Thielmann, Tristan, and Christoph Borbach, 2025. "The Digital Leviathan: Medializing Sovereignty for Critical AI and Data Studies." *communication +1*, vol. 11, issue 2, pp. 1—31.
DOI: https://doi.org/10.7275/cpo.3521

The Digital Leviathan: Medializing Sovereignty for Critical AI and Data Studies

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This introduction to the special issue investigates the concept of digital sovereignty at the intersection of political philosophy, media theory, and Critical AI and Data Studies. While sovereignty has traditionally been tied to the nation state, current debates—ranging from platform governance and data capitalism to the discourse on Sovereign AI—demonstrate that power is increasingly mediated by corporate infrastructures and algorithmic systems. Revisiting Thomas Hobbes' *Leviathan* and its medial figuration of sovereignty, the article traces how sovereignty has always been articulated through representational practices and visual strategies. Building on actor-network theory, the article argues that digital sovereignty must be understood as a distributed, recursive, and conditional phenomenon: it emerges through socio-technical mediations across data life cycles, platform infrastructures, and algorithmic practices. The analysis develops a framework for examining how sovereignty is reconfigured under digital conditions, highlighting both its paradoxical specificity and its entanglement with data objects, infrastructural dependencies, and media imaginaries. In this way, the paper positions digital sovereignty as a central object of inquiry for Critical AI and Data Studies, offering conceptual tools to address its practices, infrastructures, and theories through the contributions gathered in this special issue.

1. Introduction

Digital sovereignty is a term of high relevance for both human and non-human actors. It encompasses the boundaries of control for individuals, as well as the infrastructural, state, and territorial limits within which modes of ruling can be enforced. The establishment of digital sovereignty has a dual function: it points to the loss of control experienced by states, collectives/organizations, as well as individual actors due to the supranational power of Big Tech. The dominance of platform economies, data work within platform capitalism, and the monopolization of digital spaces by corporations such as Google, Amazon, and Meta highlight how sovereignty is now increasingly exercised not by nation states alone, but also by corporate actors that mediate access to information and communication and control the logics of their algorithmic data processing. At the same time, the promise of (re)gaining digital sovereignty suggests that state, collective, and individual actors might be able to 'take back control' over their countries, data, technologies, or lives.[1]

Against this background, the politically strongly promoted notion of "Sovereign AI" refers to a country's or organization's ability to exercise independent control over its AI technologies, data, workforce, and infrastructure.[2] By contrast, the interests of the users stand opposed. For example, contemporary debates centered around the use of personal data for training of AI illustrate how digital sovereignty has expanded beyond the realm of nation states.[3] In 2025, users of Facebook and Instagram were required to actively opt out of having their personal data, pictures, etc., used to train Meta AI,[4] foregrounding how individual agency is increasingly entangled in opaque processes of data governance. Similarly, the recent digitization of healthcare systems raises concerns about how biometric and health-related data—once considered private data—are now subjected to algorithmic evaluation and, possibly, commodification, enabling potentially new modes of data-based biopolitics.[5] These two

[1] See Alexandre Costa Barbosa et al., "Digital Sovereignty in times of AI: between perils of hegemonic agendas and possibilities of alternative approaches," *Liinc Em Revista* 20, no. 2 (2024), https://doi.org/10.18617/liinc.v20i2.7312.

[2] See Angie Lee, "What Is Sovereign AI?" *Nividia.com*, February 28, 2024, https://blogs.nvidia.com/blog/what-is-sovereign-ai, accessed September 5, 2025.

[3] Eli Tan, "When the Terms of Service change to make way for A.I. Training," *New York Times*, June 26, 2024, https://www.nytimes.com/2024/06/26/technology/terms-service-ai-training.html, accessed September 5, 2025.

[4] Melissa Heikkilä, "How to opt out of Meta's AI training," *MIT Technology Review*, June 14, 2024, https://www.technologyreview.com/2024/06/14/1093789/how-to-opt-out-of-meta-ai-training, accessed September 5, 2025.

[5] Alex Wells and Aminu Bello Usman, "Privacy and biometrics for smart healthcare systems: Attacks, and techniques," *Information Security Journal: A Global Perspective* 33, no. 3 (2023): 307–31, https://doi.org/10.1080/19393555.2023.2260818.

examples point to a broader condition: digital sovereignty is not only a matter of political control or legal frameworks, but deeply embedded in everyday media practices.

As a political term, sovereignty has traditionally been associated with the state. Derived from the Latin *superanus*, meaning 'above' or 'superior,' it entered other languages through the French *souveraineté*. The original understanding of sovereignty is based on the centralization of power: the sovereign holds the ultimate decision-making authority and monopoly on violence. Over time, however, the concept distanced itself from its absolutist roots and became supplemented by stronger democratic legitimacy. Sovereignty was democratized by elevating the citizen to the true sovereign, counterbalancing the concentration of power through democratic control, as contemporary scholars on digital sovereignty such as Thorsten Thiel[6] or Julia Pohle et al.[7] emphasize. Through the recent development and debate on "Sovereign AI," which enables the technological entrenchment of autocratic structures, the totalitarian and absolute conception of sovereignty has also regained relevance.[8]

The discourse on digital sovereignty has consequently been shaped primarily by the social sciences, particularly Political Science and Communication Studies, as programmatically illustrated by studies and publications in the field, such as by Julia Pohle and Thorsten Thiel,[9] Georg Glasze et al.,[10] or Thorsten Jelinek.[11] Hardly any research has been conducted on the *mediality* of sovereignty, although it is already inscribed into the foundational text of modern sovereignty theory. This special issue seeks to change this by, first, examining how sovereignty has been medialized[12] since

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[6] Thorsten Thiel, "Das Problem mit der digitalen Souveränität," *Frankfurter Allgemeine Zeitung*, January 26, 2021, https://www.faz.net/pro/digitalwirtschaft/europa-will-in-der-informationstechnologie-unabhaengiger-werden-17162968.html, accessed September 5, 2025.

[7] Julia Pohle et al., "Das Subjekt im politischen Diskurs zu 'digitaler Souveränität'," in *Handbuch Digitalisierung und politische Beteiligung*, ed. Norbert Kersting, Jörg Radtke, and Sigrid Baringhorst (Springer, 2022).

[8] See Rui-Jie Yew et al., "'Sovereignty' Myth-Making in the AI Race," *Tech Policy Press*, July 7, 2025, https://www.techpolicy.press/sovereignty-myth-making-in-the-ai-race, accessed September 7, 2025.

[9] Julia Pohle and Thorsten Thiel, "Digital sovereignty," *Internet Policy Review* 9, no. 4 (2020), https://doi.org/10.14763/2020.4.1532.

[10] Georg Glasze et al., "Contested spatialities of digital sovereignty," *Geopolitics* 28, no. 2 (2023): 919–58, https://doi.org/10.1080/14650045.2022.2050070.

[11] Thorsten Jelinek, *The digital sovereignty trap. Avoiding the return of silos and a divided world* (Springer, 2023).

[12] On the difference of 'medialization' and 'mediatization,' see Theo Hug and Rainer Leschke, "On the medialization of the world and the mediatization of discourse. Explorations between the poles of conceptual politics in medial infrastructures and concept-analytical differentiations," *Media Theory* 5, no. 1 (2021): 59–88.

Thomas Hobbes' 17th-century work and how these insights can be applied to contemporary discussion. Building on this, the second section develops a research framework for investigating digital sovereignty in the context of Critical AI and Data Studies, diagnosing the particular paradoxical specificity of digital sovereignty from a media-theoretical perspective. The third section (Chapter 4) discusses and summarizes the individual contributions to this special issue.

2. Medialized Sovereignty

Thomas Hobbes' *Leviathan, or The Matter, Forme and Power of a Commonwealth Ecclesiasticall and Civil* (1651) is the central work in the discourse on sovereignty—in political philosophy, legal theory, and media theory alike. Its relevance endures because Hobbes created a theoretical, symbolic, and media figure for modern statehood and political order in *Leviathan*. Hobbes described the state as an "artificial man," basically a synthetic human assemblage, created by a social contract, whose soul is the sovereign. This makes Hobbes the founder of the modern concept of sovereignty, in contrast to the theologically legitimized rule of premodernity. Hobbes' concept of sovereignty is reflected medially, especially through the frontispiece of *Leviathan*, which depicts the sovereign as a visual composite of the bodies of the subjects (see Fig. 1). The frontispiece shows the sovereign ruling over land, cities, and their inhabitants. In his hands, he holds the crosier and the sword: symbols of spiritual and worldly power. His body is composed of the people who have consented to the social contract.

Hobbes' *Leviathan* holds special significance in actor-network theory (ANT). It serves as a key reference to explain the emergence of a macro-actor (society) from a multitude of micro-actors. In Hobbes' depiction of the state, Bruno Latour and Michel Callon see an analogy to such a composite actor that arises through the networking of many individuals. Callon and Latour argue that, in outlining the emergence of the modern state, Hobbes articulated "for the first time the relationship between micro-actors and macro-actors," without presupposing a fundamental distinction between the two.[13] His solution to overcoming the "state of nature" was to design a social contract through which a multitude of individuals authorize a sovereign to speak and act on their behalf. Put in the words of Hobbes himself:

[13] Michel Callon and Bruno Latour, "Unscrewing the Big Leviathan; or How actors macrostructure reality, and how sociologists help them to do so?" In *Advances in Social Theory and Methodology*, ed. Karin Knorr-Cetina and Aaron Victor Cicourel (Routledge and Kegan Paul, 1981), 277–303, here 278.

Fig. 1: Frontispiece to Thomas Hobbes, *Leviathan*, London 1651. Etching on paper, London, British Library.

> "This is more than consent, or concord; it is a real unity of them all, in one and the same person, made by covenant of every man with every man, in such manner, as if every man should say to every man: *I authorize and give up my right of governing myself to this man, or to this assembly of men, on this condition; that you give up, your right to him, and authorize all his actions in like manner*."[14]

For Callon and Latour, this proposal is intriguing because "Hobbes sees no difference of level or size between the micro-actors and the Leviathan *which is not the result of a transaction*" or translation.[15] In this view, sovereignty is produced by the actors themselves, as long as they are connected through both a *social contract* and a *network*. The body politic of the state becomes indistinguishable from the biological body of a

[14] Thomas Hobbes, *Leviathan. Edited with an introduction and notes by J.C.A. Gaskin* (Oxford University Press, 1998 [1651]), 114.

[15] Callon and Latour, "Unscrewing the Big Leviathan," 278.

human organism. As Callon and Latour describe it: "The construction of this artificial body is calculated in such a way that the absolute sovereign is nothing other than the sum of the multitude's wishes."[16]

Callon and Latour develop the foundations of ANT through their analysis in "Unscrewing the Big Leviathan." People connected through social contracts become actors. All these actors are isomorphic and to be understood as a network. This is, interestingly, reflected in an image of a 'digital sovereign' generated by ChatGPT, in which the Leviathan's body is no longer composed of a multitude of people but of a meshed network of nodes and connections: where formerly the people who consented to the social contract were, there are now network connections that give the synthetic sovereign its corporeal form (see Fig. 2). In this way, technical systems are assigned the status of actors—surprisingly, completely in line with the basic argumentation of ANT.

The ChatGPT visualization offers a multilayered interpretation of digital sovereignty by linking the political and legal dimensions of state power with the capabilities of modern technology. The central figure stands in the middle of the image and assumes the imposing, all-encompassing presence of the original. Its body is grand, majestic, and at the same time threatening, as in Hobbes, but this time it consists of an extensively branched network that extends from the body across the Earth. ChatGPT interprets this as follows: "The silhouette of the Leviathan is defined by digitally inspired lines and nodes, reminiscent of circuit paths or neural networks, symbolizing the flowing movement of data."[17]

In its dominant right hand, the Leviathan holds a towering staff. At its tip is not a sword symbolizing worldly power, but a stylized cloud-like shape that simultaneously evokes a traditional cloud and modern cloud infrastructures. In its left hand, it presents an open laptop, with the screen drawing the viewer directly into the digital sphere. The screen is black, giving it a potentially threatening appearance. The landscape background lacks the detail of the classical engraving: it features historical city elements like a church and a medieval city wall, around which satellite dishes, transmission towers, and, according to ChatGPT's interpretation, data centers and server farms are also grouped.

[16] Ibid.

[17] Dialogue with ChatGPT 4.0, accessed July 13, 2025.

Fig. 2: The Digital Leviathan above the Commonwealth. Prompt (ChatGPT 4.0): "Show me, using the example of 'The Big Leviathan' by Thomas Hobbes, how digital sovereignty can be visualized."

But let us return to the original image (Fig. 1). The sovereign in Hobbes' *Leviathan* is constructed not only through legal or political theory, but also through media techniques of representation. This already makes the Leviathan from 1651 a media-theoretical model of power in which sovereignty is rendered visible, imaginable, and tangible. At the heart of this interpretation lies the frontispiece—engraved by Abraham Bosse under the supervision of Hobbes—which visually represents the sovereign as a gigantic figure composed of the bodies of the governed. The sovereign is shown as emerging from the landscape, towering above city and countryside. His face is individualized, while the body dissolves into a multitude: the unity of the state as a fiction of visual synthesis. It is notable that this is an early example of composite imaging—a technique we would today associate with data visualizations, crowd renderings, or algorithmic patterning.

As Horst Bredekamp argues, the Leviathan is not just a political figure but a media figure.[18] The sovereign is not only thought but shown, and only by being shown can be thought. According to Bredekamp's image-theoretical considerations, Hobbes employs "an artificial framework" for representing the sovereign—one that is "capable of supplying, then continuously supporting, its own contractual basis."[19] This stabilizing instance, which is intended to translate the social contract into enacted authority and enduring legitimacy, lies not only in the monopoly of violence but also in the production of emblematic imagery. At the visual and conceptual center of this imagistic regime stands the frontispiece of *Leviathan*, where the upper half is dominated by the monumental figure of the sovereign, whose composite body renders political unity visible. The gaze directed at the giant's head from all human positions is reflected back through his eyes to the viewer, who is simultaneously invited to reconstruct the low-angle (frog's-eye) perspective of the rear-facing figures and, at the same time, is interpellated by the sovereign's face at eye level. The following passage by Bredekamp underscores how this quasi double-perspective is inscribed both into the content of Hobbes's argument, and also into the argument's formal imagery:

> "The contradictory character of the state as envisaged by Hobbes and expounded in the text of his *Leviathan*—called into being by individuals contractually opting for the benefits and responsibilities of a life in common under an acknowledged authority, yet always susceptible to the weakness occasioned by a loss of communal cohesion—is already

[18] Horst Bredekamp, *Leviathan: Body politic as visual strategy in the work of Thomas Hobbes* (De Gruyter, 2020).

[19] Ibid., 10.

> vouchsafed, to anyone opening the volume, in the vast discrepancies of purpose and of power at play within this ocular interchange."[20]

Following the trajectories of gaze, a circular virtual flow of data is established between the various 'figures' involved, which stabilizes sovereign action. From the perspective of actor-network theory, sovereignty is not imposed from above, instead, "sovereignty comes from below and through step-by-step concatenation."[21] If one takes this approach seriously, one can observe from a media-theoretical perspective that a quasi-data stream emanates from the people and is directed toward the center of power, which in turn fixes its gaze on the observer, who identifies with the citizens depicted. This creates a circular gaze loop between the represented people, the virtual sovereign, and the physical viewer of the etching on paper. But can this historical design of a visual process for exercising sovereignty be transferred to the analysis of contemporary digital phenomena?

3. Digitized Sovereignty

Data are no mere inert or passive re-presentations of the world, but dynamic socio-technical presentations shaped by the infrastructures, protocols, or institutions through which they circulate—while at the same time shaping these very infrastructures, protocols, and institutions. This understanding of data as a contextual and transformative "assemblage"[22] is particularly relevant to debates on digital sovereignty, where control over data entails navigating privacy questions of ownership and access, but also the mutable and entangled nature of data itself. As the following passage illustrates, digital data are in constant flux, undergoing transformation as they move 'through step-by-step concatenation' between infrastructures, networks, and environments—an ongoing process that complicates any attempt to define them in stable terms:

> "Unlike their paper-based antecedents, digital data are remade on a continuous, real-time basis and often on demand. As they enter the gears of a capillary infrastructure by which they are generated, data are continuously edited, rendered compatible with other data, standardized, ported across settings, and recontextualized. A piece of news on the web is constantly edited, and its delivery is personalized. So do

[20] Ibid., 7.

[21] Bruno Latour, *After lockdown: A metamorphosis* (Polity, 2021), 124.

[22] Ceilyn Boyd, "Data as assemblage," *Journal of Documentation* 78, no. 6 (2021): 1338–52, https://doi.org/10.1108/JD-08-2021-0159.

> most data-based services offered online. During this process of ongoing data production, editing, and processing, several data types emerge and constantly change. Data are cleaned and aggregated, are combined and repurposed, change formats as they travel across systems and software applications, lose some of their properties, and acquire new ones as they are brought to bear upon various contexts or markets."[23]

Moreover, the life of data is embedded in transnational socioeconomic arrangements and maintained through interdependent technological infrastructures. Data increasingly appears to lead an autonomous life of its own. This presents challenges for both the analysis and the practical implementation of digital sovereignty. In particular, data sovereignty lies at the heart of the debate when we speak of digital sovereignty.[24] The following section attempts to reaccentuate this focus on data sovereignty, which has emerged in the course of digitization discourses.[25]

For the future study of digital sovereignty, we consider it crucial to shift the focus from discussions of individual, collective, national, or supranational sovereignty to the sovereignty of *data themselves*. This means taking data seriously as an actor and examining its sovereign status at every stage of the data life cycle. So far, the scientific discussion has been fragmented, focusing either on data production, data sharing, or data use, without taking the entire life of data into account.[26]

Data life cycles are often conceived as a sequence of interconnected steps. It is called a cycle because each step involves elements of self-evaluation and feedback that loop back to the initial stage, namely, the relevant question, problem, or event that serves as the starting point. A typical scientific data process begins with the formulation of the problem and proceeds through the collection, wrangling, cleaning, modeling, representation, distribution, and interpretation of data.[27] Other data life cycles describe the complete journey of data within an organization, from data generation,

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[23] Cristina Alaimo and Jannis Kallinikos, *Data rules: Reinventing the market economy* (MIT Press, 2024), 61.

[24] See Petra Gehring, "Datensouveränität versus Digitale Souveränität: Wegweiser aus dem konzeptionellen Durcheinander," in *Datensouveränität. Positionen zur Debatte*, ed. Steffen Augsberg and Petra Gehring (Campus 2022), 19–44.

[25] See Patrik Hummel et al., "Data sovereignty: A review," *Big Data & Society* 8, no. 1 (2021), https://doi.org/10.1177/2053951720982012; or Gehring, "Datensouveränität versus Digitale Souveränität."

[26] See, e.g., the concentration on data sharing in Aaron Martin, "Why sovereignty matters for humanitarian data," *Big Data & Society* 12, no. 3 (2025), https://doi.org/10.1177/20539517251361109.

[27] See Cecilia Aragon et al., *Human-centered data science: An introduction* (MIT Press, 2022).

collection, processing, storage, management, analysis, visualization, to interpretation.[28]

Regardless of which cycles one refers to, most life cycles can be divided into eight steps. As the final step of the process feeds back into the first, this gives rise to the model of seemingly endless data paths spreading out within an ecosystem of different data lives, some of which prosper while others decay. Such a holistic and integrated view also allows us to analyze how sovereignty has been and continues to be digitized. In this regard, the elaborated theory of data life cycles, developed by Cristina Alaimo and Jannis Kallinikos, is particularly helpful.[29]

In their book *Data Rules*, Alaimo and Kallinikos argue that data is not simply given, but rather socio-technically produced, formalized, and constantly transformed. Therefore, data undergoes non-linear cycles of generation, aggregation, interpretation, re-formatting, utilization, and commercialization. In this process, "data objects" are formed, which function as structuring, epistemic, and action-coordinating units within data-driven systems.

According to Alaimo and Kallinikos, data objects are digital units composed of aggregated data, operating as "mediating cognitive devices."[30] These data objects serve multiple central functions within the data life cycle: (1.) They function as "knowledge objects," meaning tools for generating and organizing knowledge that translate complex, fluid data streams into processable units. Examples include user profiles, credit scores, or digital twins. (2.) They perform coordinative functions, acting as interfaces between various actors, systems, and domains. (3.) Furthermore, they also have a transformative function: enabling new practices such as data-based business models, algorithmic decision-making, or machine learning.

Crucial to the discourse on digital sovereignty is that data objects, while unable to be sovereign themselves due to their fluid and "heavily mediated" nature,[31] nonetheless act sovereignly by pre-structuring decisions (e.g., through scores), organizing markets (e.g., through bid request objects), or formatting reality (e.g., via authority data, standardization, etc.). In this sense, analyzing the emergence and processing of data objects within a data life cycle can help make delegated or structural sovereignty analytically accessible and scientifically researchable. Such an analytical model is also applicable to AI. In this respect, Critical AI Studies are hardly distinguishable from

[28] See Tim Stobierski, *A beginner's guide to data & analytics* (Harvard Business School, 2021), https://online.hbs.edu/blog/post/data-life-cycle, accessed September 6, 2025.
[29] Alaimo and Kallinikos, *Data rules*, 61–87.
[30] Ibid, 76.
[31] Ibid., 71.

Critical Data Studies.[32] Both research fields share the view that the use of data—its actors and purposes—is constitutive of its very nature and meaning. Generative AI functioned as a distraction merely for a brief period, obscuring the growing centralization of data and power among a few dominant corporations and platforms.

Let us weave these single threads together. Transferring Latour's concept of political sovereignty as agency, together with Bredekamp's notion of the mediality of political figuration, to the conditions of digital sovereignty implies two things: (a) the analysis of virtual data flows is of critical importance for the emergence and stabilization of sovereign action; and (b) it becomes essential to analytically expose what precisely is included in the social "covenant of every man with every man,"[33] through which digital sovereignty is delegated and transferred as individual will merges into collective will. From our perspective, and in light of existing research in Critical Data and AI Studies, this can be achieved through the analysis of the "social life of data."[34]

In updating Callon and Latour's classical analysis of a new body politic from 1981, it seems useful to conceptualize digital sovereignty as a distributed accomplishment. It is based on a multitude of small socio-technical mediations that unfold in every step of data production, distribution, and consumption. Data-intensive media, distributed agency, and digital sovereignty are thus co-constitutive for reinventing media theory as a critical data theory capable of answering fundamental questions about the possibilities and tensions of digital sovereignty.

The history of sovereignty—if one were to trace it, for example, to the space-spanning network of the colonies of Classical Athens and Crete—was never solely about territorially bounded sovereignty, but rather about a political order subject to specific conditions.[35] In this sense, digital sovereignty is an autonomy, an authority, or a rule that is entirely subject to the conditions of the digital. It constitutes a conditional sovereignty that both describes and constructs the agency of digital actions.

For political science, the digital in digital sovereignty refers to a networked order.[36] In this context, political scientist Thorsten Thiel characterizes sovereignty as a concept in the history of ideas that remains diffuse and increasingly overdetermined.

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[32] See Katherine Bode and Lauren M.E. Goodlad, "Data worlds: An introduction," *Critical AI* 1, no. 1-2 (2023), https://doi.org/10.1215/2834703X-10734026.

[33] Hobbes, *Leviathan*, 114.

[34] Alaimo and Kallinikos, *Data rules*, 63.

[35] See John Agnew, "The contingency of sovereignty," in *A Research agenda for territory and territoriality*, ed. David Storey (Edward Elgar, 2020): 43–60.

[36] See Esther Menhard and Thorsten Thiel, "Interview: 'Wir müssen nicht digital souverän werden,'" *Netzpolitik.org*, April 5, 2025, https://netzpolitik.org/2025/interview-wir-muessen-nicht-digital-souveraen-werden/, accessed September 5, 2025.

From a media-theoretical perspective, the specificity of digital sovereignty lies in the condition of binary coding: the representation of all data through the symbols 0 and 1. The distinction between 0 and 1 is constitutive of the digital. Digitality thus refers to an epistemic disposition toward capturing, structuring, describing, and making the world available. Under digital conditions, this means being able to distinguish between binary oppositions such as self and other, inside and outside, truth and falsehood, legal and illegal.[37] These binaries are not just the technological imaginary of digitality but also form its epistemic, logical, and sometimes even logistical functions: Renegotiations of supposed binaries and boundaries through digital technologies and digital media environments that shall ensure state sovereignty are currently materializing in the field of digital boundaries and borders, which govern the inclusion and exclusion of human subjects based on algorithmic processes of identification and classification (and potentially discrimination). "The current retrofitting and technological remediation of borders," Tamara Vukov and Mimi Sheller argue, "suggests their transformation away from static demarcators of hard territorial boundaries toward much more sophisticated, flexible, and mobile devices of tracking, filtration, and exclusion."[38] This flexibilization of territorial boundaries applies nowadays, for example, to the phenomenon of virtual fencing and its sensor-based terrain modelling.

Rather than reducing the perspective to merely cases in which sovereignty is distributed with and through digital technologies, it should be noted that the digital has its *own* form of sovereignty—sometimes independent, sometimes entangled with the longstanding contingency of sovereignty rooted in the hierarchical structure of nation states. There exists a notion of the complementarity of analog and digital sovereignty, ideally working hand in hand—where digital sovereignty is often conceived as a repair mechanism for increasingly inadequate analog sovereignty, as Luciano Floridi points out.[39] However, such diagnoses fall short when attempting to grasp digital sovereignty from a media-theoretical perspective. A foundational definition is provided by Bruno Latour in his conference keynote "*Onus Orbis Terrarum*: About a Possible Shift in the Definition of Sovereignty." Here, Latour argues that the origin of the concept of sovereignty is a deeply spatial phenomenon if one traces it back to its philosophical roots:

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[37] See Niklas Luhmann, *Social Systems* (Stanford University Press, 1995).

[38] Tamara Vukov and Mimi Sheller, "Border work: Surveillant assemblages, virtual fences, and tactical counter-media," *Social Semiotics* 23, no. 2 (2013): 225–41, https://doi.org/10.1080/10350330.2013.777592. For the politics of bordering, see also Louise Amoore, "The deep border," *Political Geography* 109 (2024), https://doi.org/10.1016/j.polgeo.2021.102547.

[39] Luciano Floridi, "The fight for digital sovereignty: What it is, and why it matters, especially for the EU," *Philosophy & Technology* 33, no. 3 (2020): 369–78, https://doi.org/10.1007/s13347-020-00423-6.

> "Although sovereignty is a concept apparently restricted to law, political philosophy, and geopolitics, everything happens as if an implicit principle of sovereignty comes into the picture whenever any entity—human or non-human—is defined as *distinct* from any other and as occupying a certain chunk of space. The reason I choose to go this way is because everything that is tied by such a knot depends on the idea that entities are *impenetrable* to one another, and are, for that reason, *delineated* by precise boundaries that define their identity."[40]

Impenetrability proves to be a key concept of any sovereignty, especially digital sovereignty, since algorithmic processes are characterized by opaque structures. From a media-theoretical perspective, practicing sovereignty implies that (1.) parts exist, (2.) these parts interact, and (3.) intermediaries are needed to enable translation and transformation so that interactions among parts can take place.

Drawing on Alfred North Whitehead, Latour argues that sovereignty arises through partitioning, and partitioning is the result of a localization process—as generated through a system of coordinates or, for example, Google Maps. Sovereignty, from the very beginning, is thus a media-geographical undertaking. For Latour, the difficulty in exercising sovereignty lies in the fact that the principle of localization is subject to certain weaknesses and unintended artifacts. These include relations, scales, causalities, and agency losses that obscure the coexistence of distinct parts (as *partes extra partes*). In particular, the idea of scaling—from the local to the global and back—is often misinterpreted, as if something small resides within something large and as if one could seamlessly zoom in and out between different modes of existence. In this regard, digital cartography has undermined sovereignty, while at the same time offering tools to compensate for this undermining. For instance, Google Maps and other U.S.-based digital map providers rebranded the Gulf of Mexico as the Gulf of America, demonstrating that the digital terrain is subject to the sovereign authority of the United States.[41]

According to Bruno Latour, sovereignty is thus challenged by media practices of relationalization, scaling, causalization (stimulus-response, cause-effect), and de-animation, while simultaneously being reinforced by digital-ontological features such as binarity and impenetrability. In this sense, digital sovereignty emerges as a paradoxical undertaking—one that can neither be fully established nor entirely lost.

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[40] Bruno Latour, "*Onus orbis terrarum*: About a possible shift in the definition of sovereignty," *Millennium: Journal of International Studies* 44, no. 3 (2016): 305–20, here 311, https://doi.org/10.1177/0305829816640608.

[41] See "Gulf of Mexico naming controversy," *Wikipedia*, September 5, 2025, https://en.wikipedia.org/wiki/Gulf_of_Mexico_naming_controversy, accessed September 5, 2025.

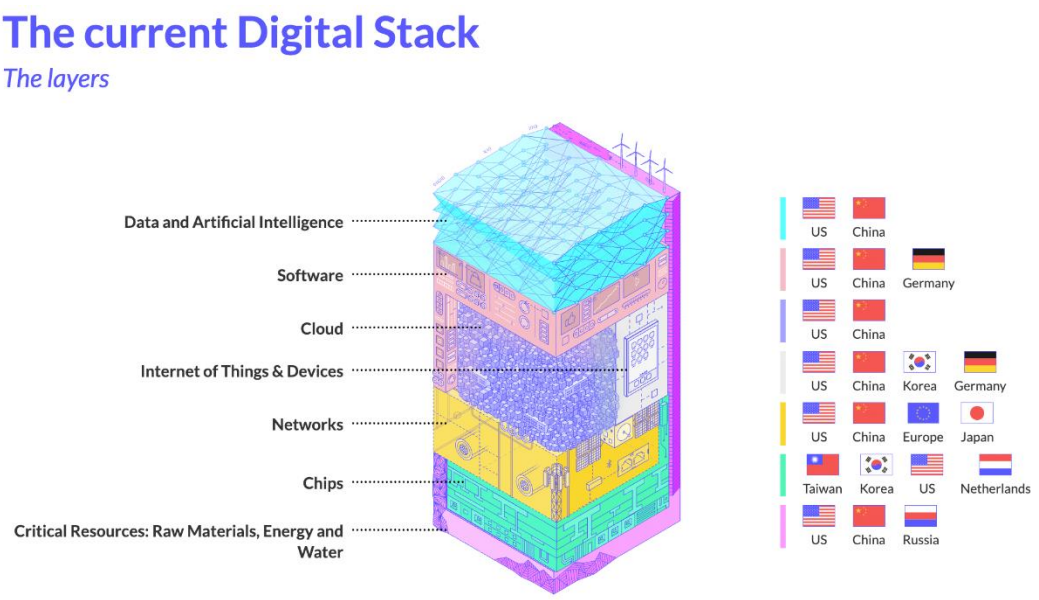

Fig. 3: Key components of digital sovereignty with their dependency on specific countries. Screenshot, https://www.euro-stack.info, accessed September 5, 2025.

As John Agnew has pointed out, we are confronted with an "imperfect past and imperfect present of sovereignty."[42]

In the same vein as Latour, Benjamin H. Bratton's notion of "The Stack" complicates the concept of sovereignty by proposing that digital governance operates across multiple layers, from cloud computing and platform regulation to user interfaces and algorithmic control.[43] Building on Bratton's idea, the EuroStack initiative seeks an alternative to the current Digital Stack (see Fig. 3) by supporting "sovereign AI" and "sovereign cloud" capabilities in order to achieve independence from the United States and China.[44] In this stack model, AI constitutes an additional layer on top of cloud and software infrastructures, encompassing digital actions, while at the same time constraining digital autonomy.

In both conceptions, sovereignty is a dividing entity.[45] Cloud and platform infrastructures are characterized by the reversibility of intersecting lines or exceptions. Bratton draws on Carl Schmitt's famous maxim from *Political Theology*—

[42] Agnew, "The contingency of sovereignty," 46 et seq.
[43] See Benjamin H. Bratton, *The Stack: On software and sovereignty* (MIT Press, 2015).
[44] See Francesca Bria et al., *EuroStack – a European alternative for Digital Sovereignty* (Bertelsmann Stiftung, 2025), https://doi.org/10.11586/2025006.
[45] See Bratton, *The Stack*, 20 et seqq.

"Sovereign is he who decides on the exception"[46]—as a guiding principle for his theory of digital sovereignty. Just as political order arises through an extralegal act (such as territorial appropriation), sovereignty can only be demonstrated within an extralegal framework: the state of exception. In the digital realm, Bratton locates this ability in the power to continually shift and redefine the digital lines and their meanings. This dynamic reconfiguration of boundaries—and the authority to determine what they include or exclude—constitutes what Bratton terms "platform sovereignty":

> "We'll see that platform sovereignty operates within territories that are composed of intersecting lines, some physical and some virtual, and for this, deciding exceptions is no less critical. The exceptions to be decided, however, are over what geographies those lines describe and what conditions they inscribe. Is one side or the other the inside or the outside?"[47]

Similar to Latour, Bratton treats sovereignty as a borderline concept. However, from a media-theoretical perspective, he expands the idea of the reversibility of geographical and technological boundaries: the "postdigital membranes"[48] that separate the inside from outside may take the form of skins, surfaces, or layers. This notion resonates with a deeper convergence between Carl Schmitt's political theology of sovereignty and Marshall McLuhan's understanding of media as "extensions" of the human body from 1964.[49] Both the sovereign and the medium act as articulations of 'us' versus 'them,' of friend versus foe—and at a more metaphysical level, as the conflict of one belief system against another.[50] In this sense, the gaining and losing of digital sovereignty constitute a core concern of media theory.

From a media-philosophical perspective, Yuk Hui has recently articulated the fundamental relationship between sovereignty and machine (learning).[51] With reference to Carl Schmitt, he also outlines sovereignty as a borderline concept that pertains

[46] Carl Schmitt, *Political theology. Four chapters on the concept of sovereignty*, trans. G. Schwab (University of Chicago Press, 2005 [1922]), 5.

[47] Bratton, *The Stack*, 21.

[48] Robert Pepperell and Michael Punt, *The postdigital membrane: Imagination, technology and desire* (Intellect, 2000).

[49] Marshall McLuhan, *Understanding media. The extensions of man* (McGraw-Hill, 1964).

[50] Tracy B. Strong, "Foreword: The sovereign and the exception: Carl Schmitt, politics, theology, and leadership, in Schmitt, *Political Theology*, vii–xxxv, here xxviii.

[51] See Yuk Hui, *Machine and sovereignty: For a planetary thinking* (University of Minnesota Press, 2024).

to the outermost sphere. The discourse of an "America First" on the Internet—exemplified by the recent controversy over TikTok in the United States[52]—demonstrates that digital sovereignty is conceptually still entrenched in its digital-ontological binarity and no more far-reaching than traditional notions of nation-state sovereignty. In Hui's view, therefore, "digital sovereignty shrinks to a virtual border sustained by firewalls and ideologies."[53] The debate surrounding Sovereign AI, in particular, reveals that a Digital Leviathan entails not only the perpetuation of algorithmic automation within state administration, but also the power to suspend megamachines, break recursive computation, and inaugurate programs anew. In this sense, so-called digital sovereignty amounts to a concept of digitized sovereignty, which transfers geopolitical power relations from the analog to the digital realm.

As the above discussion has shown, digital sovereignty remains a borderline concept, delineated either through step-by-step concatenation or across the hierarchical layers of a stack. The model conceptions introduced in this chapter themselves generate boundaries and thereby inclusions and exclusions, whether in the form of the horizontal layers of a stack or the mediating step zones of data life cycles. It is therefore important to also incorporate the non-hierarchical and non-linear aspects of data sovereignty into analysis and theory-building.[54] Ultimately, how can the contributions to digital sovereignty collected in this special issue be programmatically framed?

4. Digital Sovereignty: The Contributions

This special issue brings together a diverse set of papers that collectively enrich the field of Critical Data Studies by engaging with data infrastructures, governance, and the politics of visibility, interpretation, and control. The contributions can be grouped into three thematic clusters that reflect distinct but overlapping engagements with the epistemic, infrastructural, and political dimensions of data operations. The first cluster focuses on empirically grounded critiques of data practices, particularly in contexts where datafication intersects with grassroots action, institutional design, or resistance to platform logics. These contributions foreground the political stakes of design and data representation, emphasizing how data objects mediate

[52] See "Restrictions on TikTok in the United States," Wikipedia, August 25, 2025, https://en.wikipedia.org/wiki/Restrictions_on_TikTok_in_the_United_States, accessed September 7, 2025.

[53] Hui, *Machine and sovereignty*, 188.

[54] These include recursive data journeys through which data objects are generated. See Alaimo and Kallinikos, *Data rules*, 63 et seqq.

access, exclusion, and empowerment. The second cluster engages with the infrastructural and material dimensions of data technologies, especially as they relate to AI, urban environments, and platform governance. These papers conceptualize data not only as a technical artifact but also as a political infrastructure, opening space for rethinking agency, responsibility, and governance in relation to algorithmic systems and urban ecologies. The third cluster consists of theoretical interventions that interrogate the concept of sovereignty itself. These essays shift the focus from normative notions of control to relational, distributed, and infrastructural modes of sovereignty, deeply resonant with contemporary Critical Data Studies debates.

4.1 Sovereign Data Practices

In the paper "Who is sovereign and how?," *Leah Friedman* discusses issues of sovereignty within the context of autonomous health movements (AHMs). For Friedman, digital sovereignty intends "to create conditions that consider the social and collective setting in which individuals can claim control over their data, aiming to mediate between collective and individual interests when it comes to data management, generation, collection, and use." Critically examined, issues of exclusion come to the fore here. Methodologically, Friedman, both as an extension of and departure from Critical Data Studies, examines two historical case studies: self-managed abortions and the Black Panther's efforts to organize free, independent health clinics. These cases, selected for their approaches to practiced care and self-determination, serve as empirical lenses through which Friedman develops a model of sovereignty that is collective, culturally situated, and infrastructurally embedded. In both cases—each deeply embedded in resistance to structural violence, surveillance, and state neglect—Friedman identifies four "binding dimensions," which stabilize the two autonomous health movements *in actu*. Shared ideological or political beliefs are key here, but they are not the only decisive factor for the fulfillment of data sovereignty. Shared cultural or identity-based experiences, a shared connection to place among the human actors involved, and control over shared physical infrastructure are also part of it. Rather than framing sovereignty as a legal status or technocratic right to data control, Friedman proposes that sovereignty emerges through situated, community-bound practices of care, autonomy, and infrastructural co-creation. Friedman shows that achieving data sovereignty is inherently a question of design (of adequate data consent systems, among other things), but it is also a design issue that unfolds across the entire data life cycle. Aspects of design that have largely been discussed in research in terms of representational and aesthetic aspects and in relation to the affordances of technical systems and objects—and more recently also explicitly in relation to marginalized groups, as in Dis/Ability Studies—are thus also explicitly linked to ethical, legal,

and political questions. The 'politics of design' can be understood literally in this context: Data sovereignty, according to Friedman, can be understood in this sense as a "countermeasure" to mitigate the power asymmetries, that are created and reinforced by large-scale datafication, for the benefit of collective interests. Data sovereignty is thus an inherent component of digital sovereignty, especially given the dependence of digital platforms, AI, and large language models on big data, which brings the infrastructural dimension of digital sovereignty to the fore in favor of raising awareness of potential data harms affecting marginalized or socially stigmatized groups. With this sociologically oriented approach—starting the investigation not with health data, but with people in health organizations—, Friedman explores "how people group themselves rather than how they are grouped by algorithms." At stake here are not the formative effects and, for example, classification logics of big data-driven technologies, but rather the self-organization of collectives *beyond* big data. While careful not to appropriate Indigenous Data Sovereignty (IDS)[55] discourse, Friedman draws parallels between the cultural cohesion of indigenous approaches and the solidaristic foundations of AHMs, suggesting that both rely on sovereignty as a lived practice of collective care and self-determination. Friedman reminds us that "sovereignty beyond borders" is fundamentally a question of who actually forms a collective that can then put the question of sovereignty on its agenda.

The infrastructural processing of large amounts of data collected in public spaces, often based on sensor technologies, has repeatedly been described as invisible and literally untraceable, making it almost incomprehensible to citizens, especially since it is rarely perceptible phenomenologically. This inevitably raises legitimate concerns on the part of individuals about possible privacy violations and data breaches. The real-time collection of residents' data within smart city contexts—due to image capturing, smart water meters, WiFi hotspots which automatically connect GPS-based parking apps on smartphones with personal credit card information, among other things—essentially, but invisibly, concerns the "right to self-determination" of postmodern city residents. However, there are several ways to make these processes visible and raise awareness about them among citizens. *Gwen Shaffer* explores one possibility in the paper "Trust, transparency, and technology," that aims at providing "residents with a clear understanding of how local government applies predictive and diagnostic analytics to personal data." Rather than framing surveillance technologies as something opaque, hidden, or even atmospheric, the Digital Rights Platform project, led by the City of Long Beach's "Smart City Initiative," aims at making surveillance empirically transparent. The Digital Rights Platform combines physical signage

[55] See, e.g., Tahu Kukutai and John Taylor, eds., *Indigenous Data Sovereignty. Toward an agenda* (Australian National University Press, 2016).

at sites of data collection—such as city-installed sensors or surveillance cameras—with a digital portal that offers accessible explanations of how data is collected, processed, and used by municipal authorities. This interface design responds to critiques of 'black-boxed' smart city systems by giving residents insight into the ways they are datafied in everyday life. Through this case study, Shaffer investigates how residents' perceptions of data-driven governance can be (re)shaped through material and communicative interventions designed to enhance transparency and trust. Situated in-between the frameworks of surveillance studies, trust, and contextual integrity, Shaffer understands digital sovereignty as "an individual's ability to exercise autonomy and control over one's data and online content, including with whom digital personal information can be shared and used." The project raises awareness about data-capturing technologies in direct dialogue with residents, employing, for example, data walking or rather "data walkshops" (Allison Powell) as both a methodology and an analytical framework. Although the project was carried out in Long Beach, the theoretical and policy implications of this project are transferable and scalable to cities beyond its original cultural context. The results suggest that when individuals are informed about data practices in contextually meaningful ways, their willingness to engage with civic technologies increases. Importantly, this does not translate into unconditional acceptance, but fosters critical awareness and selective engagement.

The aspect of designing digital sovereignty, which has already been highlighted as central, is also addressed in *Renée Ridgway's* paper. Based on the methodology of document and critical discourse analysis, Ridgway problematizes how the "logic of accumulation" of web indexing and search engines affects the fields of digital sovereignty. "Ubiquitous googling" has significantly accelerated the commodification of web and user data, that is, their instrumentalization and monetization. The supposedly objective media practice of "googling" is part of a complex capitalist corporate structure that connects users (and thus potential consumers) with companies by displaying hyperlinks that match their search history—a "commercial datafication of citizens" which is all to the financial advantage of platforms and data brokers. The influence of nation states in relation to legally regulating these platforms, such as Google, is limited. On a somewhat more positive note, however, Ridgway recalls that Wendy H.K. Chun describes searching neoliberal subjects as "small sovereigns." In the same vein, and as a solution to web index-based data capitalism, Ridgway presents and discusses a (forthcoming) EU-funded Open Web Index (OWI) as an open alternative to corporate search engines such as Google and a vision for the future (OpenWebSearch.eu). This Index could function as a European norm and value-based "third way" of digital sovereignty—based on "transparency, accountability and inclusiveness" and "trust and diversity," according to Ridgway—besides "US surveillance

capitalism" and "Chinese and Russian techno-authoritarianism." The OWI is presented as an interesting case "in-the-making": a partially realized platform alternative that seeks to instantiate digital sovereignty through openness, federation, and value-sensitive design—put in the terminology of the coordinator of OWI, it allows for "[f]ree, open and unbiased access to information."[56] Particular emphasis is placed on the Working Group Ethics (WGE), a transdisciplinary forum tasked with articulating normative guidelines for the OWI's development. Central among the emerging principles is the category Sovereignty/Autonomy, which the article examines as a collectively contested and evolving ethical concept, rather than a fixed policy goal. Seen this way, and put in the media-ecological phrasing of Sebastián Lehuedé, the OWI could be regarded as a space in which "hacker ethics and technological sovereignty interact with permaculture."[57]

4.2 Sovereign Data Infrastructures

One aspect that distinguishes recent technological infrastructures from previous ones is their high degree of automation. This prompts *Anne Mollen*, in the paper "Struggling with Generative AI," to examine how the autonomy of collective and individual actors can be upheld in relation to generative AI technologies. Generative AI—although famously described using the metaphor of the stochastic parrot by Emily M. Bender and colleagues,[58] thereby almost downplaying its precarious biases and extractive tendencies—should not be understood as being merely a tool for the automated production of digital commodities such as (potentially hallucinatory) written or spoken texts, synthetic images and songs or audiovisual materials. Rather, generative AI as an agential cultural technique evokes a fundamental transformation of our media ecology that requires critical analysis. "[C]opyright violations, discriminatory outputs, precarious working conditions along the LLM value chain, and political misinformation," Mollen argues, are only some of the disastrous effects of AI, not to mention the environmental implications of AI such as its water or carbon footprint, which reveal the supposedly symbolic medium to be fundamentally material, extractive, and energy-intensive. Hitherto, research into generative AI has been largely shaped by issues of symbolic interaction. Building on the research into media infrastructures by

[56] https://openwebsearch.eu, accessed July 31, 2025.

[57] Sebastián Lehuedé, "An alternative planetary future? Digital sovereignty frameworks and the decolonial option," *Big Data & Society* 11, no. 1 (2024), https://doi.org/10.1177/20539517231221778.

[58] Emily M. Bender et al., "On the dangers of stochastic parrots: Can language models be too big?," *FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (2021), https://doi.org/10.1145/3442188.3445922.

Lisa Parks and Nicole Starosielski,[59] and expanding it to a processual understanding of *infrastructuring*, Mollen employs an infrastructural social sciences perspective as an analytical lens to explore the individual's and collective's autonomy implications that manifest themselves in current generative AI applications. This perspective on autonomy issues in relation to generative AI is specified and examined in four areas: training data; accountability; market power; and social and environmental justice implications. Shifting the focus from acting *with* to acting *on* generative AI, the concept of "digital self-determination" is presented as a potential alternative to "digital sovereignty," focusing on individual and collective autonomy in the face of AI to exemplify that AI's "impact extends far beyond its outputs."

In the paper "Data rights reconsidered," *Jose Marichal* bases his research into the domain of digital freedom (departing slightly from the term digital sovereignty) on Henri Lefebvre's "Right to the City." In his seminal work, Lefebvre presents a vision of a city in which residents manage urban spaces themselves, and also for themselves, beyond the control of the state and capitalism. Lefebvre's theoretical imaginary calls for profound changes and can be understood as a practical treatise for thinking differently; and it can serve as a guide and inspiration for concrete measures to change today's media environments: not just cultural territories such as cities but also the discursive landscape of issues of digital sovereignty. Understanding Lefebvre's emancipatory and egalitarian stance as a framework, and drawing on references to philosopher Byung-Chul Han, Marichal attempts a holistic approach to understanding the "datafied society"[60] by taking into account questions of data rights. Three points of departure form the structure of Marichal's argument: a right to the platform; a right to the datafied city; and a right to AI potentiality. In the same vein as Friedman and Ridgway, Marichal links the question of data sovereignty to aspects of design: in this case, the media-ecological design of entire digital environments. This shows that questions of actively shaping digital sovereignty are indeed not limited to the design of data consent forms, for example, but extend across a multitude of dimensions that have to be considered holistically when theorizing (and designing) digital sovereignty: technical objects, networked devices, technological infrastructures, algorithmic software, digital governance, protocols, policies and politics, questions of data law, and aspects of self-organized community-help practices. Unfolding his argument, beginning with the Facebook–Cambridge Analytica data scandal from the 2010s—the processing of personal data from millions of Facebook users without their consent by a British consulting firm—makes evident that issues of personal platform data and

[59] Lisa Parks and Nicole Starosielski, eds., *Signal traffic: Critical studies of media infrastructures* (University of Illinois Press, 2015).

[60] Mirko Tobias Schäfer and Karin van Es, eds., *The datafied society: Studying culture through data* (Amsterdam University Press, 2017).

data rights (and their potential violation) are an integral part of practiced digital sovereignty on an everyday level that affects our possible social media usage. This illustrates that digital sovereignty is not a static ontological concept, but rather that new algorithmic technologies—in this case platforms—not only prefigure user possibilities, but also always carry within them new potentialities for data rights violations. The "politics of platforms"[61] also has a data rights dimension. Digital sovereignty is thus not a fixed top-down authority, but a recursive process involving scripts, routines, interfaces, and socio-technical systems. In the platform context, this means that sovereignty becomes less a question of who governs and more a question of how governance is inscribed into the everyday life of users and citizens through the design and operation of digital social media. Just as the city is a built environment, platforms are designed architectures—a reversal of Friedrich Kittler's axiom that "the city is a medium"[62]: similarly, in the sense of Lefebvre and Marichal, platforms could be seen as technological networks with intersections, addresses, commands, etc., in which questions of data rights are negotiated—namely, speaking in the terms used by Haggerty and Ericson, how our "data doubles"[63] are processed algorithmically and what classification and commodification logics they are subjected to.

4.3 Sovereign Data Organization and Theorization

The essential "characteristic of the modern subject," *Thomas Wendt* argues, "is its capacity for autonomous decision-making." This basic definition of the postmodern subject is fundamentally challenged by digital technologies when autonomous decision-making also becomes a central characteristic of semi-autonomous algorithms and infrastructures.[64] On the one hand, it could be argued that this development grants non-human actors the status of postmodern subjects—a case in point for the realization of Gilbert Simondon's argument in his fundamental theory of technology, in which he explicitly applied biological terms to technological objects and granted them a societal right to have a say.[65] On the other hand, this shift of agency and its distribution across technological environments has, of course, consequences for

[61] Tarleton Gillespie, "The politics of 'platforms,'" *New Media & Society* 12, no. 3 (2010): 347–64, https://doi.org/10.1177/1461444809342738.

[62] Friedrich A. Kittler, "The City Is a Medium," *New Literary History* 27, no. 4 (1996): 717–29.

[63] Kevin D. Haggerty and Richard V. Ericson, "The surveillant assemblage," *The British Journal of Sociology* 51, no. 4 (2000): 605–22, https://doi.org/10.1080/00071310020015280.

[64] See Christoph Borbach, Wendy H.K. Chun, and Tristan Thielmann, "Making everything ac-countable: The digital twinning paradigm," *New Media & Society* 27, no. 8 (2025): 4369–84, https://doi.org/10.1177/14614448251338289.

[65] Gilbert Simondon, *On the mode of existence of technical objects*, trans. Cécile Malaspina and John Rogove (Univocal, 2017 [1958]).

human subjects. Combining subject and organization theory, and tracing a "historical trajectory of the evolution of the digital age," Wendt argues that the decision-making capacity of the postmodern subject has always been shaped by structures of organization—by institutional infrastructures that prefigured and conditioned the possibilities and limitations of what can be (sovereignly) decided upon at all, one could add with reference to Michel Foucault.[66] Put differently, the decision-making agency of the modern subject is always entangled and co-constituted because it is contingent upon or at least co-designed with organizational structures through which communicational processes are practiced. 'Autonomous' decision-making, seen this way, is a phantasm as it is always a collaborative and entangled process involving subjects, objects and infrastructures of organization; it is "reliant on the organizational processing and filtering of decision-making alternatives." "The history of the digital subject," Wendt explains, "begins to a significant extent in organizations." Frederick Taylor's scientific management and Fank Gilbreth's analog media for motion detection, recording, and analysis can be seen as early cultural techniques for the systematic datafication of the human body for the purpose of optimizing work: "The result is a data-driven one-best way of doing work that is available regardless of the individuals involved." Wendt therefore understands the early phase of management theory as paving the way for the digital transformation of organizations. Wendt suggests that what appears as a crisis of human sovereignty is better understood as the emergence of a new actor model—one in which subjectivity is structured through continuous feedback with algorithmic environments. Agency no longer operates solely through reflection or deliberation but is entangled with datafied behavioral regimes that guide or preempt decisions. This marks a shift from the subject as a supposedly autonomous agent to the subject as an organizationally and technologically entangled and formatted node within complex systems of distributed decision-making (which, ironically, corresponds almost exactly to ChatGPT's visualization of a Digital Sovereign as shown in Fig. 2).

Stephan Packard takes the fact that it was originally technological transformations of our entire media environments that led to the "invention" of digital sovereignty as the starting point for an analysis of imaginaries of sovereignty. Since the process of ubiquitous digitization already defines a historical epoch, because our recent media environments are now characterized by post-digitality and post-humanity, Packard argues that our thoughts on digital sovereignty must also be brought to a correspondingly post-digital and post-human level. Situations in which we actively enter cyberspace via the interface of a desktop computer are only one slight slice of a

[66] Michel Foucault, "Orders of discourse," *Social Science Information* 10, no. 2 (1971): 7–30, https://doi.org/10.1177/053901847101000201.

large mosaic of entering digital spaces. Computing today no longer takes place within the static boundaries of singular objects, but has become environmental. Media theorists therefore claim that media are becoming environmental, while environments simultaneously become media themselves;[67] technological objects are becoming invisible and can be regarded as "atmospheric media."[68] Since digital and analog spaces can no longer be clearly separated from one another, since they interact and overlap, Packard—like Mollen—problematizes individual "self-determination" in digital environments. The humanity of sovereign subjects is challenged, as it is no longer just human individuals and collectives or human governments, but also "non-human and more-than-human agents [as] potential carriers of sovereignty," leading to a "post-human uncertainty" about post-digital sovereignty (Packard). The paper examines this using political communication during protests in the context of internet governance as a case study: German protests in 2019 against the then new European regime of copyright control in social media and the protesters' claims "we are not bots!" and its inversion "we are the bots!". Packard explores how communicative practices in digital protest milieus engage with—and reflexively alter—traditional concepts of sovereignty rooted in individual autonomy and humanist subjectivity. The staging of doubts about the humanity of these 2019 protesters on social media platforms is a paradigmatic example of agentiality under post-digital conditions. Packard conceptualizes this as a post-digital imaginary: one in which digital media are fully integrated into lived reality and no longer experienced as novel or separate. In doing so, Packard introduces the idea of the post-human to capture how sovereignty is (re)configured in light of technological extensions, algorithmic agents, and distributed agentiality that challenge humanist assumptions of coherent, bounded individuals. By analyzing the communicative micro-politics of protest through the lens of post-digital and post-human theory, Packard's work pushes beyond legal and infrastructural paradigms to consider sovereignty as a contested imaginary—produced, circulated, enacted, and destabilized in the cultural fields of political expression.

In their paper "Three actors, eight models," *Dennis Lawo*, *Gunnar Stevens*, and *Jenny Berkholz* problematize digital sovereignty as a non-coherent concept which refers to the agency of heterogeneous actors at different levels in different discourses. Rather than considering these levels in isolation, they elaborate a relational framework to analyze how the digital sovereignty of nation-states, companies and individuals are

[67] See, e.g., Sebastian Scholz, "Sensing the 'contemporary condition': The chronopolitics of sensor-media," *Krisis | Journal for Contemporary Philosophy* 41, no. 1 (2021): 135–56, https://doi.org/10.21827/krisis.41.1.36967.

[68] Mark B.N. Hansen, "Ubiquitous sensation: Toward an atmospheric, collective, and microtemporal model of media," in *Throughout: Art and culture emerging with ubiquitous computing*, ed. Ulrik Ekman (MIT Press, 2012), 63–88.

interrelated and co-shaped. Taking into account these diverse notions of digital sovereignty, the authors argue for its terminological conceptualization in the plural form and develop a model involving actors at different levels—governmental, economic, individual—and correlating them to different narratives on digital sovereignty—pluralism, state capitalism, communitarianism, authoritarianism, libertarianism, corporatocracy, anarchism, and anomie. Lawo, Stevens and Berkholz's central aim is to clarify how sovereignty is not merely possessed or enacted by one actor, but negotiated and co-constructed within dynamic relational constellations. Rather than seeking a universal definition, the authors emphasize the contextual and discursive multiplicity of digital sovereignty. They argue that sovereignty must be understood as a relational attribution—a status that actors claim, delegate, or contest in particular configurations. The authors highlight that tensions often arise when models with different normative premises and institutional logics collide, such as when user-centric autonomy discourses confront platform control regimes or when state-driven regulation challenges transnational corporate governance. The article's main contribution lies in conceptual clarification: by revealing the fragmented yet overlapping meanings of digital sovereignty, the authors provide a typology that enables comparative analysis.

The special issue concludes with a dialogue with *Stéphane Couture* and *Sophie Toupin*. The discursive point of departure for the discussion is Couture and Toupin's canonical paper from 2019 on the various notions of sovereignty when referring to the digital, and what has changed since its publication in discursive, legal, and technological dimensions. In the dialogue, Couture and Toupin, based on their own academic background, trace the term's evolution across activist, Indigenous, and state contexts, showing how it functions as a boundary object—a concept that travels between domains, is used by different communities and groups, while holding a stable identity. At stake here are issues of sovereign AI, the fragmentation of the internet, data crawlers as part of extractive generative AI, and the opacity of consent forms. Couture and Toupin emphasize design, infrastructure, and consent as crucial terrains where sovereignty is materially negotiated and constructed. Reflecting on digital resistance, Toupin and Couture argue that practiced digital sovereignty represents a conceptual shift from reactive defiance to proactive reappropriation: an affirmative politics of infrastructural self-determination. The dialogue revisits Indigenous and Global South perspectives, stressing digital sovereignty as a decolonial struggle for epistemic and material autonomy. Finally, Couture and Toupin question the anthropocentrism of sovereignty discourse, proposing a Latourian posthumanistic understanding that remains attentive to ecological entanglements, opening up the imagination of a sovereign Earth as a provocative space for reflection.

4.4 Perspectives for Critical AI and Data Studies

Taken together, the contributions to this special issue offer a multifaceted and both theoretically rich as well as empirically grounded rethinking of digital sovereignty—its actors, infrastructures, organizations, practices, meanings, and political stakes. Digital sovereignty is therefore an essential object of investigation for Critical AI and Data Studies. Rather than arriving at a singular or universal definition, the papers collectively demonstrate that digital sovereignty is best understood as a contested, distributed, relational, and situated concept, with its articulation depending on context, scale, and disciplinary vantage point. A recurring theme across the articles is a critique of narrow or technocratic models of digital sovereignty that focus solely on data ownership, infrastructure localization, or legal control.

The authors show that digital sovereignty is enacted through sociotechnical arrangements and embedded in broader cultural, social and political imaginaries. They emphasize the need to understand how power operates through classification systems, algorithmic loops, and platform architectures, and how these shape the agency and autonomy of individuals and human collectives, but also of more-than-human collectives alike. In doing so, the methodological orientation of all papers aligns with infrastructural and procedural perspectives in Science and Technology Studies: rather than treating sovereignty as an abstract principle or a fixed institutional property, the contributors trace how it is being debated, modeled, and potentially embedded within the protocols and architectures of algorithmic systems. Through this lens, digital sovereignty emerges not as a top-down reassertion of institutional or state power, but as a distributed, negotiated, and transformative practice across technical, algorithmic, infrastructural, ethical, and political domains.

The collective insight is that digital sovereignty is not 'possessed' but continually performed and reconfigured—through social movements, technological designs, legal frameworks, and communicative-political acts. Sovereignty in the digital age is thus not just about territorial control over technological networks, algorithms and datacenters, or about data ownership alone, but more about the capacity to shape the conditions of cooperating, communicating, and interacting in a self-determined manner within entangled human–machine environments. Taken as a whole, the special issue provides a multifaceted account of how data objects, infrastructures, and social imaginaries participate in shaping and contesting contemporary regimes of visibility, valuation, and control. By bridging empirical inquiry with theoretical innovation, the contributions illuminate the transformative role of data in medializing and mediating power across technical, social, and political domains.

An analysis of digital sovereignty from the perspective of Critical AI and Data Studies should take into account the epistemic and visual imaginaries on which the argumentation relies: whether in the notion of a composite human body of a digital sovereign, the components of a digital stack, or the life path of data. These different imaginaries of digital sovereignty are inscribed in the force of the debates and deserve greater attention than they have thus far received. It is our hope that this special issue will contribute to advancing a more comprehensive discussion of the practices, infrastructures, and theories of digital sovereignty.

This contribution was funded by the German Research Foundation (DFG)—project number 262513311—Collaborative Research Centre 1187 "Media of Cooperation."

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