

What Does the Concept of “Sovereignty” Mean in Digital, Network and Technological Sovereignty?

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1 Introduction¹

In this paper, we are interested in the notion of sovereignty as it is applied to “the digital.” Indeed, the notion of “sovereignty” has increasingly been used in recent years to describe various forms of independence, control and autonomy over digital infrastructures, technologies and contents. Although the notion of “sovereignty” seems to gain significance in digital discourses and associated scholarly literature, our preliminary analysis shows that while this notion is generally used to assert some form of collective control of digital content and/or infrastructures, the interpretation, subject, means and definition of sovereignty can significantly differ.

This paper proposes to review the literature explicitly addressing the notion of “sovereignty” in relation to digital technologies and infrastructures. Methodologically, our analysis mainly focuses on scholarly literature, but we also integrate journalistic or activist articles to provide a broader perspective on the subject.

In this paper, we address the following research questions: What are the uses of the term “sovereignty” when it relates to digital data, content or infrastructure? How does this term relate or not relate to more traditional notions of nation-state sovereignty or to other metaphors such as social justice, autonomy or collective governance? What more does the notion of sovereignty in digital discourses bring to our understanding of autonomy or collective governance?

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In the next section, we will briefly review the notion of sovereignty as it was conceived classically and more recently in different perspectives that differ from its current applications in the digital. We will then present our methodological approach, which will be followed by the presentation of ways in which “technological sovereignty” seems to be conceptualized in the literature.

2 Theoretical framework: The Notion of Sovereignty

The modern concept of sovereignty has emerged in the work of Machiavelli, Bodin, and Hobbes as a way to conceptualize the supreme authority over a political entity (a polity). The concept was mainly used up to the 20th century to reflect on the supreme authority within a territory. Philipott (2016) defines four “ingredients” for the sovereign: 1) it possesses authority; 2) this authority is derived “from some mutually acknowledged source of legitimacy — which can be God, a constitution or a hereditary law; 3) this authority is supreme; 4) this authority is over a territory. The territorial dimension of sovereignty in present-day continues to frame international relations. In particular, the notion of State sovereignty, or Westphalian sovereignty, refers to the supreme authority of a governing body (be it a monarch or a constitutionally elected assembly) over the territory and domestic affairs of the state, without interference from external power. Although supreme, the sovereign authority might also be limited in scope by international or regional treaty, or by planetary challenges such as climate change or global pandemics. This situation gets complicated with the increasingly close interdependence of states between them and issues that affect us all.

As noted by Hollis (2012) however, the label “territory” should also not be restricted to the landmass, but also - and this is important for our later analysis - to resources lying on the territory such as human infrastructures, air space or minerals (or oil) below the surface or in its adjacent sea. Philipott also notes that while territoriality is almost completely taken for granted in its association with sovereignty, other principles were used in the past to delineate sovereignty, such as family kinship, religion, tribe, and feudal ties. For instance, the author notes, sovereignty in a wandering tribe is not so much related to the territory, but rather to family ties. The territorial conception of sovereignty - what we call in this paper *State Sovereignty* - is thus a conception grounded in European modern (classic) politics.

As a case in point, the concept of sovereignty has been reframed recently in directions that break from earlier notions, and which has an impact on the diverse ways in which digital/technological sovereignty is conceptualized. For instance, the notion of “food sovereignty” was coined in 1996 by Via Campesina and later defined as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (Declaration of Nyéléni, 2007). Similar notions, such as “energy sovereignty,”

are also used in reference to food sovereignty to address sustainable and locally controlled means of production (Cotarelo et al. 2014). As we will see later, the notion of digital sovereignty is sometimes explicitly compared by some actors with these conceptualizations of sovereignty.

The notion of *Body sovereignty* is also being used by social movements such as feminist (Rivera 2016, Murphy 2012) and indigenous (Wilson 2015) activists and scholars, among others, to reclaim the right to one's own body. For instance, Wilson (2015) argues that "body sovereignty and gender self-determination" are crucial aspects of undoing systematic forms of oppression. She writes that "When we call ourselves two-spirit people, we are proclaiming sovereignty over our bodies, gender expressions and sexualities" (2015, 3). Sovereignty over one's body has also been understood in terms of how to dress, how to behave, or the decision of what to let into the body. In her research on the feminist self-help movement in the United States in the 1970s, Murphy (2012) demonstrates the extent to which feminists were claiming and embodying sovereignty over their body by using techniques of vaginal self-examination and menstrual extraction, among others. In this way, they could attempt to steer the means of reproduction away from patriarchy and capitalism. Reclaiming one's body, she writes, "was intended as an assertion of sovereignty over oneself—of self-possession enacted through practice" (2012, 35). Body sovereignty thus refers here to individuals' absolute authority to define and manipulate their own body.

More recent works have been extra critical of the use of the notion of sovereignty. As part of an issue of *Cultural Anthropology* dedicated to the notion, Bonilla (2017) notes that sovereignty has recently become an important analytical framework or object of study in the humanities and social sciences, to the point of being characterized as a "sovereignty turn" in these disciplines, that follow the older "global turn." She argues, however, for the importance of remembering how the political category of sovereignty is associated with violence and inequity. Bonilla writes that the concept of sovereignty was used to claim lands of so-called unsovereign people - that is those who were deemed uncivilized by the colonizers. It is through the doctrine of *terra nullius* that native communities were dispossessed from their lands or that treaties with native people were struck (Bonilla 2017; Kulchyski 2013). In other words, the concept of Westphalian sovereignty did not recognize the sovereignty of the indigenous people on their land, rather it was considered "nobody's land," which could be acquired by occupation. Sovereignty in this context was used to colonize, dispossess and belittle indigenous peoples. Although the concept would later be used and claimed by subaltern populations and anti-colonial movements, it is important to remember that the category itself is not neutral and that the material practice of dispossession is in contrary encoded in the contemporary framework of international relations and in consequence, to the very notion of sovereignty. The entanglement between colonization and sovereignty

raise questions as to who had the power to define the hegemonic concept of sovereignty, for which reasons and how it was applied. For our analysis, this also raises the question of knowledge production: who defines technological sovereignty and for which purpose it is pertinent? As we will show in the following, these different perspectives and interpretations of the notion of sovereignty are informing the conceptualization of what is understood today as technological sovereignty.

3 Method: Literature Review and Discourse Analysis

For this analysis, we surveyed different articles that addressed the concept of technological sovereignty and its associated notions. The articles were mostly identified using our prior knowledge of the subject and using academic research engines, in particular Google Scholar. The goal was to find articles that used explicitly in their title, abstract or body, the notion of sovereignty in the context of the digital. While we started with “technological sovereignty” as our primary keyword, the list of keywords was augmented during the search process. The keywords thus far are:

- Technological sovereignty
- Digital sovereignty
- Network sovereignty
- Data sovereignty
- Spectrum sovereignty
- Internet sovereignty
- Cyber sovereignty
- Computer sovereignty
- Network sovereignty
- Information sovereignty

We tried to mostly address academic articles. However, as this is in essence a political subject, we also took into account other substantial work. For instance, works written by business people or social activists, who address (and advocate) some form of digital sovereignty were examined. For now, our literature review is mostly in English, with some French references that we were able to find, as French is our native language. In the future, we would like to enrich this analysis by including articles written in other languages, such as Spanish and Portuguese.

Conceptually, our analysis is based on a constructionist approach that posits that metaphors organize users’ perceptions and contribute to creating new realities (Krippendorf 1993; Proulx 2007). Taking the notion of “sovereignty” as a metaphor, we are interested in what is emphasized or neglected in its use, as compared to other related metaphors (such as autonomy, independence, digital rights, etc.). Moreover, as metaphors are modes of representation, we attempt to understand how and the extent to which the use of the notion of sovereignty contributes to reiterate or disturb mythologies of digital infrastructures.

4 Five Interpretations of Technological Sovereignty

We have come up with five categories that enable us to understand the concept of technological sovereignty. These categories have been designed to highlight some of the core issues that we have identified through our literature review. The five categories are comprised of: 1) State and National Technological Sovereignty, 2) Social Movements and Technological Sovereignty, 3) Indigenous Technological Sovereignty, 4) Personal Technological Sovereignty, and 5) Technology as a means for sovereignty. These categories, though not exhaustive, bring to forefront some of the key actors (state, social movements, indigenous people, etc.) and issues that pertain to the concept, and enable us to shed light on the ways in which the concept is being used by them.

4.1 State and National Technological Sovereignty

The concept of technological sovereignty (or related notions) is probably most talked about today, in a post-Snowden world, when analyzing the relationship with states. Papers in these categories could be divided in two axis: 1) Normative papers that promote or oppose the power of states to better control their infrastructure, data and flow of information; 2) More analytical papers that look at the changing role of State sovereignty in relation to the digital.

The oldest definition we found of technological sovereignty was published in 1983 in the Australian, still active, *Prometheus Journal of Critical Innovation Studies*. The author (Grant, 1983), defines technological sovereignty as “the capability and the freedom to select, to generate or acquire and to apply, build upon and exploit commercially technology needed for industrial innovation” (p. 239). Although the author is interested in the capacity of the State, he mentions that this notion of sovereignty can apply to companies, as well. Grant’s notion of technological sovereignty is along two axis: “the freedom to develop or exploit acquired technology” - meaning the absence of contractual or legal constraint - and the “capability to do such task.” In writing his article, the author criticized Australia’s failure, at the time, to recognize the importance of technological sovereignty when migrating to technological intensive activities.

More broadly, this category refers to the efforts of nations and/or countries to create technologies that reduce American control over, and surveillance of technological systems, including the Internet. Following the revelations of mass surveillance by Edward Snowden and Wikileaks, many countries have attempted to protect their sovereignty and the sovereignty of their citizens through the passing of laws and the development of “national” or domestic technologies. This includes Germany’s efforts to counter US surveillance of Angela Merkel’s phone and email conversations, and Brazil

or Canada's efforts to create more Internet exchange points to redirect Internet traffic outside of US territory, which in turn can be subject to American laws.

This situation has led several actors to argue for the extension of the principle of state sovereignty to domains of computing and telecommunication, and have insisted on the necessity of countering the hegemony of foreign countries (most notably the USA) in this sector.

In France, a mainstream reference for digital sovereignty (*souveraineté numérique*) is Pierre Bellanger, a businessman who funded the popular rock station Skyrock in France and has published a variety of essays on digital technologies. In an interview with a popular newspaper, Bellanger defined digital sovereignty as "the control of our present and of our destiny as they manifest and orient themselves through the use of technologies and computer networks" (Bellanger, 2011). Bellanger proposes a similar analysis as the one provided by Grant (1983). He laments France's lack of control over the evolution of digital networks, which he characterizes as a loss of sovereignty. However, contrary to Grant, this loss of sovereignty is not only in economic terms (such as losing employment and industrial "backwardness"), but also refers to secrecy and security considering the capacity of the state to guarantee the confidentiality of its citizens' communications. In other words, the sovereignty of France in economic terms is equivalent to the nation-state sovereignty in the realm of the digital. In a similar way, one of the authors of this article (Couture, 2013) has insisted that the use of free and open source software by states and governments is a way of ensuring control over its informational infrastructure and fewer dependencies from private corporations.

The concept has also been used by political leaders to insist on the need to break technological dependence on foreign nations. Another example is the case of Brazil where, following Snowden's revelations, former President Dilma Rousseff proposed a plan to remove the Brazilian Internet from the influence of the USA and its tech giants (Holpuch 2013), which has been characterized by some analysts as a way to assert digital sovereignty (Rhodes and Armijo, 2014). In Canada, Obar and Clement (2013) have called for a re-assertion of Canadian Network Sovereignty by improving infrastructures in order to diminish data routing through the United States. They note that national sovereignty is threatened "when an otherwise internationally independent state has its rights and powers of internal regulation and control violated by the encroachment of a foreign body" (p. 1).

In an article published in 2015, Morovov argued that the concept of technological sovereignty might be one of the most important and controversial issues to emerge that year. He noted that efforts by countries such as China and Russia to assert sovereignty over the Internet had major consequences in terms of control and censorship. However, he noted a certain hypocrisy on the US' part, in the sense that while it decries these

states practices, its control over the Internet and technological tools has become hegemonic.

Nugraha, Kautsarina and Sastrosubroto (2015) put forward the term “Data Sovereignty” to describe the “reasonable efforts by nation states to subject national sensitive data flows to and across national borders” (p. 465). Examining the case of Indonesia, they write that while the term “data sovereignty” is not explicitly used in official Indonesian texts, many aspects of the legislation refer to it, especially concerning aspects of state defense against external threats. The authors suggest different proposals to enact data sovereignty, such as “encryption, national email services, data center localization, national routing of Internet traffic, and national backbone communications infrastructure” (p. 465).

For Polatin-Reuben and Wright, data sovereignty refers “to the attempt by nation states to subject data flows to national jurisdictions” (p 1). The authors note that data sovereignty is a “catch-all term” that has become an important international debate following the Snowden revelations. They distinguish between two poles of data sovereignty - weak sovereignty and strong sovereignty - between which different approaches are situated: “Weak data sovereignty” refers to “private sector-led data protection initiatives with an emphasis on the digital-rights aspects of data sovereignty” (p. 1), and strong data sovereignty “favors a state-led approach with an emphasis on safeguarding national security” (p. 1)². The authors especially analyze the respective approaches towards data sovereignty enacted from the BRICS countries (Brazil, Russia, India, China, and South Africa), identifying Brazil, India and South Africa as adopting a weak sovereignty approach while China and Russia are favoring stronger sovereignty approaches. For the authors, while strong sovereignty can lead to balkanization of the Internet (the fragmentation of the Internet in different self-contained networks), it is also difficult to enforce and can have negative economic and political impacts, caused by a country’s isolation in digital and physical space.

4.2 Social Movements Technological Sovereignty

The notion of technological sovereignty is also used to refer to the **autonomy** of social movements in relation to technology, and especially their power to develop and use tools which have been designed by them and/or for them. This perspective represents a rupture from the “state sovereignty” approaches described above. It affirms the need for collective (and sometimes individual) control of technologies and digital infrastructure, notably by the use of free and open source software.

² In our understanding (they do not really deepen these definitions), weak sovereignty would mean enforcing private sectors’ stakeholders so they encrypt their data and respect the privacy of their citizens, while a strong sovereignty signifies that states would have their own infrastructures.

Of significant importance for our work is an edited collection funded by French civil society organization Ritimo and coordinated by researcher-activist Alex Haché³. In her work, Haché writes that Technological Sovereignty relates to “technologies developed from and for civil society” (Haché, 2014, p. 11). The author explicitly defines civil society as the “the whole of citizens and collectives in which individual and collective actions are not foremost motivated by the lure of gain, but rather to respond to desires and needs and at the same time, develop social and political transformation” (p. 10).

More specifically, Haché refers to technological sovereignty in this paper as initiatives that create alternatives to commercial and/or military technologies. The author puts a great emphasis on free (and open source) software and hardware that form the basis - while not the whole - of technological sovereignty. She also writes about activist initiatives like decentralized community networks, encryption software, hackerspaces or activist collectives who reflect broadly on technopolitics.

To illustrate her point, Haché refers to the metaphor of “food sovereignty” as a reference point to understand technological sovereignty. Haché cites the Declaration of Nynia that defines food sovereignty as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods” and “the right to define and control our own food and agriculture systems” (Haché 2014, p. 9, free translation). Like the concept of food sovereignty, Haché’s concept of technological sovereignty is also ideologically oriented: it valorize local economies, sustainable technologies and the right of people to control their technological systems. While Haché considers technological sovereignty to be important for civil society (or, as we write, social movements), her definition of sovereignty could also be characterized as a people’s sovereignty.

While Haché’s edited collection is about technological sovereignty, only certain authors in this publication address this notion explicitly, which are mentioned here:

- Rieman, in the preface of the document does not define the notion, but notes that technological sovereignty itself will not solve all our contemporary crises and, more specifically, the environmental crisis.
- Richard Stallman, who invented the concept of free software, uses the notion of “computing sovereignty” (*souveraineté informatique*, in French) to refer to the duty of public services to “keep total control” of their computing tasks in the benefit of citizens, insisting that this control should never be left to private

³ This work is significant for our paper, not only for the original way in which technological sovereignty is conceptualized, but most importantly because it was the starting point of our reflection. Haché is a friend and colleague of ours, and the way technological sovereignty was used in her paper questioned us, as compared to others, which offered a more policy oriented reflection on the concept.

enterprises (p. 21). This perspective is closer to the “state sovereignty” perspective we developed earlier.

- Cadon notes that the question of technological sovereignty relates to our capacity to freely access the Internet, which involves, among other things, defending the principle of network neutrality and free access to Wifi spectrum, which would enable in turn, the development of alternative electronic networks which would be open, accessible and anonymous (the author cites Batphone, Deaddrop and Piratebox as examples).
- Elleflâne promotes the use of free hardware as a way to protect and defend technological sovereignty, in the sense that it allows individuals to not depend uniquely on one hardware or resource provider of its activity.
- For Ippolita, sovereignty refers to the capacity of people to establish their own rules, thus opposing the increasing prescriptions and Terms of Services developed by big private companies without much transparency and democratic legitimization.
- Maxigas retraces a history of hacklabs, which he considers a political project of technological appropriation that is grounded in the larger autonomous movement for transforming social life. Technological sovereignty, he writes, is interpreted as “the sovereignty of autonomous social movements, as a technology that is not controlled by the State or by Capital.”

The aforementioned authors, except Stallman, conceive of technological sovereignty as a form of technological independence from private enterprises, but also from the State, which sharply contrasts with previous perspectives, which were more policy oriented.

Another body of work that espouses a social movement’s interpretation of technological sovereignty is Tristan Nitot’s (2016) edited collection entitled *Numérique: Reprendre le contrôle* (Digital: Regain Control). Echoing the claims made by indigenous people and anti-colonial movements regarding the dispossession of lands by European colonists and/or settlers, this publication compares the use of our personal data by tech companies to a form of dispossession of individuals. In talking about dispossession, the publication highlights the well-known fact that the data that we produce using corporate digital services like Facebook, Google and the like, do not belong to us. Rather, it belongs to the company who provides the service. The user, it is argued, is thus stripped or dispossessed from what he/she has created for the purpose of third-party money making and/or surveillance. By thinking about technological sovereignty, the author brings to fore the possibility of the emergence of new practices, which will in turn change, he believes, the relationship we have to the digital, and our control over it. To be sovereign over one’s personal data is to gain in autonomy and freedom (Nitot 2016, p. 3).

At the level of discourse, Nitot notes that it is not easy to convince people of the relevance of the notion of technological sovereignty. This is in part due to the fact that many are not ready to change learned behaviors, and that the impact on the lack of sovereignty is too immaterial for users to fully comprehend, and hence difficult to grasp in comparison with the immediate benefits for the users (2016, 16). Raising awareness, the publication argues, is part and parcel of what technological sovereignty means. It is believed that an understanding of the current digital condition and its materiality will help the user to act and appropriate their technologies, data and content. For instance, the term *privacy by using*, rather than *privacy by design*, is mobilized to demonstrate that if individuals are accompanied in the process of technological sovereignty, they will begin to understand what privacy means in a digital context and hence change their personal behavior. *Privacy by using* in the context of technological sovereignty does not mean to completely reject a technology or services provided by tech giants, but rather it means to learn how to protect oneself from forms of dispossession.

To be sovereign also implies not to be at the mercy of tech projects that might eventually close. Blockchain - decentralized database - is given as an example where its decentralized feature brings more independence than centralized services (such as Facebook or Google). Moreover, while no one controls a blockchain, no one by him/herself can modify it. This, they suggest, is a promise of sovereignty (81).

The publication ends with a strong belief that users are ready for a new discourse that rethinks the current digital ecology. They argue that with the power of tech corporations, States are no longer able to maintain their citizens' online safety and security, and the onus now resides on them to build their own digital sovereignty. This is a call to seize the means of technological production. Finally, the publication suggests that we need to create alternative imaginaries through science fiction to tear down the predetermined dystopian technological future that lies ahead.

4.3 Indigenous Technological Sovereignty

The concept of sovereignty is currently mobilized by certain indigenous scholars to affirm their control over their resources and information relating to them. In recent years, a number of articles and books have come out using the terminology of sovereignty to address the intersection of technology and indigeneity. Taylor and Kukutai (2016) propose, for instance, an agenda on "Indigenous data sovereignty," where indigenous people have rights regarding the collection, ownership, and application of their data. In a similar vein, Bertram (2016) proposes the term "spectrum sovereignty" to insist on indigenous rights over the spectrum and on current neo-colonial dynamics that exist, where telecom companies resell spectrum usages to indigenous people at high prices.

The use of this terminology by indigenous authors and/or about indigenous issues, has to be situated in the larger struggle of indigenous people to reclaim sovereignty over their land, body, spirit and now the technology and its derivatives. By and large, indigenous technological sovereignty refers to the notion of (re)claiming data and technologies and their ownership. This type of sovereignty includes ownership over spectrum, data and technology, with the specific purpose of native sovereignty, self-governance, self-determination, and decolonization.

In *Indigenous Data Sovereignty: Toward an Agenda*, Kukutai and Taylor (2016) reflect on what data sovereignty implies. In other words, what does it look like? Their impetus for their theoretical and practical move came from the fact that data sovereignty has been dominated by states and/or corporations. What has been missing, they argue, is the voice and the rights of indigenous peoples in relation to the “collection, ownership and application of data about their people, lifeways and territories” (2016, 2). The book showcases case studies of practices and aspirations rooted in the self-determination of indigenous peoples.

In her chapter *Data Politics and Indigenous Representation in Australian Statistics*, Maggie Walter (2017) focuses on the ways in which statistics about indigenous people in Australia create a particular discourse imbued with a specific set of meanings, and in turn influence public policy. Walter argues that using indigenous methodological frameworks - data collection methods not rooted or descendant of colonialism - to understand the data itself might change the representation of indigenous people and ultimately policy making. This, she affirms, represents a form of sovereignty over the data and its interpretation.

Pathways to First Nations' Data and Information Sovereignty is a chapter written by the First Nations Information Governance Centre (2017), where they trace the emergence and meaning attached to the concept of indigenous data sovereignty in Canada. Following the gap in data collection on reserves, a process that stemmed from indigenous peoples were initiated. As part of a Regional Health Survey, indigenous peoples spearheaded and registered the trademark OCAP®, which means ownership, control, access and possession. This was a way for First Nations to own their information in “the same way that jurisdiction is exercised over First Nations' lands” (2017, 142). The issue of jurisdiction over territory and information are thus articulated through the prism of sovereignty.

In a similar vein, the book *Network Sovereignty: Building the Internet Across Indian Country* by Marisa Elena Duarte (2017) examines the question of the relationship between information, communication technologies (ICTs) and Indigenous people. The author argues that Indigenous people use ICTs to advance their quest for self-determination and self-governance. She shows that the state of connectivity and access

to different types of technologies on reserves is low. Duarte speaks, for instance, of the lack of cellular signal on reserves, the lack of indigenous content and language on radio, and the difficulty in accessing broadband Internet, among many others. While ICTs are integral to tribal sovereignty, Duarte argues that free and autonomous Native people have always shared information among themselves and their neighbors, which in turn have reinforced the knowledge of their homeland, philosophies, languages, cosmologies, etc. (Duarte 2017, 37). In this sense, there is a sort of overlap between technology and sovereignty, a latter term she understands as referring to the integrity of a people, as well as the integrity of their government. In speaking about other ways in which sovereignty is being used and framed through the use of technology, Duarte refers to the Montreal-based Aboriginal Territories in Cyberspace Collective. This collective has been engaged in the development of digital gaming environments to create a home for indigenous people on the Internet (Duarte 2017, 139).

Duarte's interpretation of technology is seen more as a *means* to enact a "network sovereignty" among indigenous people than the object itself of sovereignty, as is the case for most of the work we cite in this paper. In particular, we note that Duarte generally celebrates all forms of ICTs, such as the use for corporate social media (Facebook and Twitter, among others) as effective tools for the practice of indigenous self-determination. This perspective is closer to the *privacy by using* approach than a "hacker" perspective, which sees the use of free software and hardware as an essential condition of technological sovereignty.

4.4 Personal Technological Sovereignty

This category refers to the control of an individual over her data, device, software, hardware and other technologies, including reproductive technologies. In referring to personal technological sovereignty, it seems that one of the most common notions relates to the issue of privacy. The issue of privacy has become an important battle for organizations (such as the Electronic Frontier Foundation) and movements (such as hackers) alike. It also is in this context that the rise of encrypted tools for the masses (Signal, Telegram, WhatsApp, etc.) have become an important focus for the hacker community. The use of encryption can be understood through the prism of personal technological sovereignty in the sense that it allows individuals to have the perception of ownership over the content of their discussions with others, while often leaving the metadata in the clear.

The notion of individual or personal technological sovereignty can also refer to women's bodily sovereignty. This association, used by some feminists, aim at trying to draw a parallel between one's body and one's technology. In her article, *Sexting Girls: Technological Sovereignty and the Digital*," Julian Gill-Peterson (2015) refers to the relationship between technology (in this case, cell phones) and the possibility for girls to

have bodily sovereignty in the sense that they can decide to engage in the practice of sexting (i.e. sending sexual selfies of themselves through this medium). While the article highlights the contradictions that emerge with this practice, it also discusses a new reading of sexting, one that instead of rendering girls victims and in need of protection from the law, focuses on their digital agency, which is thought through the technological sovereignty of their bodies. While the essay questions the notion of digital sovereignty through this practice, and advances the non-sovereignty of the girl who sexts, it also recognizes the trap of a binary understanding of the sovereignty of girls over their sexuality when the question is framed as either vulnerability or agency.

4.5 Technology as a means for Sovereignty

Recent scholarly work has tried to re-conceptualize or reaffirm the notion of sovereignty itself in the context of increasingly complex relationships between networks and places. In his book *The Stack: On Software and Sovereignty*, Bratton (2015) develops a conceptual analysis of the relationship between software and sovereignty. For Bratton, the planetary-scale infrastructures of computation, which he calls “The Stack,” represent a break with the ways in which Westphalian nation-states sovereignty is enacted. He shows, for instance, how a war over a shifting virtual border almost erupted when Google Maps decided to slightly shift the border between Nicaragua and Costa Rica in 2010. Moving away from horizontal subdivisions of space (expressed by national laws, currencies, etc.), he sees the new governing logic of the Stack as acting vertically through a set of layers – which he names Earth, cloud, city, interface, address and users) – which in turn act in their own sovereign ways.

Contrary to this argument, Tong-Hui Hu (2015) in *A Prehistory of the Cloud* argues that the sovereignty of nation states is reaffirmed digitally when they use their prerogative power to cut Internet access to entire populations. The war in Syria is given as an example to highlight a turn to the reterritorialization of the Internet: nation states having the power to control whether the Internet flows or not. Moreover, it is used to show the extent to which “crowdsourcing” in the context of war may be used to reinforce sovereignty. For that, he uses the case study of American radio-frequency hackers who used open data on the Internet in order to help NATO locate sensitive sites to be bombed in the 2011 Libyan NATO military intervention.

While these two conceptualizations are different in their analysis, their common ground is technology as a means for sovereignty. Technology is not an object of sovereignty, rather it is a means to further sovereignty.

5 Technological Sovereignty: Commonalities of Uses and Interpretations

The conceptualization of technological sovereignty varies according to the different actors involved. In the following, we have identified a number of commonalities that exist between the different uses and interpretations of the concept:

- The concept of technological sovereignty is being used by individuals, civil societies, and the state to mark their opposition to different kinds of hegemonies, be it the hegemony of the USA or the hegemony of corporations. More precisely, technological sovereignty is framed as an opposition to a hegemonic power, namely the United States and in more contemporary work, its biggest private tech companies; most specifically the GAFAM (Google, Amazon, Facebook, Apple, Microsoft).
- The notion of technological sovereignty relates to the notion of autonomy in two ways: 1) The capacity to innovate and/or engage in technological development (by developing free software, etc.), 2) The security and/or privacy of individuals or collectives (such as *privacy by design*).
- The concept of technological sovereignty seems to be used to conceptualize forms of “subaltern” perspectives. This brings us to the question of why American actors do not seem to locate their discourse along the technological sovereignty lines. While we do argue that the free and open-source movement, in addition to a hacker perspective, embodies such a stance in their practice, they do not use the language of technological sovereignty as the French free and open source movements do, for instance.
- While the concept of technological sovereignty does not seem to be used by USA actors, a discourse on appropriate technologies has existed and has been used by activist techies and engineers to locate their practice. This framework has been used to connect the current practice of low-power FM (LPFM) radio activists to past practices in the USA. The book *Low Power to the People: Pirates, Protest, and Politics in FM Radio Activism* by Christina Dunbar-Hester (2014) focuses on such a practice and framework. While she does use the term technological sovereignty, the title of her book gestures toward forms of autonomy when it comes to community radio.

6 Conclusion: Unsettling Technological Sovereignty

Our study shows that, while the notion “technological sovereignty” has been used since at least the early 1980s, recent years have been marked by an increase interest in the notion, in order to assert some form of individual and collective control empowerment over digital technologies. For instance, the concept of technological sovereignty is being used by different actors to resist the hegemony of the USA as a leading state in surveillance inasmuch as a host of some of the biggest and most powerful technological companies in the world. Moreover, while the concept was mainly used in the past to

address state control over technology, it now seems to be appropriated by individuals, civil society actors, as well as subaltern populations, such as indigenous people who use the notion as a way to address self-determination. One catalyst for the increasing use of this concept seems to be the Snowden revelations, which highlighted the scandal of mass surveillance with the complicity of powerful Silicon Valley companies.

This increased use of the notion “sovereignty” in discourses also echoes Bonelli (2017), who previously noted the recent emergence of a “sovereignty turn” in the humanities and social sciences. As Bonelli notes, however, the notion of sovereignty is not a neutral category. Sovereignty, she writes, is deeply rooted in the Western history of colonialism and imperialism, and continue to enact a “project of the west,” still deeply encoded in the structures of international law.

In the case of the digital, the current discourse of technological sovereignty should also be articulated with the more the ancient metaphor of the “electronic frontier” put forward in the nineties (Barlow 1996; Turner 2010, p. 172) to compare the Internet (then called “cyberspace”) as a space similar to the “wild west,” whose independence needed to be defended against state control. Although similarities between “technological sovereignty” and “independence of cyberspace” are evident on the semantic level (though in contrary to the idea of “cyberspace independence”), technological sovereignty is often used to assert state control on the Internet, not deny it. It also permits us to root our analysis in an older discourse that is also strongly articulated with a colonial dimension.

So what then is to be gained and to be lost in the use of “sovereignty” when thinking about Internet Governance? Who exactly is using the notion of “sovereignty” today? How will the discourse around technological sovereignty impact the ways in which scholars, activists, policy makers and techies think about the governance of the Internet? While this article has looked at the discourse around technological sovereignty, how will the materiality of this actual discourse impact Internet governance as a whole? How are the neo-colonial entanglements associated with technology today - sovereign or otherwise - and how are they addressed?

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