

Technology as a Social Actor and Its Impact on the Formation of Power in Contemporary Societies

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Abstract

This article investigates the transformative role of technology as an active social force in reconfiguring power dynamics within contemporary societies. Departing from the conventional view of technology as a neutral instrument, it approaches technological systems as influential agents that shape, mediate, and redefine social, political, and economic relationships.

Grounded in Bruno Latour's Actor-Network Theory, the analysis positions technology as a central actor within socio-technical networks, actively contributing to the redistribution and rearticulation of power. The proliferation of digital platforms, the increasing centrality of data, and the rapid advancement of artificial intelligence have fundamentally altered decision-making processes, giving rise to complex and often asymmetrical structures of authority and influence.

These transformations carry profound social implications, generating new mechanisms of inclusion and exclusion, and fostering emerging hierarchies within both digital and physical spaces. At the same time, they pose critical ethical and political questions, particularly concerning regulation, transparency, accountability, and digital sovereignty.

In conclusion, the article underscores the urgent need for democratic governance of technological systems—one that safeguards fundamental rights, promotes collective well-being, and ensures that technological progress serves the interests of a more just and inclusive society.

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1. *Introduction*

For several decades, technology has played a central role in shaping contemporary societies, profoundly transforming not only how we communicate, produce, and consume, but also the very structure of our social, political, and economic relationships. Once viewed merely as a set of neutral tools serving human purposes, technology is increasingly perceived as an autonomous actor that actively participates in the organization and dynamics of social life.

This conceptual shift—from seeing technology as a passive instrument to recognizing it as a social agent—is crucial for understanding the transformations currently underway in society. It is no longer sufficient to focus solely on how humans use technological devices; we must also acknowledge that technological artifacts themselves—software, algorithms, platforms, networks—actively intervene in social processes, shape behaviors, influence decisions, and contribute to the construction of norms and values.

Approaching technology as a social actor allows us to move beyond deterministic or purely utilitarian frameworks. This perspective aligns with broader theoretical developments, particularly Actor-Network Theory (ANT) as articulated by Bruno Latour, which emphasizes the co-

construction of social realities by both human and non-human actors.

In an era where powerful digital platforms amass unprecedented economic, informational, and political influence; where algorithms mediate access to knowledge and shape interpersonal interactions; and where surveillance technologies are redefining the relationship between the state and its citizens, it is more urgent than ever to critically examine the active role technology plays in the formation and redistribution of power.

It is from this critical standpoint that our study is situated—aiming to explore how technological systems, far from being mere tools, function as structuring forces at the core of contemporary power dynamics.

Research Question

To what extent, and through which mechanisms, do contemporary technologies—understood as fully-fledged social actors—reconfigure power relations within modern societies by simultaneously generating dynamics of centralization (through dominant digital platforms, algorithmic governance, and surveillance capitalism) and decentralization (through distributed networks, cryptocurrencies, and new spaces for citizen participation)? What are the implications of these transformations for traditional social, political, and economic structures?

Study Objectives

- The primary objective of this study is to investigate how technology, when conceptualized as a social actor, influences, transforms, and redistributes power within contemporary societies. More specifically, the study seeks to:
- Identify the emerging forms of power associated with technological systems—such as algorithmic power, data power, and the power of digital platforms.
- Examine how these new forms of power reshape traditional balances between public actors (e.g., states and institutions) and private actors (e.g., corporations and digital platforms), as well as among individuals, communities, and collectives.
- Analyze the dual dynamics of power centralization—around dominant technological actors like global tech giants—and decentralization—fueled by innovations such as blockchain, distributed networks, and open-source ecosystems.
- Explore the broader social, political, and economic consequences of these transformations, particularly their impact on democratic processes, individual rights,

Methodology

To address the research question, this study adopts a theoretical and analytical approach based on a critical review of the literature. Foundational works by Bruno Latour (Actor-Network Theory), Manuel Castells (Network Society), Shoshana Zuboff (Surveillance Capitalism), Anthony Giddens (Consequences of Modernity), and other key authors will provide the conceptual framework to understand the active role of technologies in social and political structuring.

1. Technology as a Social Actor: Theoretical Framework

1.1 Definition of Technology as an Actor (Reference to Bruno Latour, Actor-Network Theory)

In the social sciences, technology has long been perceived as a mere instrument or passive tool serving human action. This classical view places technology in a subordinate role, denying it any capacity for autonomous agency. However, this reductive approach is challenged by Actor-Network Theory (ANT), primarily developed by Bruno Latour starting in the 1980s.

According to Latour, it is necessary to move beyond the traditional dichotomy between human actors and technical objects, considering that the latter can also act and influence social dynamics. Thus,

technology is no longer a simple medium but an actor—or **actant**—capable of making others “act”

« I propose to call whoever and whatever is represented actant. What the manager did to Bill, a dissenter may do for the ally of his opponent's laboratory » (Latour, 1987, p. 89).

Latour emphasizes the agency of technical objects by stating:

“« It is clear by now to the reader why I introduced the word 'actant' earlier to describe what the spokesperson represents. Behind the texts, behind the instruments, inside the laboratory, we do not have Nature — not yet. What we have is an array allowing new extreme constraints to be imposed on 'something'. This 'something' is progressively shaped by its reactions to these conditions »” (Latour, 1987, p. 94).

This definition broadens the sociological analytical field by integrating technical objects into the causal chain of social phenomena. For example, a machine, a computer system, or a digital network are no longer passive entities but active nodes within complex networks that influence, guide, and sometimes constrain human behavior.

Actor-Network Theory thus proposes to conceive social interactions as hybrid networks, where humans and non-humans (objects, technologies, texts) co-construct

social reality. This conceptual framework highlights the structuring role of technology, not only as a mediator but also as a source of social, political, and economic innovation. (Latour, 1987, p. 95).

This inscription into objects is what grants technology its ability to act as a social actor. For example, an electronic control device does not merely monitor; it establishes a power relationship that alters behaviors and social relations, thus embodying a form of technical authority.

Finally, Actor-Network Theory invites a symmetrical approach to actors, where humans and non-humans are studied on the same level in order to understand how they associate, negotiate, and co-produce social configurations. This shift in perspective is fundamental for analyzing contemporary societies, where technology occupies a central place in the structuring of power and social relations.

2. Distinction Between Technology as Tool and Technology as Actor: Moving Beyond the Instrumental Vision

Traditionally, technology is perceived as a tool in the service of humans — a passive entity whose function is limited to executing tasks according to human directives. This instrumental vision, inherited from the linear model of causality, conceives of technology as a mere means, lacking any capacity for

independent initiative and remaining inert outside of human use.

However, this dominant conception has been called into question by several contemporary currents in the social sciences, notably Bruno Latour's Actor-Network Theory, which invites us to conceptualize technology as a social actor endowed with its own capacity for action and influence.

"We may then be able, finally, to understand these nonhumans, which are, I have been claiming since the beginning, full-fledged actors in our collective; we may understand at last why we do not live in a society gazing out at a natural world or in a natural world that includes society as one of its components. Now that nonhumans are no longer confused with objects, it may be possible to imagine the collective in which humans are entangled with them." (Kaplan, 2009, p. 186).

Indeed, viewing technology solely as a tool amounts to ignoring the ways in which it **transforms social relations**, modifies practices, and redistributes power within human collectives. This distinction can be formalized as follows:

- **Technology as tool** is a passive object, which can only act through human will. It is subordinated, instrumentalized, and external to social processes.
- **Technology as actor** is an active element of the social network,

which acts upon behaviors, constrains, facilitates, or transforms interactions, participates in the production of meanings, and contributes to the structuring of power.

For example, in the field of **surveillance**, a CCTV camera is not merely a passive tool. It acts as an **actor**: by recording, deterring, and shaping behaviors, it alters the relationships between citizens and authorities, creating new forms of social control.

Thus, moving beyond the instrumental vision means recognizing that technology is a constitutive component of actor networks and social dynamics, endowed with its own agency, which deserves to be analyzed and understood in all its complexity.

3. Technology and Social Networks: Non-Human Agents Participating in Social Structuring

Actor-Network Theory (ANT) offers a fundamental reconfiguration of how we understand social networks by integrating non-human agents, among which technology holds a central place. These agents are not mere accessories or passive instruments but actants that actively participate in the constitution and transformation of social networks.

In this view, technologies — from mundane objects to complex infrastructures — intervene in shaping

practices, redistributing roles, and restructuring social dynamics. ANT thus challenges traditional sociological approaches that privilege human intentionality, insisting instead on the heterogeneous composition of social assemblages, where humans and non-humans co-construct reality.

From this perspective, technology becomes an integral agent, playing a key role in the construction of social relationships and in the distribution of resources and power. It does not merely facilitate human interactions; rather, it Nonhumans are endowed with speech, however primitive, with intelligence, foresight, self-control, and discipline, in a fashion both large-scale and intimate. (caplon, 2009, p160).

" Some, like what certain media scholars and media economists have termed 'user-generated content platforms' (often also called 'social networks,' with examples including YouTube, Instagram, and Twitter/X) orchestrate complex online environments, building out not just intricate public-facing interfaces for content ranking, recommendation, and delivery, but also increasingly sophisticated bureaucratic underbellies designed to police the 'digital public spheres' that they create and manage ." (Gorwa 2024 p 17).

This understanding highlights how technology actively participates in social structuring rather than simply serving as a passive conduit, challenging traditional

views of technological determinism. As Winner argues,

Understanding the Politics of Artifacts in Technology

The concept that "artifacts have politics" suggests that technologies are not neutral; they embody specific forms of power and authority. This idea is crucial in understanding how technologies interact with social structures and influence human behavior. Here are some key points related to this concept :

- **Technologies as Non-Human Agents:** Integrating technology as a non-human agent within social networks allows us to view social phenomena as products of hybrid networks. This means that both humans and technologies play active roles in shaping outcomes, leading to co-constructed processes that reflect the interplay between social and technological elements. This perspective is essential for analyzing the complexity of contemporary societies, especially in the digital age.
- **Sociological Legitimacy of Government Actors:** The legitimacy of government actors is a significant factor in how they can intervene in technology governance. Low-legitimacy governments may struggle to collaborate with

international firms on governance issues, as these firms are wary of negative reputational impacts from associating with such regimes. This highlights how the political context can influence technological governance and the role of artifacts in shaping power dynamics

- **Content Moderation and Governance:** Technology companies have developed intricate infrastructures for rulemaking and enforcement, particularly in content moderation. This governance is not just about enforcing rules but also about managing relationships with various stakeholders, including advertisers and regulators. The governance structures established by these companies reflect the political and social contexts in which they operate, further illustrating the intertwined nature of technology and authority .

There is a growing recognition of the need to incorporate political science concepts into the study of technology policy. This interdisciplinary approach can yield valuable insights into how technologies function within social and political frameworks, emphasizing the importance of understanding the political dimensions of technological artifacts.

"Langdon's theory of technological politics substantiates a fundamental change in perspective of how to understand politics:

politics does not just involve human action, but also the realm of technology. Not only in the sense that modern politics are technologically mediated and build on a material infrastructure, but that technology in itself is a political phenomenon. Technology embodies politics. Not only human action, but also the materialized action of things is political." (Schraube, 2021, p. 04).

1. Centralized Power vs. Distributed Power: How Technologies Redefine Decision-Making Centers

The technological revolution, particularly the rise of digital technologies, profoundly disrupts the traditional modes of structuring and exercising power in contemporary societies. Traditionally, political, economic, or social power was often centralized, concentrated within dominant institutions or actors such as the state, large corporations, or social elites.

However, the emergence of digital technologies and connected infrastructures promotes a **redistribution of power** through processes of decentralization and the diffusion of decision-making capabilities. This transformation does not necessarily imply the disappearance of centralized power but rather a **reconfiguration of centers and networks of decision-making**, now incorporating new and hybrid actors, including technical systems.

According to Manuel Castells, an expert on network societies:

Digital technologies, through their ability to facilitate instant communication, large-scale information sharing, and process automation, enable the decentralization of decision-making. For example, collaborative platforms, block chain systems, and artificial intelligence tools are redefining governance and control mechanisms, sometimes granting individuals or groups previously marginalized unprecedented access to decision-making processes.

“In sum, while there is still a concentration of the stock of science and technology in a few countries, and regions, the flows of technological know-how increasingly diffuse around the world, albeit in a highly selective pattern. They are concentrated in decentralized, multi directional production networks, which link up with university and research resources around the world.” (Castells, 2010, p. 129)

Nevertheless, this apparent decentralization can coexist with new forms of **technical and algorithmic centralization**, where dominant technological platforms concentrate immense power over the management of information flows and social interactions. Shoshana Zuboff analyzes the phenomenon of algorithmic surveillance, noting that:

“Major technology companies wield unprecedented power over the collection and exploitation of data, influencing behaviors and social choices” (Zuboff, 2019, p. 17).

Thus, technology reshapes decision-making centers by introducing a complexity where power becomes simultaneously more diffuse and more concentrated, necessitating a nuanced analysis of the underlying mechanisms driving this dual dynamic.

2. The Impact of Digital Platforms: The Emergence of New Power Intermediaries (Google, Meta, Amazon, etc.)

Digital platforms today play a central role in structuring social, economic, and political relations. Google, Meta (formerly Facebook), Amazon, and other dominant actors are no longer mere providers of digital services; they position themselves as essential intermediaries of power, profoundly transforming modes of access to information, social practices, and the distribution of power in contemporary societies.

These platforms exercise **intermediary power** by controlling access to networks, filtering content, modulating information flows, and influencing user behavior. They act as **gatekeepers of digital interactions**, which grants them a strategic position within the power chain.

As emphasized by Tarleton Gillespie, a specialist in digital media:

“platforms are not merely disputes about particular uses and where the line between appropriate and prohibited should be drawn. And they are not just attempts by users to claim the right to set the terms within which they participate online”. (Gillespie, 2018, p. 170).

Moreover, these companies massively exploit personal data, granting them unprecedented **algorithmic power**. They can thus influence individual and collective decisions, for example through personalized recommendations, targeted advertising, or automated content moderation. This capacity to shape informational environments reflects a new form of technical and economic power, described by Shoshana Zuboff as:

“Another example is the population-scale social herding experiments popularized by the Google-incubated augmented reality application of Niantic Labs’ Pokémon Go, in which innocent players are herded to eat, drink, and purchase in the restaurants, bars, fast-food joints, and shops that pay to play in the company’s behavioral futures markets.” (Zuboff, 2019, p. 19).

Here’s a polished academic translation of your text:

Amazon, for its part, transforms economic dynamics by centralizing global distribution, imposing its standards on suppliers, and shaping consumer behavior

through its algorithms and logistical infrastructure.

The emergence of these platforms as intermediaries of power thus raises crucial questions regarding digital sovereignty, regulation, and democracy. They create a hybrid space where private interests, commercial logics, and social issues intertwine, demanding increased vigilance from public authorities and researchers. In summary, digital platforms are not neutral tools but powerful actors that redefine the distribution and forms of power in contemporary society.

3. The Role of Data and Artificial Intelligence: Algorithmic Power and Information Asymmetries

In contemporary societies, digital data and artificial intelligence (AI) systems occupy a central place in the transformation of power structures. Indeed, algorithmic power unfolds through technologies’ ability to collect, process, and analyze massive volumes of data, thereby enabling the prediction, influence, and steering of individual and collective behaviors.

The technology companies and institutions controlling this data hold a significant strategic advantage, as they possess a major information asymmetry compared to individuals and other social actors. This asymmetry creates a power imbalance, reinforcing these actors’ capacity to intervene and exert control across various domains — economic, political, and social.

As Pasquale explains: Algorithmic power relies on the ability to shape social reality through opaque systems, where decisions are made by computer codes inaccessible to most (Pasquale, 2015, p. 24).

AI algorithms do not merely process information; they **shape the range of available choices** by promoting certain content, personalizing experiences, or implicitly discriminating against certain groups. This “algorithmic black box” raises significant ethical and political questions, particularly concerning transparency, accountability, and fairness.

Shoshana Zuboff thus speaks of a “**new regime of power**” which she calls **surveillance capitalism**, where data become strategic resources enabling the remote governance of human behavior:

“Surveillance Capitalism’s Origins and ‘Laws of Motion’ Borrowed from Newton’s laws of inertia, force, and equal and opposite reactions, ‘laws of motion’ is a metaphor that has been used to describe the necessary and predictable features of industrial capitalism.⁴ Although surveillance capitalism does not abandon established capitalist ‘laws,’ such as competitive production, profit maximization, productivity, and growth, these earlier dynamics now operate in the context of a new logic of accumulation that also introduces its own sui generis laws of motion, first discovered and honed in the

early years of Google.” (Zuboff, 2019, p. 12).

This algorithmic power also impacts democratic institutions, as it can influence public opinion, political mobilization, and even electoral processes through disinformation campaigns or micro-demographic targeting.

In sum, the role of data and AI illustrates a profound transformation of power mechanisms, characterized by **technical and informational centralization**, accompanied by significant asymmetries that call for appropriate regulation and democratic governance (Couldry & Mejias, 2019 p 17).

3. ISSUES AND REPERCUSSIONS

1. Reconfiguration of Social Relations: Inclusion, Exclusion, and New Hierarchies

The growing integration of digital technologies in contemporary societies leads to a significant **reconfiguration of social relations**. On one hand, these technologies open new spaces of **inclusion**, facilitating access to information, social participation, and collective mobilization. As Castells (2015) highlights:

“The digital social networks based on the Internet and on wireless platforms are decisive tools for mobilizing, for organizing, for deliberating, for coordinating and for deciding. Yet, the role

of the Internet goes beyond instrumentality." (Castells, 2015, p. 257)

However, these same technologies also create mechanisms of **exclusion** and digital inequality. Van Dijk (2019) notes that:

"Finally, the term 'digital' suggests that the digital divide is a technical issue when, in fact, it is more of a social problem. Technical properties of digital media are important for access and use – they can be complicated or relatively simple – but the causes and effects of (in) equality are social. The digital divide is not brought to an end when everybody owns and commands the technology concerned. In this book I argue that the digital divide is here to stay even when all such problems are overcome." (Van Dijk, 2019, p. 05)

Ethical and Political Challenges: Regulation, Responsibility, and Digital Sovereignty

The rise of digital technologies presents significant ethical and political challenges. The concentration of power among private actors, the extensive collection of personal data, and the opaque nature of algorithms have raised critical concerns regarding responsibility and transparency. As Zuboff (2019) notes,

"laws of supply and demand to higher order laws aimed at fostering and defending the conditions of a more equal, fair, and humane society"(Zuboff, 2019, p. 15).

In light of these challenges, Zuboff emphasizes the need for new forms of collective action to address the asymmetries of knowledge and power created by surveillance capitalism. The historical parallels with earlier forms of capitalism highlight the necessity of subordinating the "laws of supply and demand to higher order laws aimed at fostering and defending the conditions of a more equal, fair, and humane society"(Zuboff, 2019, pp. 28-29).

Consequently, regulating these technologies has become a priority for states and international organizations. However, such regulation requires a delicate balance between protecting individual rights — including privacy and freedom of expression — and fostering technological and economic innovation. Furthermore, the issue of digital sovereignty gains prominence amid the global dominance of major foreign platforms. It involves increasing control over infrastructures, data, and technological standards at national or regional levels to ensure strategic autonomy and safeguard citizens' rights. As De Filippi and Hassan argue, *"Digital sovereignty is critical to reclaiming governance over digital infrastructures and protecting democratic values in the age of global platforms."* This concern is amplified by the evolving nature of the digital environment, which, *"whether the consequences are intentional or not, opens up the doors to a new form of regulation —*

by private actors — which might try to impose their own values by embedding them into a technological artefact." (De Filippi and Hassan, 2016, p. 04)

Conclusion

This analysis underscores the pivotal role of technology as an active social actor, one that fundamentally reshapes power dynamics within contemporary societies. Far from functioning merely as a neutral instrument, technology emerges as a mediating force that actively transforms the configuration of social, political, and economic relations.

The rise of digital technologies—particularly through platforms, big data infrastructures, and artificial intelligence—has led to a complex reorganization of power. On one hand, these technologies contribute to the decentralization and distribution of power across hybrid and networked systems. On the other, they simultaneously generate new forms of centralization, notably through algorithmic control, surveillance mechanisms, and informational asymmetries that reinforce the dominance of certain actors.

These shifts carry significant implications for social structures. They redefine mechanisms of inclusion and exclusion, create novel hierarchies, and challenge long-standing norms of equity and access. At the same time, they raise pressing ethical and political concerns, particularly

with regard to regulation, transparency, accountability, and digital sovereignty. Traditional notions of legitimacy and authority are being reconstituted within a fluid and often opaque digital environment.

In this context, the democratic governance of technology is not merely desirable—it is essential. Addressing these challenges requires the development of robust normative, institutional, and participatory frameworks to ensure that technological development aligns with the public interest, safeguards fundamental rights, and promotes a more equitable and inclusive society. The capacity of societies to respond to these transformations—by forging new forms of cooperation among public institutions, private actors, and civil society—will play a decisive role in shaping the future trajectory of democracy in the digital age.

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