and to whom a claim to sovereignty is referred. Therefore, there are also alternatives in place, despite the limited extent to which they are scalable and end up relying on policies and institutional politics to thrive.

One alternative approach to digital sovereignty is the one led by social movements, as identified by Haché (2014). This approach considers the role of Information and communication technologies for civil society to overcome unfavorable political structures. On the one hand, it encompasses the mobilization of resources and for campaigns, promoting engagement. On the other hand, it enables the documentation of the memory of struggle. In that case, the social movement recognizes the relevance of the concept as an umbrella for other structural digital inclusion agendas, such as access to adequate Internet connectivity and to digital education, and the promotion of a fairer digital economy.

In terms of social movements more broadly, we may also consider intersectional feminist approaches (Buolamwini and Gebru, 2018; Orembo et al., 2023; Schmidt, 2023). As introduced, among others, by the *SempreViva* feminist organization (SOF) in Brazil in their report upon their grassroots technological sovereignty, they emphasize the dimension of the body (SOF, 2022).

Another approach is related to indigenous people and their claims for data sovereignty. It is related to the right and ability of indigenous communities to make reasonable decisions over the data they produce. The United Nations' Declaration On

The Rights Of Indigenous Peoples puts for instance, besides reconciliation and non-discrimination, the rights for self-determination, participation, data ownership, and cultural heritage as central. Pointing at harmful commodification and inequalities due to colonialism, indigenous perspectives are often bound to specific territories and communities. Indigenous epistemologies especially provide valuable alternatives to data sovereignty concepts (Steen, 2022).

Very much linked to small-scale territories, there is also the Community Networks approach. Community Networks are communities and territories with prior social and political organization appropriating the connectivity infrastructure and creating local policies for access and use of the Internet. They are mostly based on open-source software and hardwares and consider the offer of materials from the region to develop their own - albeit partially - infrastructures (Keysar et al., 2021). Hence it brings by design a local sustainable development approach having the Internet itself within its core. Moreover, by embedding the environmental dimension to other critical components for an inclusive digital development, the idea of a democratic and sustainable digital sovereignty has also been promoted (Herlo et al., 2023; Barbosa 2022).

There is also the approach pushed by former Chief Digital Officer of Barcelona, Francesca Bria that explicitly fosters digital sovereignty from a commons-based perspective and focused at the municipal level (Bria, 2015). It has a municipalization goal, challenging ownership models of data and digital infrastructures through local policies and politics, however it is not within the analysis given the state-led approach, although at the local level. Local, civic engagement based approaches in urban digitization policies also frame alternative concepts of digital sovereignty from a democratic theory point of view (Pierri and Calderón Lüning, 2023).

Scholars from the Weizenbaum Institute for the Networked Society developed a series of workshops among academic and other stakeholders throughout 2022 through a European Union-funded project. This process resulted in an analysis of interdependencies between digital sovereignty and sustainable digitization. As an output, a document recognizes digital sovereignty itself as a vital principle for a democratic and sustainable future (Herlo et al. 2023). However, the concept of sustainability itself raises multiple risks when used, such as depoliticization of the debate, the propagation of "greenwashing" agendas and controversial climate justice due to the legitimization of economic growth as the path to follow by the peripheries.

The primary objective of this approach was to enable a convergent approach of digital sovereignty and sustainability, bonding digital competencies and sustainable digitization. It can be argued that one of the major contributions from the sustainable digital sovereignty approach is its intrinsic relation to an eco-socially framed environmental agenda, that has been somehow neglected or not systemically addressed within global Internet Governance (Barbosa, 2022).

The authors of Weizenbaum's article define sustainable digital sovereignty as one that

> "*incorporates the effects of digitalization on all people and environment and at the same time addresses aspects of democracy, participation, and involvement*" (Herlo et al. 2023)

Therefore, the sustainable digital sovereignty approach targets the necessary skills to promote a combined ecological and democratic digital development. It recognizes common good approaches alongside democracy aspects such as justice, inclusion and diversity as vital.

ANALYSIS AND REFLECTIONS

Considering the goal to explore alternative approaches to digital sovereignty not centered around states, markets, or individuals and how these alternative approaches correlate. Data collection comes from sources that identified alternative approaches in ongoing academic and gray literature regarding digital sovereignty through a non-extensive search of databases. The selection criteria were the examples often referenced within the literature. Initiatives focused on data sovereignty or technology sovereignty. Despite having nuances usually share similar goals to digital sovereignty and, therefore, were also considered. The chosen alternative approaches were some from more than two years, until the end of 2022, such as a popular digital sovereignty from the Homeless Workers Movement (MTST 2022; 2023), a feminist technology sovereignty from the *Sempreviva Organização Feminista*, community networks-led digital sovereignty, and indigenous data sovereignty from English-speaking countries. The selected alternative approaches to digital sovereignty are marginal compared to hegemonic state or market-centric approaches. Thus, we acknowledge the limitation of these approaches in influencing major digital sovereignty frameworks, but we believe that they can do it for the better.

This session provides an overview of the selected alternative approaches to digital sovereignty, answering questions regarding the context of launch, the primary objective behind that claim and - if there is any - the definition of digital sovereignty implied. The questions are: What context was this digital sovereignty approach launched within? What is its primary objective? Does this approach rely on a specific source and provide a specific definition of digital sovereignty, and if so, what is it? As follows, there is an analysis of the key pillars or principles identified in those alternatives, focusing on the similarities and differences among the agendas, their viability and their relations to mainstream digital sovereignty claims.

THE MTST'S POPULAR DIGITAL SOVEREIGNTY

The Homeless Workers Movement (*Movimento dos Trabalhadores Sem Teto*, MTST) is a housing social movement dated from 1997. In the past five years they created a technology sector working with issues related to digital education, community-based technology development and meaningful Internet connectivity. During their expansion

they launched a manifesto calling for "digital sovereignty from the social movements" (MTST 2022) and, in sequence, a booklet partnered with the University of Toronto called "MTST and its struggle for digital sovereignty" (MTST 2023).

The primary objective of MTST's Popular Digital Sovereignty is "to strengthen people's power In the era of the information society". The Homeless Workers Movement define digital sovereignty as:

> "*the technological sovereignty of social movements and workers. We understand this sovereignty based on the use and development of technologies by and for those who carry out social struggles. That is, in addition to not being left behind in the digital race, being able to point out which path is truly emancipatory, showing how we can promote technology to strengthen the organization of people power*" (MTST 2022)

The popular digital sovereignty, therefore, is directly linked to the technology appropriation by vulnerable populations, with a specific emphasis on urban peripheric communities given the profile of MTST.

THE SOF'S FEMINIST TECHNOLOGY SOVEREIGNTY

Building upon different theories and epistemologies, there are diverse feminist approaches to digitization. For instance, Nancy Maure-Flude (2020, 2021) echoed Internet sovereignty from the historicization of women's role in computation development since Ada Lovelace in the mid-XIX century. Nonetheless, here we consider the approach from *Sempreviva Organização Feminista*, an organization that relies on materialism, ecofeminism, and intersectionality of gender, race, and class as foundational theories. SOF launched a report on "Feminist hints for technology sovereignty from the popular movements" in late 2022, considering as reference the World March of Women. SOF is a long-lasting and international-oriented Brazilian feminist organization headquartered in Sao Paulo. The document recognizes the notion of popular sovereignty intrinsically related to autonomy, self-determination, democracy and participatory decision-making.

SOF's goal was to advocate for the autonomy of women to claim for their own bodies and territories sovereignty in a systematic way. That is, in SOF's perspective, a feminist approach to digital sovereignty must

> "*be a mark of all systems and social relations in which our bodies-territories are inserted, work, food, health, energy, among many other aspects that sustain life in its human and non-human dimensions*" (SOF 2022).

Their primary objective is to promote the development of emancipatory, non-dominant and feminist technologies, but also encompasses a diverse range of claims ranging from right communication and connectivity, including the right to not connect, to the development and use of open-source tools.

THE BOTTOM-UP DIGITAL SOVEREIGNTY FROM COMMUNITY NETWORKS

As aforementioned, community networks is a model of Internet access in which socially organized groups decide to govern the connectivity infrastructure. There are several studies and projects regarding community networks (Keysar et al., 2021; Fröbel et al., 2023), however their approach to digital sovereignty has been promoted as an outcome of the United Nations Internet Governance Forum Dynamic Coalition on Community Connectivity. The coordinators argue that community networks are "catalysts for commons-based notion of digital sovereignty and environmental sustainability" (Belli & Hadzic 2023).

Enabling the understanding of digital sovereignty from an entity level, the report defines digital sovereignty as

> *"One's capacity to grasp the functioning of technology and being empowered by it"* (Belli & Hadzic 2023).

Despite not often being referred to as digital sovereignty, community networks' primary objective relies on the alternative ways in which digital infrastructure can be built and managed from a bottom-up approach. Furthermore, community networks are also enablers of local sustainable digital development, since it aims at reducing Internet infrastructure carbon footprint and promoting climate justice.

THE INDIGENOUS DATA SOVEREIGNTY

This article does not intend to reduce the notion of digital sovereignty from the perspective of Indigenous peoples to the sovereignty of Indigenous data, disregarding issues such as the extraction of genetic data, the expropriation of traditional knowledge, or the absence of proprietary infrastructures. However, the literature that deals with the subject, especially in English, comes from so-called developed English-speaking countries and deals more specifically with the issue of data. There are several articles published regarding this approach, mostly coming from Australia, New Zealand, Canada and the United States of America (Walter et al., 2021). However, the agenda was mainly established by the book "Indigenous Data Sovereignty: toward an agenda" (Kukutai and Taylor, 2016), organized after a workshop held in Canberra with indigenous representatives from those countries.

The authors recognize the multifaceted nature of indigenous data sovereignty, ranging from data ownership regimes, intellectual property rights and access to data for

research and policy-making. A definition that may encompass the multiple view around indigenous data sovereignty is the following:

> *"the right of Indigenous peoples to own and govern data about their communities, resources and lands. This means that indigenous peoples are the stewards of data collection and research carried out using their data; they control what and how that data is accessed and used."* (Diviacchi 2023)

The authors also point out that the indigenous data sovereignty is not only a critical approach, but has practical implications for indigenous social policy with regards to a more inclusive, decentralized and diverse governance of data. Conversely, a vision developed from the perspective of the indigenous populations of Latin America would, above all, rescue the historical demands for land demarcation and the recognition of nations within modern states. Therefore, challenges to that policy-oriented framework, hence disputes between state-centric visions of digital sovereignty and the self-determination of peoples become imminent.

REFLECTIONS UPON THE COMMON PRINCIPLES AND POTENTIALS

Besides the primary objective and the context in which the alternative digital sovereignty was raised, they also comprehend specific principles and values. In essence, there are several commonalities among the claims, such as a certain emphasis on collective autonomy and inclusion; sustainability; meaningful participation; diversity and the development and adoption of emancipatory technologies. Table 1. outlines the pillars of each of the five assessed approaches from specific sources. In terms of context of launch, it is relevant to point out that only the indigenous data sovereignty dates from a longer period. All of the other specific approaches were raised in the last two years, following the recent euro-centric boom of digital sovereignty.

Source	Values and principles	Specific claim for digital sovereignty
MTST (2022; 2023)	Technology appropriation; critical digital education; meaningful connectivity; Workers-owned technologies and class strugle	**Popular Digital Sovereignty**
(Kukutai & Taylor 2016; Walter et al. 2021; Diviachi 2023)	Collective Ownership; Self-governance of data resources; Decoloniality; Community-based datasets for public policies	**Indigenous data sovereignty**
(SOF 2022)	Right to Communication; Access to basic rights and services; Democracy; Balance between ancestral and digital technologies; Transparency; Privacy; Education; Right to	**Feminist technology sovereignty**

	connectivity; Digital Education; Digital Security; Open-source	
(Belli & Hadzic 2023)	Commons-based; Self-Governance; Technology and Infrastructure appropriation; Environmental Sustainability	**Community Networks digital sovereignty**
(Herlo & Ullrich & Vladova 2023)	Democracy, Socio-ecology; Sustainable digitalization; Digital Education; Common good; Justice; Participation; Diversity	**Sustainable digital sovereignty**

Table 1: Principles of alternative digital sovereignties from specific sources (Elaborated by the authors)

Different strategies and theories, similar goals

All of the approaches foster new ways of empowering vulnerable populations to fully and safely enjoy the benefits of digital development. Some hegemonic agendas tend to focus on citizens rights, but do not consider the concrete needs identified from those who historically have lacked access to those rights. There may be a valuable contribution to identify which are the major goals of these communities to shape digital sovereignty policies.

Even if specifically targeting environmental sustainability, mentioning it or encompassing other dimensions of sustainability such as the social and cultural, the alternative approaches promote the overarching goal sustainability. This is very relevant since the hegemonic digital sovereignty agendas do not have this clear claim, even if it relates to a state control over critical infrastructure or the domestic digital industrialization. It is worth noting that, for instance, a sustainable digital sovereignty approach, as an umbrella concept, is somehow what community-networks are enabling, but within their community boundaries. Similarly, there are several community networks developed within indigenous groups and social movements and through a feminist perspective. Additionally, the alternative approaches aim at enhancing the broad and meaningful participation of groups in the decision-making processes of digitization.

In a sense, their agendas support the need of digital technology development that takes social justice and considers the very elementary aspect of education, both in terms of digital skilling and critical thinking. Some of the approaches recognize the importance of technology appropriation as central to digital sovereignty, such as the one from the Homeless Workers Movement and, regarding data specifically the indigenous approach. In any case, all of them emphasize the need of being able to minimally understand the risks and possibilities of digital technologies so as to orient their development towards their original and major objectives. Hegemonic agendas

may learn from these alternatives so as to enable the design of ethical and human rights-centered technologies.

In a comprehensive way, the alternative approaches to digital sovereignty represent themselves as diverse cultural, social and political contexts. More than that, they claim for digital sovereignty as well to ensure the promotion and respect to that diversity. Some approaches such as the feminist and the sustainable digital sovereignty explicitly refers to diversity as a principle.

Although the points of convergence regarding the demands of these alternative approaches to digital sovereignty are clear, there are significant distinctions between what would be a feminist, popular, and indigenous vision of digital sovereignty. However, it is worth highlighting that some overlap, as in the case of indigenous sovereignty and community networks, as experiences that draw on Latin American communitarian feminism (Paredes, 2017). To some extent, all of them challenge the power acquired by giant foreign technology companies.

The approaches also differ in terms of the role of the State. The feminist approach of SOF and the popular approach of the MTST, to some extent, demand transformations through public policies, although they do so in a critical way and do not reduce them to such. In the case of Indigenous sovereignty, the State is part of a colonial structure. Therefore, sovereignty would be precisely an emancipation from these institutions.

Furthermore, the feminist perspective of sovereignty also questions the patriarchal structure of domination of the State and its deliberative bodies in order to perpetuate gender oppression. As mentioned, SOF emphasizes the dimensions of bodily autonomy and reproductive rights when promoting the idea of technological sovereignty. In the case of popular digital sovereignty, the vision is directly related to the class struggle and the construction of "popular power" in the era of the information society. To a certain extent, it is a pragmatic vision that seeks to create material conditions to enable the massive distribution of resources and "digital decision-making" processes. As for the indigenous approach, as in many cases of community networks, the difference also occurs at the epistemological level. That is, Sovereignty must be built on ancestral knowledge and control over digital infrastructures to support preserving local culture and its ecological practices.

CONCLUSIONS

Digital sovereignty reached a momentum in which several countries and companies are developing initiatives labeling them as such. Nonetheless, they have been mostly represented by autocratic state-centric over digital infrastructures, or a market-oriented neo-industrialization, or solely an individualistic rights-based approach. Alternatives to these ones also exist and provide valuable insights for the future.

In highlighting and assessing those alternative digital sovereignty approaches we could identify relevant correlations and potential influences on digital sovereignty agendas in terms of autonomy, inclusion, sustainability, participation and emancipatory technology development. However there are also key distinctions that are worth further investigation.

Despite alternative approaches to digital sovereignty being less expressive than the others, we argue that there are fundamental contributions that those approaches can provide to "sustainable digital futures". Herlo, Ullrich and Vladova (2023) findings around the sustainable digital sovereignty agenda fostering participation, education and environmental sustainability demonstrates that that concept may eventually bridge the other approaches if done in a critical way. That is, it shall emphasize the material, cultural and historical dimensions as well as the need for further research into the interdependencies between digital sovereignty and sustainable digitalization.

Albeit directly or indirectly, alternative approaches to digital sovereignty challenge the foundation of state-, market-, or individual-centered models. They relate to hegemonic approaches by focusing on the same axes of control over infrastructure. They propose a redistribution of this control and an expansion of rights, challenging the centralization and individualistic focus typical of dominant approaches.

Therefore, each alternative approach of organizations identified and evaluated reflects different relationships with the state regarding the way of conceiving and developing digital technologies and community organizations. However, they present themselves as agendas that converge in promoting imaginaries and rationales for more inclusive and autonomous digital spaces.

There is a need and an opportunity to explore those alternative digital sovereignty concepts through concrete examples of how they have influenced institutional agendas within their respective contexts, as well as how they relate to broader agendas such as a feminist, popular and indigenous digital sovereignty. In any case, Digital sovereignty is still going to be in the global political agenda and these alternatives can contribute to demonstrate that the focus should be on digital self-determination, not individual, but a collective one, hence challenging the hegemonic approaches.

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