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PLATFORMIZATION IN THE EUROPEAN UNION

Politico-Legal Challenges of Platforms as Infrastructures

ACADEMIC SUPERVISORS

Prof. Ronald Car
Prof.ssa Natascia Mattucci

PH.D. CANDIDATE

Gianmarco Cristofari

SCIENTIFIC COORDINATOR

Prof.ssa Benedetta Barbisan

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List of abbreviations

AIA Artificial Intelligence Act
API Application Program Interface
BAXT Baidu Alibaba Tencent Xiaomi
CJEU Court of Justice of European Union
DA Data Act
DAO Decentralized Autonomous Organization
DGA Data Governance Act
DMA Digital Market Act
DMR Digital Rights Management
DSA Digital Service Act
DSC Digital Service Coordinator
ECHR European Court of Human Rights
ECJ European Court of Justice
EPRS European Parliament Research Service
EU European Union
GAFAM Google Amazon Facebook Apple Microsoft
GDPR General Data Protection Regulation
IaaS Infrastructure as a Service
IANA Internet Assigned Numbers Authority
ICANN Internet Corporation for Assigned Names and Numbers
ICI Information Communication Infrastructure
ICT Information Communication Technologies
IETF Internet Engineering Task Force
IGF Internet Governance Forum
ISO International Organization for Standardization
ISP Internet Service Provider
ITU International Telecommunication Union
LDPB Legal Protection by Design
LTS Large Technical System
NSA National Security Agency
OECD Organization for Economic Cooperation and Development
PaaS Platform as a Service
SaaS Software as a Service
SDK Software Developer Kit
STS Science and Technology Studies

TEU Treaty on European Union

TFEU Treaty on the Functioning of the European Union

TOS Terms of Services

UN United Nations

VSM Viable System Model

W3C World Wide Web Consortium

WSIS World Summit in the Information Society

WTO World Trade Organization

I like to think (and
the sooner the better!)
of a cybernetic meadow
where mammals and computers
live together in mutually
programming harmony
like pure water
touching clear sky.

I like to think
(right now, please!)
of a cybernetic forest
filled with pines and electronics
where deer stroll peacefully
past computers
as if they were flowers
with spinning blossoms.

I like to think
(it has to be!)
of a cybernetic ecology
where we are free of our labors
and joined back to nature,
returned to our mammal
brothers and sisters,
and all watched over
by machines of loving grace.

Richard Brautigan (1967). *All Watched Over by Machines of Loving Grace*

Acknowledgments

The present dissertation originated with a retroactive reflection on my experience with the first ‘smartphones’ as a teenager. I started to believe – in the sense of McLuhan’s ‘I wouldn’t have seen it if I hadn’t believed it’ that there was something new in how we were playing with them – and how they were playing us. I therefore started to see if pieces of evidence would support this thesis. I then found out that this is more or less how science works: a Janus *bifrons*, with a science ‘in the making’ (how it is researched in the lab) and a ‘ready-made science’ (how it is presented)¹.

During this journey I was guided by many awesome human beings. I first want to thank my academic supervisors: prof. Benedetta Barbisan, Ronald Car and Natascia Mattucci for helping me with understanding what I was actually researching, for the stimulating conversations, and for showing that academia can be a nice place. If this work turned out to be interdisciplinary it is also their fault. A warm hug also to my Ph.D. colleagues, Davide Zoppolato, Alessandro Graciotti, Omar Pallotta, and especially to Chiara Salati and Arianna Porrone for the mutual support and valuable conversations.

During my work I also had to decide where to move for the research period abroad for the Ph.D. during a global pandemic. I noted an unusual concentration of good books and papers regarding digital platforms coming from Amsterdam circles and scholars. Amsterdam not only had that fundamental focus on media studies - a field of research somehow missing from Italian academia for historical reasons, but obviously central for studying platforms² - but, as media became supercharged with economic value, it seemed that the already blurred boundaries of that field also started to melt. Consequently, I spent one year as a visiting scholar at *Instituut voor Informatierecht* (Institute for Information Law, IViR) working on the team dedicated to the societal impact of blockchain and digital technologies³. I would like to thank Balazs Bodo for my time in his team on trust and digital technologies, together with Alexandra Giannopoulou and Valeria Ferrari. At IVIR I enjoyed the company of an *engagé* intellectual group: Marijn Sax, Paddy Leerssen, Jef Ausloss, Jill Toh, Naomi Appelman, Edoardo De Martino, Ljubisa Metikos, Tom

¹ Latour, B. (1987). *Science in Action: How to Follow Scientists and Engineers Through Society*.

² This may be due historically to the presence of a very strong public sector control and investment as the Radiotelevisione Italiana, and the establishment and cultural relevance of semiotics departments, traditionally adverse to studies on media. See for instance the polemics of Umberto Eco against Marshall McLuhan: if ‘the medium is the message’, there would no need to enter into a theory of discourse. For a reconstruction see D’Armenio, E. (2017). *Tecnologie della semiosi. Il campo di una retorica intermediale nella produzione audiovisiva*, and for a reconstruction of the debate of McLuhan’s work in Italy see Pallavicini, P. (2008). *Postfazione*, in McLuhan, M. (2008) *Gli strumenti del comunicare*. Therefore, media studies contributions in Italy tend to belong to sociological studies. A recent notable example is the manual of Sorice, M. (2020) *Sociologia dei media: un’introduzione critica*, 165-212, which defines platform studies as the fourth and latest stage of media studies.

³ <https://www.ivir.nl/>

Barberau, Eva Van Der Graaf, and Theresa Seipp. Furthermore, thanks to the other Amsterdam researchers as Davide Beraldo, Stefania Milan, and Letizia Chiappini.

At the same time, I was guest at the *Institute for Network Cultures* (INC) at the Hogenschool van Amsterdam, an institute dedicated to critical internet and design studies. With the support of INC, during this year I conducted 12 interdisciplinary expert interviews on platformization, which resulted in a publication supported by the University of Amsterdam⁴ to which I refer from time to time. I am extremely grateful to Geert Lovink for accepting me at the *Institute for Network Culture* during a global pandemic and for confirming that there was a cool topic to be further researched. Thanks to the entire crew of the *Institute for Network Cultures*, especially to Tommaso Campagna and Jordi Viader Guerrero.

Thanks to the participants to the following conferences: the 2020 conference *Nuove tecnologie e futuro del diritto pubblico* organized by ICON-S Italy; *Global Perspective on Platforms and Cultural Production* which took place in May 2022 in Amsterdam; the 72th ICA conference *One World, One Network?* in Paris in May 2022; the *Luhmann conference*, which took place in Dubrovnik in September 2022; the *Computers, Privacy & Data Protection 2022: Data Protection & Privacy In Transitional Times* in Bruxelles.

Nicola Zengiaro has been my emotional and philosophical peer reviewer over the last Ph.D. years. Thanks to you for the many conversations on semiotics and digitization and to Marco Dal Lago for those on economics. Thanks to my dear friend Alberto Micheletto, with whom I discussed the philosophy of metaphors, and Alessio Andriolo for introducing me to more critical studies on contemporary technologies, and to Claudi D'Aurizio.

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⁴ Those contributions are not included as direct sources of this manuscript since the interviews came out to be more dialogues and conversations than semistructured interviews. However, the interviews were published in Cristofari, G. (2023). *The Politics of Platformization: Amsterdam Dialogues on Platform Theory*, and from time to time I refer to them in the present manuscript. On the research methodology, I followed the pieces of advice that I found in Bogner, A., Littig, B. & Menz, W. (Eds). (2009). *Interviewing experts*, and Döringer, S. (2021). *The problem-centered expert interview. Combining qualitative interviewing approaches for investigating implicit expert knowledge*.

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We may dream of the time when the *machine à gouverner* may come to supply – whether for good or evil - the present obvious inadequacy of the brain when the latter is concerned with the customary machinery of politics. [...] In comparison with this, Hobbes' Leviathan was nothing but a pleasant joke.

Père Dubarle (1948) in his review of Norbert Wiener's *The Human use of human beings*

1. Introduction

1.1 The organizational consequences of computation

In 1978, two inspectors of finance of the French government were asked by the French president to write a report on the development of informatic applications and how they could be “promoted and governed to be put at the service of democracy and human development”⁵. The report, entitled *L'informatisation de la Société (The Computerization of Society)*, dealt with the crisis of democracy in Western society, and especially with the role and sovereignty of the French state confronted with then powerful monopolist companies as the International Business Machines (IBM). Nora and Minc, the authors of the report, provided a quite prophetic analysis of computerization: they suggested that the “informatic revolution” was the most relevant technological change of those years since it constituted the common factor that allowed all other technological evolutions to accelerate. The consequence would have been a change in the nervous system of organization of society as a whole⁶. The Nora-Minc report had foreseen a way forward for computerization. Computers could have become a force fostering the decentralization of power and granting a “socialization of information”. As such, Nora and Minc – two French pragmatic public functionaries - had some insightful political recommendations to achieve such socialization of information. According to them, public power should have played a central role in the development of networks and standards, starting from directly engaging in regulatory activities. They opposed any cyberlibertarian ideal, because they believed that

Il n'y a pas de spontanéité sans régulation, pas de régulation sans hiérarchisation. L'autogestion si elle se veut autosuffisance restera une contresociété marginale. Pour contribuer à transformer la société globale, elle doit accepter une stratégie de l'insertion. Socialiser l'information, c'est donc mettre en place les mécanismes par lesquels se gèrent et s'harmonisent les contraintes et les libertés, le projet régalien et les aspirations des groupes autonomes. C'est favoriser la mise en forme des données à partir desquelles la stratégie du

⁵ See the letter from December the 20th 1976 of French president Valéry Giscard D'Esteng in Nora, S. & Minc, A. (1978). *L'informatisation de la Société: rapport à M. le Président de la République*, 2.

⁶ Nora, S. & Minc, A. (1978). *L'informatisation de la Société: rapport à M. le Président de la République*, 11. In the report they also coined the term telematic (a union between telecommunications and informatics).

centre et les désirs de la périphérie peuvent trouver un accord: celui par lequel la Société et l'Etat non seulement se supportent, mais se fabriquent réciproquement⁷.

Almost fifty years later the report it is clear that those recommendations haven't been followed. The path taken by the historical development of computational technologies did not proceed the cybernetic dream of cooperation between men and machines⁸ - at least, not in the way imagined by cyberneticians and early Internet enthusiasts⁹. In this situation, it gets harder to resist the philosophical position that sees Technology as autonomous driving force of history¹⁰. But technology doesn't drive history by itself¹¹; it is also driven by economic and political forces - governments and corporations alike. Computational technologies ultimately allowed to experiment with both citizens and firms, to make serendipitous discoveries, and eventually turned those discoveries into something first valuable, and now indispensable¹². That is something that the science of cybernetics had already understood: as Geof Bowker once put it, "instead of the laboratory being barricaded off from the world, the world would have become a laboratory"¹³.

During third decade of the 21st century, we can observe two things. On the one hand, the platform as a term refers to the global corporate platforms of the GAFAM and BATX: international firms whose success also depended on adopting the platform model and which became monopolists or oligopolists in certain markets and leveraged that success to expand in others. Those corporations play a fundamental role in the life of European citizens; their power seems to be inescapable and their use, like bridges, common carriers, and infrastructures, has become unavoidable. I usually refer to these entities using the plural: "platforms". On the other hand, in a more interesting and controversial sense, the digital "platform" is a new organizational form or model that emerged during the first two decades of the 21st century. Perhaps surprisingly, organizational sociology has started to study platforms with a significant

⁷ Nora, S. & Minc, A. (1978). *L'informatisation de la Société: rapport a M. le Président de la République*, 123.

⁸ The potential impact of computation in Wiener, N. (1954). *The Human Use of Human Beings*.

⁹ See Turner, F. (2006). *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* for the historical reconstruction, and Barbrook, R., & Cameron, A. (1995). *The Californian Ideology*.

¹⁰ An image that starts in 1799 with the German poet Novalis in his "Europe-Essay", in which he describes modernity as a "mill that is grinding itself". See Sloterdijk, P. & Ziegler, H. (2006) [1988]. *Mobilization of the Planet from the Spirit of Self-Intensification*, 39. See also cp. 4 for an analysis of some of the philosophical positions towards technology.

¹¹ See Smith, M. R. & Marx, L. (Eds) (1994). *Does Technology Drive History? The Dilemma of Technological Determinism*.

¹² An argument put forward, albeit in very different terms, by the two most celebrated meta-narratives of the digital revolution: Zuboff, S. (2019). *The Age of Surveillance Capitalism* and Bratton, B. (2015). *The Stack: On Software and Sovereignty*.

¹³ Bowker, G. (1993). *How to Be Universal: Some Cybernetic Strategies*, 123.

delay in comparison to other disciplines; the topic was first explored by management theorists and digital activists. Those two meanings – actually existing platforms and the “Platform”- are complementary and inseparable, as the latter is a theoretical abstraction derived from the observation of the former, including not-for-profit ones: state-owned platforms, platform cooperatives, urban platforms, and others.

Media theorist Geert Lovink noted that the word platform seems to have become the “Keyword of Our Time”, replacing the word ‘network’¹⁴; he locates this shift in the year 2016, that have witnessed some mainstream publications on platforms, as well as the explosion of the Cambridge Analytica case¹⁵. For this reason, we will see how the platform keyword has been applied in a great variety of contexts, giving rise to expressions such as platform power, platform capitalism, platform socialism, platform party, platform labor, platform welfare, platform group, platform governance and governmentality, platform democracy, platform state, platform sovereignty, platform law, platform architecture, platform ecosystem, platform urbanism, platform delusion, platform nihilism, and finally to the platform society¹⁶. A keyword, that of the ‘platform’, whose schema for meaning-making is still – and it may forever be - contested¹⁷, and that is not without critiques¹⁸.

Hence, the following dissertation deals with the political and legal challenges brought by the digital platform as a new organizational form and, consequently, by the phenomenon of

¹⁴ The centrality of the word ‘network’ in management theory had been explored by Boltanski, L. & Chiappello, E. [1999] (2017). *The New Spirit of Capitalism*. In a similar fashion, the management ideology is the starting point for understanding the specificities of the forms of creation and extraction of value in and by digital platforms. See cp. 3.2.

¹⁵ Lovink, G. (2017). *Forward*. In Apprich, C. (2017). *Technotopia*, xii.

¹⁶ I omit here the references, which can be found throughout the literature review of cp. 3.

¹⁷ Schüßler, E., Attwood-Charles, W., Kirchner, S., & Schor, J. B. (2021). *Between mutuality, autonomy and domination: rethinking digital platforms as contested relational structures*, claim that the platform as a social structure should be understood as a continuous contestation between difference social actors. I contend however, with Barns, S. (2020). *Platform Urbanism*, that platformization can give rise to valuable epistemological strategies. It can be a useful epistemology in the sense of the *reduction* of complexity of digital assemblages.

¹⁸ The concern regarding the reification of the platform was widely discussed during the conference “*Global Perspective on Platforms and Cultural Production*” which took place in May 2022 in Amsterdam. On a general level, everybody agrees on the fact that the platform should not become a universal framework applicable in all contexts: platform research must be sector-specific and differentiate between geographical and economical uneven contexts. This doesn’t solve, however, the problem regarding what platform *platform studies* is talking about (*infra*, 3.7). When a new keyword starts to spread endemically, the academic is put front of a choice: reject the keyword *tout court* in the attempt to use different terms or trying to propose a new meaning for that word. This last option has been the objective of what I defined as the ‘Amsterdam movement of platform studies’, of central importance in Europe. Regarding the critique of the platform keyword in relation to in academia, see my interview with Balazs Bodo, “*Platform skepticism and private trust infrastructures*”; for a politico-economical defense in terms of how platformization can enable actual criticism, see the interview with Niels van Doorn, “*The Political Economy of Democratic Platformization*”. For a critique on the risk of reification of the platform keyword see, Miconi, A. (2022). *On Value and Labour in the Age of Platforms*, in Armano, E. et al (Eds) (2022). *Digital Platforms and Algorithmic Subjectivities*.

platformization in the European Union¹⁹. Fuelled by digital technology and linked to longer-term organizational trajectories, this process of platformization has been transforming consumption, production, participation, and everyday life in general. One can describe, with the lenses of social system theory, how the “platform” as an organizational form is permeating virtually all societal systems: economic²⁰, political²¹, legal²², educational²³, health²⁴, military²⁵, news and traditional media²⁶, labor and work²⁷, financial²⁸, urban²⁹ academic³⁰, art and cultural production³¹ and

¹⁹ Platformization is defined as the “penetration of infrastructures, economic processes and governmental frameworks of digital platforms in different economic sectors and spheres of life, as well as the reorganization of cultural practices and imaginations around these platforms”. Poell, T. et al (2019). *Platformization*, 1. For a discussion, see chapter 3. By “digital” – a word that comes etymologically from the terms *digitus* (finger), whose functions is to *count*, *point* and *manipulate* - I refer to the classical definition of “technologies, infrastructures, data, and content based on and/or using electronic computing techniques”. For technology historian Benjamin Peters, digital media carry out some fundamental activities: they “count the symbolic, they index the real, and, once combined and coordinated, they manipulate the social imaginary”. See Peters, B. (2016). *Digital*, 94, in Peters, B. (Eds) (2016). *Digital Keywords: A Vocabulary of Information Society and Culture*. Moreover, according to Felix Stalder, digital “refers to historically new possibilities for constituting and connecting various human and non-human actors, which is not limited to digital media but rather appears everywhere as a relational paradigm that alters the realm of possibility for numerous materials and actors”. Stalder, F. (2018). *The Digital Condition*, 9.

²⁰ Srnicek, N. (2016) *Platform Capitalism*; Steinberg, M. (2019). *The Platform Economy: How Japan Transformed the Consumer Internet*; Van Doorn, N. (2022). *Platform Capitalism's Social Contract*. Athique, A., & Parthasarathi, V. (2020). *Platform Capitalism in India*; Boyer, R. (2021). *Platform Capitalism: A Socio-Economic Analysis*; Langley, P., & Leyshon, A. (2017). *Platform Capitalism: The Intermediation and Capitalization of Digital Economic Circulation*; Rolf, S., & Schindler, S. (2023). *The US-China rivalry and the emergence of state platform capitalism*.

²¹ Gerbaudo, P. (2019). *The Digital Party: Political Organisation and Online Democracy*; Nunes, R. (2021). *Neither Vertical nor Horizontal: A Theory of Political Organization*.

²² Cohen, J. (2019). *Between Truth and Power: The Legal Constructions of Informational Capitalism*; Garapon, A. & Lassègue, J. (2018). *Justice digitale*.

²³ Unesco (2021). *The Platformization of Education: A framework to Map the New Directions of Hybrid Education Systems*; Cappello, G. (2022). *The Platformization and Commodification of Italian Schools during the Covid-19 Crisis*; Van Dijck, J., Poell, T. & de Waal, M. (2018). *The Platform Society*, 117 – 134.

²⁴ Charitsis, V. (2019). *Survival of the (data) fit: Self-surveillance, corporate wellness, and the platformization of healthcare*; Sax, M. (2021). *Between Empowerment and Manipulation: The Ethics and Regulation of for-Profit Health Apps*.

²⁵ Hoijsink, M. & Planqué-van Hardeveld, A. (2022). *Machine learning and the platformization of the military: a study of Google's machine learning platform tensorflow*.

²⁶ Van Dijck, J.; Poell, T.; de Waal, M. (2018). *The Platform Society*, 49 – 71. Usher, N. (2021). *From Media Capture to Platform Capture*; Nielsen, R. K. & Ganter, S. A. (2022). *The power of platforms: shaping media and society*.

²⁷ Casilli, A. & Posada, J. (2019). *The platformization of labor and society*. In: Mark, G. & Dutton, W. H. (Eds) (2019). *Society and the internet: How networks of information and communication are changing our lives*, 293-306; Huws, U., Spencer, N. H., & Coates, M. (2019). *The Platformization of Work in Europe: Highlights from Research in 13 European Countries*.

²⁸ Ferrari, V. (2022). *The Platformization of Digital Payment*.

²⁹ Barns, S. (2020). *Platform Urbanism: Negotiating Platform Ecosystems in Connected Cities*; Hodson et al (Ed.). (2020). *Urban Platforms and the Future City: Transformations in Infrastructure, Governance, Knowledge and Everyday Life*; Strüver, A. & Bauriedl, S. (2022). *Platformization of urban life: towards a technocapitalist transformation of european cities*.

³⁰ da Silva Neto, V. J. & Chiarini, T. (2023). *The Platformization of Science: Towards a Scientific Digital Platform Taxonomy*; Tabarés, R. (2022). *Open access, responsibility and the “platformization” of academic publishing*.

³¹ Poell, T., Nieborg, D. & Duffy, B. E. (2022). *Platforms and Cultural production*.

music³². Paraphrasing Siva Vaidhyanathan, we could describe it as the ‘platformization of everything’ and, even this time, we should be worried³³.

Nowadays, social media platforms rely on recommended contents so heavily that they are turning into portable televisions where the channel cannot be chosen³⁴. On the basis of their layoffs, someone claims that it could be the end of their domination. But once these platforms are gone, where do the users migrate to? How will they organize and be organized? *They will most likely migrate to other digital platforms*. In theory, we can imagine a world without Google, but not a world without platforms. That is why the notion of platformization – which is understood as an evolutionary *process* – is, in my opinion, a useful as concept to make sense of the sociotechnical changes of the last twenty years. Furthermore, the necessity to understand the platform model arises from the fact that in the EU it is being institutionalized via regulations and may stay with us for a long time (*infra*, cp. 4).

The roots of this dissertation, however, are to be found in some practical instances that I developed through my personal history. The first story behind the dissertation deals with my addiction to video games at a young age. At the passage of the millennium, consoles and computers such as the Game Boy – as we shall see, strictly connected to platforms as multi-sided markets – were already able to fully capture the attention of children and keep them on a screen for several hours per day. Just some years later, the advent of pay-per-use, wired internet routers enabled online gaming, and things got worst. Because of my experience as an online gamer, I could witness the perils of gamification in the first person³⁵. Nowadays, the widespread presence of attention-harnessing technology, creating addictions to users while extracting data from them, sounds familiar to most smartphone users. That is because those technologies made their way into most of the fields of human experience, and are now used by corporations,

³² Bonini T. & Gandini A. (2019). *“First week is editorial second week is algorithmic”: platform gatekeepers and the platformization of music curation*.

³³ Vaidhyanathan, S. (2012). *The Googlization of Everything And Why We Should Worry*.

³⁴ Signorelli, D. (2023). *Come i social sono diventati la nuova televisione*. As far as a platform needs an interface in the form of a screen as the point of contact with the human user, the provocations of Baudrillard on television killing reality are still relevant. See Baudrillard, J. (1996). *The Perfect Crime*, 74: “at the heart of our universe of signs there is an evil genius of advertising, a trickster who has absorbed the drollery of the commodity and its *mise en scène*. A scriptwriter of genius (capital itself?) has dragged the world into a phantasmagoria of which we are all the fascinated victims”.

³⁵ Gamification is a set of practices applied to the most diverse fields to increase the performance levels of users of a system. It can be based on parameters that are either explicit (scores and other) and implicit (the behavior to implement). Gamification is heavily used in the design of digital platforms. In Europe, among the first to work on gamification was the hacker collective Ippolita. See Ippolita (2018). *Tecnologie del Dominio*; Ippolita (2019). *Gamificazione*.

governments, and institutions to cybernetically manage populations, citizens, consumers, and subjects and to obtain a behavioral surplus to be turned into value³⁶.

One of the differences of this paradigm of extraction was grasped by Roberto Calasso, who once noted that the recurring obsession throughout the twentieth century was that of *social control*. However, social control was fully achieved only at the beginning of the new millennium, when the “digital empire” was established. There

it became clear that *control* meant firstly *control of data*. And the situation was reversed. Data was no longer extracted by force from above, but was spontaneously offered from below, by countless individuals. And it was the very material over which to exercise control. The question then arose: what would be the controlling power? The first suspects, as always, were states. But a startling novelty was introduced. States were not the only ones who could act. Starting with them, there is a sequence that includes above all the businesses where data is constantly flowing³⁷.

The centrality of data brings us to the second relevant experience to be taken into account, which comes from more recent and work-related activities. After my degree in European law, the Cambridge Analytica scandal and the Snowden revelations revived my interest in technology-related topics³⁸. I started to work as a lawyer and data protection consultant before the coming into force of Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation, the GDPR). During this time, I figured out that the new obsession of business circles was simply called ‘data’: the imperative was to gather them, structure their flows and figure out how to turn them into value. The GDPR had been the result of years of discussions and negotiations at the European level and constituted a great advancement not only in the protection of privacy, but also in the regulation of digital technologies in general, for at least two reasons. In the first place, the GDPR was a distinctively European experiment with a

³⁶ For the notion of behavioral surplus, which goes together with that of behavioral manipulation, see Zuboff, S. (2019). *The Age of Surveillance Capitalism*, 131, “*The dynamic of behavioral surplus accumulation*” and *infra* for a critique to Zuboff.

³⁷ Calasso, R. (2019). *The Unnamable Present*, Ebook, 16%.

³⁸ Cambridge Analytica was a British consultancy firm that became known all over the world for the use of behavioral microtargeting based on the psychometric of the ‘Big Five’ model of personality. Cambridge Analytica used data collected via Facebook and third-party app connected to it, without the awareness of data subjects, to make inferences used for targeted political ads, which played a role both in the outcome of the presidential election in the USA and in Brexit. In 2019, Facebook paid a record-breaking \$5 billion penalty to settle Federal Trade Commission charges about the deception of users on its privacy practices. See Kaiser, B. (2019). *Targeted: The Cambridge Analytica Whistleblower's Inside Story of How Big Data, Trump, and Facebook Broke Democracy and How It Can Happen Again*.

great symbolic impact. The European Union explicitly tried to embed principles and values shared by an ideal of liberal-democratic governance, including the protection of fundamental rights in the transition to an often recalled ‘digital society’. It created new and important individual and subjective rights, which made it a humanist regulation aimed at putting the ‘citizen at the center’³⁹. Secondly, the GDPR developed new regulatory strategies suited for the technological changes of the last decades, including the advent of the commercial internet: risk-based regulation, impact assessments, and a sophisticated system of inclusion of Supervisory Authorities and data subjects between the national and the European level. Finally, in terms of enforcement, the regulatory changes included the possibility of high fines for global corporations given by Supervisory Authorities⁴⁰. After some years, we may say that the GDPR managed to enhance the data protection standards not only on the European territory but also in many other countries, working as a global standard-setter; it finally made people care about data protection and it made them aware of the value of their data.

The daily practice of GDPR implementation, however, was different. I felt a great detachment between how the GDPR was supposed to work (its foreseen ‘impacts’ as heralded by the legal and business discourse) and the reality of international firms’ compliance⁴¹. Both public and commercial discourses started to focus on compliance ‘not a cost, but as a resource for change’. As a law firm, we were selling trust via packages of compliance to corporate multinationals; in exchange, those firms were bringing money, thanks to which people could be hired⁴². Among the

³⁹ This is a constant of the self-representation of Europe in relation to the digital transition. The EU describes its intervention as the ‘democratic third way’ between American deregulatory data markets and China’s authoritarian, state-centered alternative. As I discuss throughout this work, the extent to which this can be considered true is highly debatable. For the liberal-democratic values of the GDPR see the principles expressed by art. 5 (principles related to the processing of personal data): lawfulness, fairness and transparency, purpose limitation, data minimization, accuracy, storage limitation, integrity and confidentiality, and accountability. See also the European Commission (2019). *Data protection rules as a trust-enabler in the EU and beyond – taking stock*, and the principle of privacy by design and by default. For a comment on those principles see mine Cristofari, G. (2019). *Commento all’art. 5*, in Bolognini, L. & Pelino, E. (2019). *Codice della privacy commentato*.

⁴⁰ See art. 83(5) GDPR. the fine framework can be up to 20 million euros, or in the case of an undertaking, up to 4 % of their total global turnover of the preceding fiscal year, whichever is higher.

⁴¹ Only later I found that data protection scholars had noted that much earlier, and it extended to data protection law in general: “data protection, it seems, has reached a state in which there is a significant and even troublesome difference between data protection legislation and practices on the one side and, on the other side, the concepts and values once associated with privacy as expressed in fundamental documents as e.g., in Article 8 of the European Convention on Human Rights”. Burkert, H. (2009) *Towards a New Generation of Data Protection Legislation*, 335.

⁴² The other side of the GDPR’s obligations are the cost for companies. A recent quantitative study found that European businesses exposed to the law saw their profits shrink by an average of 8.1 %. The main burden was on small and medium enterprises, which experienced an average decline in profits of 8.5 %, and 12.5 % in the IT sector. It is interesting to note that large platforms were less affected, with a decline of 4.6 %. See Chen, C. et al (2022). *Privacy Regulation and Firm Performance: Estimating the GDPR Effect Globally*.

outcomes of GDPR, then, we need to enumerate the creation of jobs in the European Union⁴³. GDPR's effects have been far-reaching; however, a new law alone couldn't be used to tackle the political, systemic issues behind the platform economy.

The starting point were clear and under the eyes of many. It involved a combination of two factors. On the one side, after the introduction of the iPhone, a real anthropological revolution took place at a historically unprecedented rate: a great part of the world population started to run around with portable computers in their pockets⁴⁴. On the other, as we have already noted, the beginning of the 21st century witnessed the swift rise of some special kind of platform corporations that - to use the vocabulary of tech exceptionalists - were disrupting the market. At first glance, by looking at these companies, one thing immediately came to mind: they all worked with data⁴⁵; they employed much fewer employees than companies of the industrial era; they were multinational corporations working at an international if not planetary level whose importance in terms of time and attention in the daily life of teenagers - as well as producers of services - could not be underestimated⁴⁶; they also seemed to evade the public-private dichotomy. The global pandemic has further accelerated this process of platformization, working as the litmus test of the digital transition. Platform corporations - with the notable exceptions of 'lean platforms' as Airbnb - significantly increased their profits⁴⁷. Because of the pandemic, both

⁴³ I have further discussed these issues with Joris van Hoboken, "Platform Regulation and the Institutionalization of computing in the European Union, in Cristofari, G. (2022). *The Politics of Platformization*.

⁴⁴ According to Statista, in 2023 there are 7 billion smartphone users on the planet. This is what Adam Greenfield called 'radical technologies', a new step towards Ghunter Anders "outdatedness of human beings". See Mattucci, N. (2018). *Tecnocrazia e analfabetismo emotivo* on the work Günter Anders. Additionally, many authors and scholars are defining this shift from an industrial to a digital society as a new Polanyian "great transformation". See for instance Cohen, J. (2019). *Between Truth and Power*; Kenney, M. F.; Zysman, J.; Bearson, D. (2021). *Transformation or Structural Change? What Polanyi Can Teach us about the Platform Economy*; Cioffi; Kenney, M. F.; Zysman, J. (2022). *Platform power and regulatory politics: Polanyi for the twenty-first century*. Grabher, G., & König, J. (2020). *Disruption, Embedded. A Polanyian Framing of the Platform Economy*.

⁴⁵ I discuss the historical realization of data value in chapter 2, while the relevant literature is deployed in the literature review of chapter 3. This awareness is related to studies on the political economy of the internet on one side, and data protection on the other. See for instance the pioneering work Oscar H. Gandy (1993). *The Panoptic Sort: A Political Economy of Personal Information*.

⁴⁶ According to Statista (2021), adults in the U.S. spent an average of 485 minutes (eight hours and five minutes) with digital media each day. <https://www.statista.com/statistics/262340/daily-time-spent-with-digital-media-according-to-us-consumers/>. One of the epistemologies of the digital transition is in fact the 'attention paradigm', according to which most of the power of digital platforms lies in the fact that they manage to keep users always connected to them. See for instance Citton (2016) *The Ecology of Attention*; Wu, T. (2016) *The Attention Merchant*; Williams, J. (2018) *Stand out of our light*; Zuboff, S. (2019) *The Age of Surveillance Capitalism*, who talks about the shift from Durkheim's division of labor to a "division of learning".

⁴⁷ Hutchinson, A. (2020, July 30). *Facebook adds 100 million more Users, Reports 11% revenue growth amid covid-19*; Takefman, B. (2021, February 02). *Amazon profits increased nearly 200% with Covid-19*; from Wakabayashi, D. (2021, May 19). *Google's and Microsoft's Profits soar as Pandemic benefits big tech*. From the sides of workers, see van Doorn; Mos; Bosma, (2020, April 11). *Disrupting "Business as Usual": How COVID-19 is impacting platform-mediated labor and social reproduction*.

states and corporations relied on the platform form, which have turned into an essential *de facto* public infrastructure⁴⁸.

Hence, it seemed to me that data was not only a matter of data protection, and perhaps not even one of creating new laws. It was also about the political economy of data, which are “the product of social relations and so properly the object of social interest”⁴⁹. I had to follow the rabbit down the economical-political hole in search of a different perspective. The first inference, made by many, was that if we wanted to learn something about how those companies worked and why they were successful, we had to assess how data worked, and how social systems themselves were getting ‘datafied’⁵⁰. In other words, the novelty of the problem seemed to lie in the political economy of data. For instance, the accumulation of personal data and the exchange of data in markets were seen to have “the potential to lead to information and power asymmetries between individuals and data hoarding organizations” with negative consequences for freedom to have a private life, informational self-determination, autonomy and on contextual social norms⁵¹. This data-centric approach led the legal discourse to focus greatly on individual data rights⁵² and algorithmic transparency⁵³ to tackle such problems.

⁴⁸ See Guggenberger, N. (2021). *Essential Platforms*; Guggenberger, N. (2021). *The Essential Facilities Doctrine in the Digital Economy: Dispelling Persistent Myths*; Graef, I. (2016) *EU Competition Law, Data Protection and Online Platforms: Data As Essential Facility*. Also states largely relied on covid apps for contact tracing.

⁴⁹ Kapczynski, A. (2020). *The Law of Informational Capitalism*, 1499. See also Sadowski, J. (2019). *When Data is Capital*.

⁵⁰ Van Dijck, J. (2014). *Datafication, dataism and dataveillance*; Couldry, N. & Mejias, U. (2018). *Data colonialism: rethinking big data's relation to the contemporary subject*; Couldry, J. & Mejias, U. (2019). *The Costs of Connection. How Data is Colonizing Human Life and Appropriating it for Capitalism*. As such, this notion of data is clearly different from ‘scientific data’ as empirical evidence to support a thesis. As Bernard Stiegler noted, data once meant ‘intuition’, while now data is what is captured by smartphones and the Cloud. The clearest example of the data-centric view is the wonderful and convincing meta-narrative created by Zuboff, S. (2019). *The Age of Surveillance Capitalism*. While her ethnography of data scientists is of the highest value, she treats data and platforms as magical entities, and avoids engaging with their political economy. For a harsh critique see Morozov, E. (2019). *Capitalism's New Clothes*; for a more nuanced critique of the limitations of the view see Kapczynski, A. (2020). *The Law of Informational Capitalism*.

⁵¹ Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, 579-580, who discuss it in relation to the rise of computational infrastructures as a precondition for data protection. See cp. 4.

⁵² See the empirical work on GDPR’s awareness and perception by Dutch citizens by Strycharz, J. et al (2020). *Data Protection or Data Frustration? Individual Perceptions and Attitudes Towards the GDPR*. The authors found that in the Netherlands, people “are aware of the law and know at least some of the individual rights granted to them”, but at the same time, they “show substantial reactance to the Regulation and doubt in the effectiveness of their individual rights”. (18) As such, there still is a stark contrast between the “(theoretical) awareness and understanding of rights and the perceived efficacy and actual use of (or intention to use) those rights”.

⁵³ Bassan, F. (2021). *Digital Platforms and Global Law* pointed out that even research in competition law research has initially focused on the market of data, but “when it became clear that data does not constitute a market”, scholars turned to “the algorithm, which makes data alive, because it gives them meaning. And therefore the levels and methods of transparency of the algorithm have become the objectives of protection” (p. 135 -136). Nonetheless, it is now clear that algorithmic transparency and regulation is also not leading anywhere. The best outcome would be that of being able to observe platform

It took me some years to understand that such a data-centric perspective necessary but incomplete. “Behavioral data”, as it is normally understood, is ephemeral and controversial. As a thing, data only exists in between bits and in between discourse. As information carriers, they are used by those who gather, create, and process them. In other terms, the hype around data initially ignored the material conditions of their production, as well as the nature of the organizations producing them. As I now understand it, it is the political economy of data only to the extent that it is the *political economy of computational and data infrastructures* (what it is referred to as ‘Cloud⁵⁴’). Therefore, each politico-legal assessment of data must always be paired with an assessment of the infrastructure that produces them, bringing another layer of complexity.

1.2 Research question and outline

The ultimate problem behind the regulation of platforms seems to be nothing less than the invention and institutionalization of computers⁵⁵, with the creation of what Wieser called “computing environment”⁵⁶, and that, in regulatory terms, have become “regulatory environments”⁵⁷. To carry out such an investigation, I initially looked at the available social studies on computation geographically carried out at the heart of the ‘empire’, namely the

properly. See Rieder, B. & Hoffman, J. (2020). *Towards Platform Observability*; Leerssen, J. P. (2023). *Seeing what others are seeing: studies in the regulation of transparency for social media recommender systems*.

⁵⁴ Apart from the much-criticized metaphor – see van Boomen, V. (2014). *Transcoding the Digital* for an analysis - the term emerged to refer to an intricate system made of smartphones, data centers, and the Internet. Data are carried by wires, stored in data centers, transmitted by satellite systems, and works with human users connecting to the Internet through physical devices. These devices are produced with rare minerals and labor, thus creating a geopolitical entanglement. The ecological aspect has been investigated by Bratton, B. (2015). *The Stack*, who dedicated the *Earth* chapter to it. On the Cloud – one of the most important allegories of the digital turn - see Mosco, V. (2014). *To the Cloud: Big Data in a Turbulent World*. Hu, T. (2015). *A prehistory of the Cloud*; Johnson, A. (2019). *Data centers as infrastructural in-betweens*. Narayan, D. (2022). *Platform capitalism and cloud infrastructure: theorizing a hyper-scalable computing regime*. The last author, after reviewing some definitions of the cloud coming from the IT sector, concludes that “cloud-based consumption is as much an organizational phenomenon as a technological one, representing an important shift in how computing assets are accessed and distributed. In fact, the trade literature defines cloud computing as a unique mechanism of (web-based) delivery, supported by distinct pricing models (i.e. pay-per-use). Instead of buying and owning infrastructure, clients have the option to utilize assets by increasing or decreasing their usage in real-time, with the computing and storage capacity owned by an external provider” (p. 920).

⁵⁵ For the history of computers see Dyson, G. (2012). *Turing’s Cathedral: The Origins of the Digital Universe*; for the history of algorithms see Berlinski, D. (2000). *The Advent of the Algorithm: the 300-year journey from an idea to the computer*. For a discussion of how ‘new’ digital technologies are see Büchner, S., Hergesell, J., & Kallinikos, J. (2022). *Digital Transformation(s): On the Entanglement of Long-Term Processes and Digital Social Change: An Introduction*.

⁵⁶ Wieser, M. (1991). *The computer for the 21st century*.

⁵⁷ See Hildebrandt, M. (2018). *Algorithmic regulation and the rule of law*, who explains that “algorithmic regulation as a concept is deeply indebted to cybernetic or regulatory theory. It refers to the idea of controlling a population by means of feedback mechanisms, based on the threefold requirement of standard-setting, monitoring and behavior modification. As such it is grounded in a behaviorist perspective on human intercourse and displays an external perspective on human action” (p. 9). The history of the word environment - who has been traced by Georges Canguilhem in his essay “*The living and its milieu*” in Canguilhem, G. (2008). *Knowledge of Life*, 98 – 120 - is particularly interesting in this regard.

United States of America, where computers were invented. In comparison to the European Union, those studies had the advantage of time, as technology production happened there. Those studies include the series by the Massachusetts Institute of Technology, a place that saw the birth of the first assessments of computation in terms of the ‘science of sciences’ of cybernetics⁵⁸.

The relationship between law and politics in light of computation is the general topic of this manuscript. It is not something that the legal system can deal with by itself, but something that, similarly to climate change, needs a global political will to rethink and redesign the instruments and institutional system for a computational era⁵⁹. More precisely, this dissertation aims at answering the following research question:

1. *What are the politico-legal challenges for the European Union brought by the process of platformization?*

In trying to answer such a question, I investigate platformization as a global phenomenon, but I am interested in the politico-legal consequences of platformization for the European Union. As such, I refer to the European Union as a coherent geopolitical and regulatory force, which is clearly not. However, it still is the most advanced supranational experiment to go beyond the nation-state, and this fiction is necessary for reducing the complexity of a topic that can be already too broad to research. This geographic limitation is also in line with the contemporary trend of the ‘regionalization of platform studies’⁶⁰.

Furthermore, such territorial focus is based on two simple pragmatical considerations: first, that the level of integration of European law and institutions is by now irreversible; second, that single states entangled in the geopolitics of global processes as platformization and global warming are rather irrelevant players, and they need to come together if they deem to matter in

⁵⁸ Those are the software studies and platform studies series of the MIT. For the explanation of cybernetics history and relevance see Chapter 2. For a review of those publications see chapter 3.

⁵⁹ The only other global issue that can be considered politically more relevant than computation is precisely global warming. This issue is however inseparable from computation itself: with Marcel Mauss we can say that they are both “total social facts” – activities whose implications reverberates through all social spheres. But with Bratton we can say that climate change is actually an epistemological achievement of computation, because computers are needed to perceive and process such changes. For legal scholar Julie Cohen, the institutional change resulting from such challenges will have to be relevant, as reforms that simply adopt yesterday’s methods are unlikely to succeed: “just as the most effective institutional changes of a previous era engaged directly with the logics of commodification and marketization, so institutional changes for the current era will need to engage directly with the logics of dematerialization, datafication, and platformization, and will need to develop new toolkits capable of interrogating and disrupting those logics”. Cohen, J. (2019). *Between Truth and Power*, 270-271.

⁶⁰ I discuss this trend with Thomas Poell in “*Governing Platform Governance*”, in Cristofari, G. (2023). *The Politics of Platformization*. Behind it there is the acknowledgment that platformization processes differs greatly in different geographical areas such as Asia, the US, Africa, Latina America and Europe,

terms of global influence and enforcement. However, the European project is still based on the ‘economic constitution’ of the founding treaties of the single market with its four freedoms of movement of goods, of capital, people and services⁶¹. Those principles, as developed in secondary legislation and in the case law of the European courts, work as supranational constraints on national state politics. But the fundamental mismatch in the digital democratization discourse of the EU lies in the fact that, as it has been noted, the European economic constitution is “tailored to protect markets and consumers, and not democratic institutions and fundamental rights, on which it may only have an indirect effect”⁶².

To contextualize the politics of platformization we can note that according to the EPRS there is a growing concern regarding the fact that “Member States of the European Union (EU) are gradually losing control over [...] their ability to shape and enforce legislation in the digital environment”⁶³. Moreover, notwithstanding the increasing centrality of the discourse on digital sovereignty, the number of European platforms has decreased from 2018 to 2023 from 3% to 2%⁶⁴. Hence, I proceeded by considering platformization as both a *political* problem – who has an interest in ‘platforming’ and how are we to institutionalize the platform model vis-à-vis the problem of digital sovereignty of European states and of the European Union, and a *legal* one: where should civil society send its letters of accusation when platformization reinvent some social practices by turning them into an asset for private profit? As a legal question, it is also about the creation of new legal subjectivities, in search of what has been called the “*nomos* of the

⁶¹ Cassese, S. (2021). *La nuova costituzione economica*.

⁶² Guimaraes, G. (2019). *Global technology and legal theory: transnational constitutionalism, Google and the European Union*, 168, for it is clear that protecting markets and consumers does not automatically lead to more democratic institutions. In fact, many European institutions such as the Commission actually present a normative imaginary of platformization that drives a notion of neoliberal consumer interests and still sees consumers as fully rational actors that can be empowered and benefit from digital innovation. See the discourse and document analysis of Ferrari, V. (2022). *The Platformization of Digital Payment*, and Ferrari, V. (2023). *Money after Money*, 189: “Eu institutions have precise visions of what the future of digital money infrastructures should be, and this vision poses the platform model as an obvious organizing principle. The regulatory agenda pushes for models of fast, seamless, and ubiquitous authentication through mobile devices; payment interfaces need to be interoperable across services. To achieve these goals, they must be embedded in platforms’ ecosystems”. For a different critique of European universalism, see instead Wallerstein, I. (2006). *European Universalism: The Rhetoric of Power*.

⁶³ See also the papers of the European Parliamentary Research Service (EPRS): Madiaga, T. (2020). *Digital sovereignty for Europe*. That of digital sovereignty is a concept that has mobilized by a diversity of actors, from heads of states to indigenous scholars, to grassroots movements, and anarchist-oriented ‘tech collectives’, with very diverse conceptualizations, to promote goals as diverse as state protectionism, multistakeholder Internet governance or protection against state surveillance [Couture, S. & Toupin, S. (2019). *What does the notion of ‘sovereignty’ mean when referring to the digital?*, 2]. See Pohle, J. & Thiel, T. (2020). *Digital sovereignty*. See also Floridi, L (2020). *The Fight for Digital Sovereignty: What It Is, and Why It Matters, especially for the EU*, and Pollicino, O. (2021). *Judicial Protection of Fundamental Rights on the Internet*, 176 – 182. For a more quantitative approach that tries to measure digital sovereignty see Kaloudis, M. (2021). *Sovereignty in the Digital Age – How Can We Measure Digital Sovereignty and Support the EU’s Action Plan?*

⁶⁴ See the Platform Strategy Summit 2018 and Platform Strategy Summit 2023.

Cloud” where the sovereignty of the state is countered by the sovereignty of the platform⁶⁵. As we shall see, it is the ubiquity of software that poses a great threat to the concept of sovereignty in legal-political terms as 1) territorial independence; 2) the competence of competencies; 3) the legal-political fact of constituent power. According to legal scholar Julie Cohen, platform firms are international actors in their own rights besides other institutions such as states, since they have both *authority* (understood as network power as well as the power to create networks), a *population* (made of human users and complementors) and a *territory* (“platform territories are not contiguous physical spaces but rather are defined using protocols, data flows, and algorithms. Both technically and experientially, however, they are clearly demarcated spaces”)⁶⁶. In this context, I therefore define platformization (see cp. 3.8) as the emergence of the *organizational consequences of computation*: platforms are the forms of organization enabled by the distribution of connected smartphones⁶⁷.

In comparison to other work on the politics and laws of digitalization, whose discourse starts from the ‘digital’ and is then supported by the circumstance of platform oligopolies and models of government⁶⁸, my contribution, influenced by the Amsterdam school of thought, aims at focusing on *platforms as infrastructures*, and I dedicate my genealogical research to showing the reasons for such understanding. In line with cybernetics, I situate the platform at a high level of abstraction. As such, the platform should be distinguished from the corporation: it is a political-economic model that can be applied to corporations, to the institutions of the state, or to any other organization. Moreover, even inside the European Union there are relevant differences in terms of the degree of platformization⁶⁹.

⁶⁵ The expression ‘nomos of the Cloud’ was first coined by Bratton, B. (2016). *The Stack: on software and sovereignty*, by referring to Carl Schmitt’s nomos of the earth: a notion that is pre-legally founding the legal order. For Bratton, the ‘platform sovereignty’ “refers to the still immature combination of legally articulated political subjectivities and an infrastructurally determined sovereignty produced in relation to the platform infrastructures, regardless of whether these are privately or publicly owned”(p. 374). For a critical discussion of Bratton’s nomos see Stiegler, B. (2018). *The Neganthropocene*, 129 -138. Similarly, legal scholar Pasquale talked about the ‘functional sovereignty’ of platforms. See Pasquale, F. (2017). *From Territorial to Functional Sovereignty: The Case of Amazon*.

⁶⁶ Cohen, J. (2019). *Between Truth and Power*, 235, in cp. 7 ‘Networks, Standards, and Transnational Governance Institutions’. On sovereignty in general, see Quagliani, D. (2004). *La Sovranità* for the historical analysis; Galli, C. (2019). *Sovranità*, for the contextualization of the concept in the history of political thought; Cannizzaro, E. (2020). *La sovranità oltre lo Stato* discusses it in the context of the international legal order.

⁶⁷ I refer here to the book of Giddens, A. (1990). *The Consequences of Modernity*, who identified three distinctively modern discontinuities that are relevant in relation to platformization: first, the pace of social and technological change; second, the scope of such change; third, the nature of modern institutions.

⁶⁸ See for instance De Gregorio, G. (2022). *Digital constitutionalism*, 20: “although the implementation of digital technologies by public actors also raises serious constitutional concerns, the rise of European digital constitutionalism is primarily the result of the role of online platforms, which, although vested as private actors, increasingly perform quasi-public tasks”.

⁶⁹ The research project *Platformization in Europe*, which provides useful empirical data, has found that “platformization has not proceeded in a uniform way across industries and countries. Some industries

I address the research question by way of the following sub-questions:

2. *What is the genealogy of platform conceptualization?*
3. *Which academic fields have been studying platformization and how do they understand the platform?*
4. *What is the relationship between platformization and the European legal system?*
5. *Can platformization be framed as a constitutional issue and what are the normative counteractions of the EU towards it?*
6. *What is the space of fundamental rights in a platformed environment?*

Chapter two addresses the second question. The platform is first of all a concept and a schema for meaning making; consequently, it is the result of a process of conceptualization. I dedicate the first two chapters of the manuscript to the semantics of this term, albeit in different terms. Chapter two is an attempt to provide a long-term reconstruction of platformization by comparing different temporalities and geographies of computation in both in socialist and capitalist countries. It traces the roots of platformization back to both the Japanese managerial, post-Fordist discourse and to the socialist and cybernetics attempts to overcome the centralization/decentralization dichotomy in organization.

If chapter three is dedicated to the *historical* and *genealogical* reconstruction of the platform concept, chapter three is an interdisciplinary literature review that looks at how several academic fields have dealt with platformization in the last twenty years. I have done that with special regard to management (the economics and organizational aspects of multi-sided markets), political economy (the problem of digital labor, of capital accumulation and intra-platforms competition), software studies (platforms as reprogrammable coding and algorithmic infrastructures using APIs), infrastructure studies (the *de facto* public function of these infrastructures), and urban studies (the geographical and spatial aspects of platforms) and the sociology of organization. I conclude chapter two by reviewing several definitions and metaphors of the platform and by proposing my definition of the platform as a social system, together with the notion of platformization as an evolutionary process. The thesis of this chapter

now rely on digital platforms to a significant degree, while others don't. Industries and countries also vary in the nature of the platforms that have become pervasive. An industry that is highly reliant on multi-national platforms in one country might not be so in another country. In other markets, home-grown European platform companies have been more successful, which may have different implications for incumbent industries". Lehtonvirta, V. et al. (2020). *Platformization in Europe: Global and local digital intermediaries in the retail, taxi, and food delivery industries*.

is that the platform can be considered a new organizational form⁷⁰. Such understanding has a relevant consequence - a point that I will reiterate many times: digital platforms are not companies; rather, companies can organize themselves as platforms⁷¹. This apparently small detail makes a great difference in terms of regulation, as criteria for regulating companies are inadequate for regulating platforms. The regulatory paradigm itself turns into an exercise of infrastructure design and multistakeholder negotiations.

Chapter four addresses the fourth research question. Given my legal background, influenced by Italian legal scholar Stefano Rodotà⁷², I was interested in analyzing platformization through legal-political lenses. In this chapter, I switch to what we may call *legal platform studies* and I try to investigate how legal theory and the sociology of law deal with platformization⁷³. This sociotechnical perspective explicitly tries to decenter the algorithm as the sole object of scrutiny, and algorithmic transparency in automated decision-making as the final goal of regulation⁷⁴. In here I favor theoretical insights that draw on existing empirical studies and on the recent historical development of legal techniques. Even if I start with positive law, I am interested in the law's technicalities only insofar as they are necessary for showing their limitations of the current legal and institutional framework vis-à-vis platformization. My goal is to assess the relationship between the platform infrastructure and the law from a theoretical point of view.

In chapter five I try to analyze the normative counteractions to platformization planned by the European Union⁷⁵. In reaction to the perils of platformization, the European Union did what it

⁷⁰ Edwards, P. N. (2021). *Platforms Are Infrastructures on Fire*. Chicchi, F., Marrone, M. & Casilli, A. (2022). *Introduction: Digital Labor and crisis of the wage system*: "platforms are not only a type of business model - they have become a crucial infrastructure around which society reorganizes itself" (p. 51).

⁷¹ This is something that is starting to be recognized even by competition law scholars. Bassan, F. (2021). *Digital platforms and global law*, contends that the important notion is that of ecosystem (see also cp. 3): "As an ecosystem, independent from the others (other platforms, but also artificial intelligence), but in an increasingly strict relationship with them, the digital platform cannot be considered, in a traditional way, a company that operates in a market competing with other companies. The ecosystem can include integrated services: the operating system, a marketplace for applications, a payment system, a cloud service, a range of smart home applications, online services (videos, emails, books, games, storage, maps, communications systems), some complementary, connected through private APIs" (p. 38).

⁷² From his pioneering work in Rodotà, S. (1972). *Elaboratori elettronici e controllo sociale*, to his reflections on internet rights in Rodotà, S. (2013). *Il diritto di avere diritti*; Rodotà, S. (2014). *Il mondo nella rete: quali diritti, quali vincoli*.

⁷³ On the legal methodology see for instance Teubner, G. (2014). *Law and Social Theory: Three problems*. According to Teubner, legal research needs: first, a transversal methodology (for instance, "drawing conclusions from the autonomy of different incommensurable social theories and their mutual interconnectedness"); second, what he calls 'responsiveness' ("the law opening itself up to the challenges posed by social theories and drawing inspiration from this for normative innovation"); finally, a self-normativity (i.e., a normativity "derived solely from internal processes of the law and developed by the reflection doctrines of other social systems"). See also Taekema, S. (2018) *Theoretical and normative frameworks for legal research: putting theory into practice*.

⁷⁴ Leerssen, J. P. (2023). *Seeing what others are seeing: studies in the regulation of transparency for social media recommender systems*.

⁷⁵ As noted by Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 168, the EU seems to keep a somewhat paradoxical relationship with

does best: producing regulations. The EU has been engaged in a “regulatory tech clash”, and it is hard to keep track of all these fast-changing regulations in their unity. Two of the most important regulation are Digital Service Act⁷⁶ and the Digital Market Act⁷⁷. However, the Data Act⁷⁸, the Data Governance Act⁷⁹ and the Artificial Intelligence Act⁸⁰ should also be included, together with the “Platform Work Directive”⁸¹ and the revised Payment Service Directive⁸², as they all deal with some aspects of platformization.

In chapter five I also try to reconstruct the more sociological debate on ‘digital constitutionalism’, which I contextualize as the logical development of global constitutionalism. Building on the results of the previous chapters, I claim that the existing institutional arrangement is loosely equipped to tackle platformization. I, therefore, try to make a speculative exercise of institutional imagination, in an attempt to create what I call “checks and balances by design” – a constitutionalization of the platform’s form. The question here regards the creation of some principles for contestation of the infrastructure and of what I call *infrastructural legitimacy*, and a European institutional setting with the power to carry out that assessment (or self-assessment). In the concluding remarks, I reflect on the space of fundamental rights in a platformed environment and on the timing of their protection.

1.3 The methodological problems of platform research: interdisciplinarity

From a methodological point of view there are some specific problems in the studies of platforms. The first and obvious problem of platform studies is defining its object of inquiry, namely the digital platform, to which I dedicate the first two chapters. I try to widen the perspective of technical entities that – following social system theory - needs to be understood in

transnational corporations of US origin, especially in the new media sector. On the one hand the process of economic integration and the rules of the single market facilitate the penetration of US companies; on the other, their dominance tends to be perceived as a threat to the European “economic constitution”, and to the public finances of Member States and to the privacy of European citizens.

⁷⁶ Regulation (Eu) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a Single Market for Digital Services and Amending Directive 2000/31/Ec.

⁷⁷ Regulation (Eu) 2022/1925 of the European Parliament and of the Council Of 14 September 2022 on Contestable and Fair Markets in the Digital Sector and Amending Directives (Eu) 2019/1937 and (Eu) 020/1828.

⁷⁸ See the Proposal for a Regulation of The European Parliament and Of the Council on harmonized rules on fair access to and use of data.

⁷⁹ Regulation Of the European Parliament and Of the Council on European Data Governance.

⁸⁰ Regulation Of the European Parliament and Of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) And Amending Certain Union Legislative Acts.

⁸¹ Proposal For a Directive of The European Parliament and Of The Council On Improving Working Conditions In Platform Work.

⁸² Directive (Eu) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC. I have explicitly excluded I explicitly exclude from my analysis artificial intelligence and blockchain; for a recent overview see Bassan, F. (2021). *Digital Platforms and Global Law*, 56 – 82.

both material and abstract terms⁸³. It is still hard to single out one analytical meaning among the many given of the platform, and even if the use of the term has skyrocketed, different meanings coexist in the academic discourse. Nevertheless, the platform can be investigated using other methods, as family resemblances⁸⁴. At the end of the third chapter, I try to account for a minimal definition of the platform.

Perhaps defining the platform, however, is not really the problem⁸⁵. Following Niklas Luhmann, I argue that the notion of the 'platform' is useful precisely as a mechanism of reduction of complexity. In other terms, it is impossible to study a phenomenon in such general terms without recurring to a recursive series of abstractions – the platform being one of them. I, therefore, stand on the side of the debate according to which the platform should be understood and studied similarly to how the various political and philosophical traditions have studied similar abstractions such as the 'state' and the 'market'. According to some, it is precisely these two abstract forms of organization that may have to be rethought because of platformization; as we shall see, platforms are marketplaces that can be centrally coordinated: they combine centralized state planning with decentralized economic coordination while allowing for experiments on citizens and users⁸⁶. Philosopher Benjamin Bratton has noted the lack of sufficient theories about platforms, since they are “simultaneously organizational forms that are highly technical, and technical forms that provide extraordinary organizational complexity to emerge, and so as hybrids they are not well suited to conventional research programs”⁸⁷.

Given the absence of a syllabus of platform research, I shall name the other methodological problems as follows: first, the problem of technicity; second, the problem of the pace of change; third, the problem of access; fourth, the problem of self-ethnography, with a final mention to the problem of the 'empty signifiers'.

First, researching digital platforms requires the social or political scientist to engage with a certain degree of technical knowledge. By 'technical' I refer mainly to the ubiquitous presence of

⁸³ This is particularly the idea of the German sociologist Niklas Luhmann, who is the author that I found more suited to investigate the relationship between platformization, law, and politics. Luhmann tried to rethink sociology by starting from the principles of general system theory and, in a second phase of its thought, from the notion of autopoiesis applied to social systems. In a sense, Luhmann had 'digitized' sociology before computation digitized society: his methodology proceeds from an initial paradoxical distinction that implies itself to a series of binary distinctions. For general system theory see Von Bertalanffy, L. (1968). *General System Theory*. See Luhmann, N. (2012). *Theory of Society*, where he wonders how revolutionary the introduction of computers in society could have been in relation to double contingency. His work has been carried out by scholars such as Ghunter Teubner for the legal and constitutional part and Elena Esposito on the sociology of algorithms.

⁸⁴ A concept coming from Wittgenstein, L. (2009) [1953] *Philosophical Investigations*, referring to a set of concepts that, like a human family, relate to each other without being traceable to a single principle.

⁸⁵ This is the opinion of Schüßler, E. et al. (2021). *Between Mutuality, Autonomy and Domination*, 1234. See *infra*, cp. 3.8.

⁸⁶ I reworked this definition from the ideas of Bratton, B. (2015). *The Stack: On Software and Sovereignty*.

⁸⁷ Bratton, B. (2015). *The Stack*, 62.

software and coding infrastructures and their consequences in terms of economical and power dynamics. Put simply, those infrastructures have enabled new, 'a-legal' power configurations, as most of the regulation of behaviors is carried out by infrastructural means - the "policy by infrastructure"⁸⁸. Things like an Application Program Interfaces (APIs), Internet protocols, stacks, modules, and reprogrammability are necessary preconditions of the discourse on platform power and cannot be left (only) to computer engineers. Those technical matters are relevant in themselves, but they are even more relevant as building blocks of larger sociotechnical entities⁸⁹. The problem of technicity, hence, points at the larger issue of the *politics of design*: how are these entities built, and which interests and values move their design choices?⁹⁰

A second methodological problem is the pace of change of digital technologies. By that I refer to the fact that social and technological changes are occurring at what we perceive as an historically unprecedented speed. This problem of speed emerged before digital technologies, but it was reinforced by them. From a sociological point of view, the speed of change makes it hard to deal with a moving object. Sir Stafford Beer – a pioneer in the use of computers for social organization – had already noted this problem by comparing sociological observations regarding computing with scientific observations in biology, a field dealing more with change than with ontology. For Beer, the problem was that when observing something in a first and a second moment, this something might have been different⁹¹. The same problem is repeatedly discussed by leading platform scholars such as Thomas Poell, José Van Dijck, and Tarleton Gillespie; for them, and for Ananny, "to understand the power and invisibility of platforms [...] we must study how they change"⁹². In other words, platforms' reprogrammability and modularity allow them to

⁸⁸ See ten Oever, N. (2020). *Wired Norms: Inscription, Resistance, and Subversion in the Governance of the Internet Infrastructure*.

⁸⁹ Sociotechnical in the sense of Jasanoff, S. & Kim, S. H. (2015). *Dreamscapes of modernity: Sociotechnical Imaginaries and the Fabrication of Power*: "collectively imagined forms of social life and social order reflected in the design and fulfillment of nation specific scientific and/or technological projects", 4.

⁹⁰ See for instance Esterling, K. (2021). *Medium Design: Knowing how to work on the world*. Latour, B. (2012). *A Cautious Prometheus? A Few Steps Toward a Philosophy of Design*; For a more legal perspective see Viljoen, S., Goldenfein, J., & McGuigan, L. (2021). *Design Choices: Mechanism Design and Platform Capitalism*. Hartzog, W. (2018) *Privacy's Blueprint: The Battle to Control the Design of New Technologies*.

⁹¹ It is a discussion that stems from Berkeley's *esse est percipi* (something which is not observed goes out of existence) to the notion of autopoiesis (something that exists may turn unrecognizable when you next observe). See Beer, *Preface*, 67, in Maturana, H.; Varela, F. (1980). *Autopoiesis and Cognition: The Realization of the Living*. For a discussion of the "epistemological status" of system theory see Zolo, D. (1983). *Autopoiesis, autoreferenza, circolarità: un nuovo paradigma della teoria dei sistemi?*

⁹² Ananny, M. (2016). *Exceptional Platforms*. Quoted in Barns, S. (2020). *Platform Urbanism*, 16. Interestingly, social system research has always been taking difference, movement, evolution and temporalization as its starting point. Philosophers such as Virilio wrote extensively about dromology (the body of knowledge concerned with the way speed determines the way in which phenomena appear to us). For the French philosopher, speed is not itself a phenomenon but a "relation between phenomena", or an "environment or milieu". See James, I. (2007). *Paul Virilio*, 31, and Virilio, P. (2013) *Speed and Politics*.

change to stay the same; and the pace of change seems to be always accelerating. Acceleration not only creates serious methodological problems for the researcher of such organizations, but also to the rigidity of constitutional charts and the reaction time of the legal system: as soon as some claims are made about platforms, they can already be partially irrelevant. This ‘academic obsolesce’ further intensifies the problems of academic production.

The third methodological problem – the problem of access – is only indirectly involved in the present manuscript, which mainly relies on qualitative research insights, but it is still worth to be mentioned, as quantitative studies produced the insights that I have relied on. By problem of access, I mean that platforms are opaque digital infrastructures that work by black-boxing complexity; additionally, they are usually proprietary. The billions of lines of code behind a platform such as Google are not accessible for public research; in any case, they cannot really be understood by humans. The problem is that in several cases, researchers ‘scraping’ data have seen their permissions denied by the platform and they had to stop their research⁹³. It is as if a historian could not access the archive directly, but he rather had to study the reports that a particular library produced of its own books. This is *per se* a scandal in a democratic polity, but the attempts to address this issue are complex and far from a solution. Shared rules are lacking; many hopes are put in EU regulations such as the Digital Service Act (DSA), which tried to tackle the problem with the provision of art. 40 on “Data access and scrutiny”⁹⁴.

The problem of self-ethnography must also be considered. By this I mean that the entities under investigation are at the same time used in the daily life of the researchers, which himself belongs to several “platform groups”⁹⁵. To research Google, researchers rely on Google. To attend conferences, academics rely on Airbnb. To retrieve academic papers, researchers rely on Academia.edu and similar. To attend online calls, researchers use Zoom. These are all considered platforms and are far from being mere instruments; rather, they are the worlds that we inhabit.

More recently, it has become the *raison d’être* of the accelerationist movement. See Mackay & Avanesian (eds) (2014) *Accelerationist reader*.

⁹³ See my interview with Anne Helmond, “*The Infrastructures and Flows of Social Media Platforms*”, in Cristofari, G. (2023). *The Politics of Platformization*. See also Bonini, T. & Gandini, A. (2020). *The Field as a Black Box: Ethnographic Research in the Age of Platforms*, where they talk about the “black boxing” strategies employed by these platforms in order to protect themselves from public scrutiny, and how media scholars can counteract in order to (partially) circumvent the restrictions posed by them.

⁹⁴ Art. 40, paragraph 1: “Providers of very large online platforms or of very large online search engines shall provide the Digital Services Coordinator of establishment or the Commission, at their reasoned request and within a reasonable period specified in that request, access to data that are necessary to monitor and assess compliance with this Regulation”.

⁹⁵ Autoethnography is a “form or method of research that involves self-observation and reflexive investigation in the context of ethnographic fieldwork and writing”. The term has a double sense, referring either to the “reflexive consideration of a group to which one belongs as a native, member, or participant (*ethnography of one’s own group*)” or to the “reflexive accounting of the narrator’s subjective experience and subjectivity (*autobiographical writing that has ethnographic interest*)”. See *Autoethnography*, in *Encyclopedia of case study research*, 43-45. Other research has focused on the alienated experience of scholars of ICT. See Healy, M. (2020). *Marx and Digital Machines*, 59 – 89.

In other words, researching platforms is not an investigation of a phenomenon of the past, or even one with some relative stability. The problem is also different than the study of other media such as television because the user is not a *spectator*, but he plays a central role in the functioning of the platform. The perspective can therefore be 'biased', i.e., influenced by the personal trajectory and culture of use of the researcher, and it could be severely influenced by its political agenda⁹⁶.

All these problems have led me to conduct research that had to be interdisciplinary - in some cases, even 'transdisciplinary'⁹⁷. I do not think we can yet understand platforms by relying on a methodology that segments them into parts and collects the maximum amount of knowledge of that part. An interdisciplinary methodology is horizontal rather than vertical: it detects similar patterns in different contexts⁹⁸. In conducting this interdisciplinary research, I relied on publications that trace the history of interdisciplinary research and account for its strengths and weaknesses⁹⁹. This problematic necessity named interdisciplinarity follows from the very object of investigation, as recognized for instance by legal scholar Giorgio Resta, for whom the problem

⁹⁶ This is partially the case also for the present manuscript. My normative position - that I further develop in the conclusions - is that platformization can be seen also as an opportunity for an exercise of institutional and constitutional design in the European Union. However, the path that platformization has been taking from the abovementioned abstract 'European-constitutional' perspective is alarming.

⁹⁷ See again the polemic notes of Stafford Beer in his *Preface* to Maturana, H. and Varela, F. (1980). *Autopoiesis and cognition*, 63-72. The difference between interdisciplinarity and transdisciplinarity lies in the fact that the latter looks for an overreaching, 'Hegelian' synthesis. Like interdisciplinarity, transdisciplinarity "is descriptive of collaborative research and problem solving", but unlike it "crosses both disciplinary boundaries and sectors of society". Repko, A. F. (2008). *Interdisciplinary research*, 15. Furthermore, a cybernetic methodology can be based on Luhmann's idea of cybernetics as a scientific methodology. In Luhmann (1996). *La ciencia de la Sociedad*, 297-303, Luhmann "highlights the existence of two main forms: deductive and cybernetic methods. The first is described with the help of the climber's metaphor, which depends, at each step, on an initial position (axioms, empirical data, etc.). Cybernetic methods, in turn, operate in the opposite way: "as there are no such security positions (because there is no external validity) and since that security is only achieved in the process, this means that one has to be constantly reviewing the starting positions and all steps (even from the first position). These latter methods would operate in a circular manner". See da Fonseca, G.F. & Leme de Barros, M.A. (2020). *Empirical research in law: new horizons based on systems theory*, 182, in Barros; Amato; Fonseca (2020). *World Society's Law: Rethinking systems theory and socio-legal studies*.

⁹⁸ A similar argument is made by Bassan, F. (2021). *Digital Platforms and Global Law*, where he talks about the 'vertical regulatory silos' of the legal discipline that are "structurally incompatible with digital evolution" (p. 134-135).

⁹⁹ I refer, in particular, to the manual of Repko, A. F. (2008). *Interdisciplinary research: process and theory*, and Abbott, A. (2004). *Methods of Discovery: Heuristics for the social sciences*. As Repko explains in the first chapter, in the 20th century the modern system of universities became the engine of knowledge production. However, three criticisms of disciplinary divisions intensified after the second world war. One followed Foucault's critique of the enormous power of disciplines as sophisticated mechanisms to regulate human conduct and social relations; a second highlighted the deepening isolation of disciplines from each other, with scholars divided into different tribes and languages; a third came with the spread of European post-structuralist philosophy and literary theory. To this we can add a material consideration: computation, the internet, and academic platforms are disrupting the way research is conducted, and software as Sci-Hub and Library Genesis have changed the bases of the citation system (limited availability of physical copies of books). Nowadays, Sci-Hub has made academic publications available to every scholar with a laptop, leading to the so-called "Sci-Hub effect" on citations. See Correa, J. C. et al (2022). *The Sci-Hub effect on papers' citations*.

of legal research on digital platforms is “the stark heterogeneity of the issues involved, which are not restrained to a single discipline, but lie at the interface of different branches of the legal system, like consumer law, competition law, administrative law, labor law, data protection”¹⁰⁰. This has been pointed out also by legal scholar as Giovanni Ziccardi, who noted that in such topics

the legal, political, informatic, economic and sociological components are so linked and interconnected with each other that it is very difficult to isolate the individual topics or focus attention on a single technical or legal aspect; this is especially noticeable when the reflections come to gaze on issues relating to human rights or to take into consideration new behaviors brought about by the digital society¹⁰¹.

As such, the present research is also connected to other fields historically characterized by a high degree of interdisciplinarity, such as legal informatics, a field that since 1949 researched the mutual relationship between the law and informatics¹⁰².

Another consideration is about my methodological approach that I deploy in chapter 3 (the politics of platformization), chapter 4 (platformization and the legal system), and chapter 5 (platformization and constitutionalism) that consist of a ‘meta-literature-review’ (a review of literature reviews). This methodology was necessary to investigate platformization as a *global* phenomenon rather than just one of its aspects (for example, urbanism of management). Hence, I often try to describe and report who I identified as the scholars that made relevant contributions to the various debates. In other terms, I adopted a *reflexive* methodology that inquires, more than platformization itself, how platformization have been researched by academics¹⁰³.

¹⁰⁰ Resta, G. (2019). *Digital platforms and the law*, 231. This is a common belief of lawyers that had to overcome their own discipline; see also Bietti, E. (2023). *A Genealogy of Digital Platform Regulation*, 67-68, where she talks about the “willingness to bridge across disciplinary silos”. Accordingly, I have tried to examine the intersections of these sub-systems in chapter 4.

¹⁰¹ Ziccardi, G. (2015). *Internet, controllo e libertà*, 30-31. Translation from Italian mine.

¹⁰² Legal informatics (in Italian, *informatica giuridica*) started with the work of the American Lee Loevinger. After 1975 the spread of computers makes legal informatics grown accordingly; it comes with a growing preoccupation by jurists of the possibilities of social control and the birth of data protection laws. It was used with two distinct meanings: in the Anglo-American world, it was mostly about retrieving precedents for the common law, and it therefore deals with the creation of legal databases. A second meaning is that of ‘computer science’, where legal informatics designates any form of automation of the public administration or of the procedures regulated by law. See Losano, M. (1994). *Informatica giuridica*.

¹⁰³ When present, I have also used the work of scholars that actively mapped the literature of a certain particular academic field. When these studies did not exist or were not useful for my account, I sought the help of experts who have been working on platforms from a practical point of view, and I interviewed them. See Cristofari, G. (2023). *The Politics of Platformization: Amsterdam Dialogues on Platform Theory*.

A final problem is that of 'labels' or of 'umbrella terms' and generally to a form of investigation that is thematic in its structure. In carrying out the extended literature review on platformization covering different fields I encountered a recurring critique. It is about the use of new and potentially catchy labels in academic research. These labels are ways in which language tries to account for sociotechnical changes but are also ways in which academics build their reputation, their careers, and success. The main example of these labels is the 'platform' itself, but others that we will encounter are the 'network', 'privacy', 'digital labor', and 'digital constitutionalism', and 'governance'. Their critics accuse those labels of being empty signifiers, while those that use them admit that, at best, they should be considered some forms of mapping. A legitimate question could then be why they are so used in the academic discourse and whether they are, at least, useful terms. My tentative answer - that I further develop in the conclusion - is that they have two purposes: first, they allow interdisciplinary research and communication among scholars from different fields; second, following system theory, as society has grown increasingly complex, those generalizations have become unavoidable for saving time. They are mechanisms for reduction of complexity, performing 'selections of selections'.

Finally, in carrying out the following analysis of platforms I relied on an established distinction between the two sides of platform governance: the governance *of* platforms and the governance *by* platforms¹⁰⁴. Corporate platform organizations are subject to rules of states and supranational entities, but they are political actors in their own right: they regulate, negotiate and act in the international arena. As Eric Schmidt once noted, "most people don't want Google to answer their questions. They want Google to tell them what they should be doing next"¹⁰⁵.

1.4 Contribution to the literature

This dissertation aims at belonging to an emerging academic field of research named platform studies, and particularly critical platform studies¹⁰⁶. As I will explain in detail in the second chapter, this field is relatively recent and characterized by a high degree of interdisciplinarity¹⁰⁷. Jean Burgess recently defined platform studies as

¹⁰⁴ A distinction initially proposed by Gillespie, T. (2017). *Governance of and by platforms*. See also Bloch-Wehba, H. (2017). *Global Platform Governance: Private Power in the Shadow of the State*.

¹⁰⁵ Finn, E. (2017). *What algorithms want*, 66. Eric Schmidt, former CEO of Google, is the author of notorious exceptionalist books such as *The New Digital Age: Reshaping the Future of People, Nations and Business*. This declaration appeared in a 2010 interview to the Wall Street Journal.

¹⁰⁶ See Poell, T. et al (2019). *Platformization* and my interview with Poell, "Governing Platform Governance" in Cristofari, G. (2023). *The Politics of Platformization*, 23 -32. For a genealogy of the concept of media from Walter Benjamin to Habermas and Eco see Guillory, J. (2010). *Genesis of the Media Concept*.

¹⁰⁷ We may trace back the symbolic birth of the field in a famous article by Tarleton Gillespie in the journal *New Media & Society*. See Gillespie, T. (2010). *The politics of 'platforms'*, which I accurately describe it the next chapter.

an umbrella term for holistic approaches to those entities that are understood and represent themselves as digital media platforms. Platform studies concern the technologies, interfaces, and affordances, ownership structures, business models, media- and self-representations, and governance of these entities, positioning these elements in a coevolutionary relationship with the platform's diverse cultures of use¹⁰⁸.

Given the stark heterogeneity of the topics and perspective involved and the involvement of different fields, it is necessary to identify some of the specific contribution to the literature that I aimed at making. In the second chapter I investigate the genealogy of the platform concept by linking two lines of research that so far haven't talked to each other: the historical-philosophical research on platforms as new forms of political planning (a field that looks at cybernetics and socialism) and platform as multi-sided markets in capitalist economies (a field related to business and management studies). The originality lies in, first, linking these two 'branches' to understand the novelty of these decentralized ecosystems that can be centrally planned via computers - now smartphones and planetary-scale computation; second, in decentering the western origin of platform studies, which is definitely not starting with the GAFAM, but which finds in them the most viable and complete application (at least until the rise of Asian super-apps¹⁰⁹). The genealogy shows that, first, at a certain moment of the managerial discourse, a separation between the platform and the firm becomes necessary. Second, that platforms, despite being formally neutral, remain "uniquely ideological" in how they realize particular strategies for organizing their publics¹¹⁰.

The claim about the novelty of the platform organizational form had to be supported with a review (in this case a review of reviews) of the critical works on it. That is what I accomplish with the third chapter, which is dedicated to the platform as a 'new' organizational form. My contribution here consists of the literature review itself, understood as the systematization of knowledge and the identification and comparison of the several traditions of platform research¹¹¹, and the final review of platform metaphors, definitions, and categories. Their comparison is also needed to address the important question – that still needs to be answered - of what a digital platform "is", in the sense of a minimal consensus within the academic community on its features. At the end of the third chapter, I therefore propose a what I consider a minimal definition of the digital platform.

¹⁰⁸ Burgess, J. (2021). *Platform studies*, 26.

¹⁰⁹ Steinberg, M., Mukherjee, R., & Punathambekar, A. (2022). *Media power in digital Asia: Super apps and megacorps*.

¹¹⁰ Bratton, B. (2015). *The Stack*, 43.

¹¹¹ Poell, T. et al (2019). *Platformization*. had identified only three traditions of platform research within the media studies field: management, political economy, and software studies. As platform studies matures, I have added the infrastructure studies tradition, platform urbanism and organizational studies.

The fourth chapter also consists in a literature review, now carried out according to the unifying category of platformization, to assess the challenges that platformization brings to legal theory. After reconstructing how the platform regulates and act and how this agency have impacted the sub-system of the law, I conclude that infrastructural platforms could be considered autonomous legal orders. I therefore consider regulation as an insufficient approach to deal with platformization; rather, their constitutional relevance for the future of the EU should lead to a discussion about how to institutionalize platforms and create mechanism of checks and balances within the platform ecosystem. The contribution here consists of showing the limits of the regulatory paradigm.

The constitutionalization of platform infrastructures is therefore the object of the fifth and final chapter. Here I explore the constitutional dimension of platformization that should lead to what could be compared to a “constituent process” for a society that coordinates social actions via computers. The novelty here lies in the normative and theoretical proposals of recognizing the constitutional and ‘common’ status of platform infrastructures and linking this right to an easier access to justice for contesting the platform infrastructural authority.

How shall we ever conceive however express a new idea if we are bound by the categorization that has delivered our problem to us in the first place?

Stafford Beer

2. A genealogy of platform conceptualization

2.1. The word platform: etymology, historical usages and metaphorical value

I wish to dedicate this chapter to the reconstruction of the genealogy of platform conceptualization by starting from its etymology. The platform is, in fact, not a technology itself but a *concept* made possible by a combination of technological artifacts. This concept is applied as a schema for meaning-making to indicate a certain kind of organizational form – a way of organizing different social groups¹. Like the “state” and the “market” it is essentially a metaphor and a useful fiction.

Tarleton Gillespie is acknowledged for providing an early framing of the debate of the platform metaphor in the political field. In his famous article *The Politics of Platforms*, Gillespie focused on the growth of streaming services as YouTube to show how emergent platforms were trying to work not only politically, but also *discursively* to frame their services and their technologies². In other terms, before the end of the first decade of the 21st century, some corporate entities as YouTube wanted to be perceived as platforms by the public. Before digging on the reason of such interests, we ought to start from Gillespie’s distinction of the four semantic territories of the word platform from the definition of the Oxford English Dictionary.

The first semantic field is defined as *computational*. The word platform is used to describe “an infrastructure that supports the design and use of particular applications, be they computer hardware, operating systems, gaming devices, mobile devices or digital disc formats”³. A second *architectural* definition - the closest to its original etymology of a human-built structure - is used to describe “a raised level surface on which people or things can stand, usually a discrete structure intended for a particular activity or operation”. In this meaning there is already a shift

¹ This explains the need to dig not only into the economical and sociological implications of platformization, but also into the philosophical inquiry of the platform concept. For instance, philosopher Gilles Deleuze used to see philosophy’s task in the *creation of concepts*. I believe that a genealogical methodology is well-suited for researching the fragmented emersion of the ‘platform’ concept: with the words of Bernard Williams, a genealogy is “a narrative that tries to explain a cultural phenomenon by describing a way in which it came about, or could have come about, or might be imagined to have come about.” [Quoted in Bietti, E. (2022). *A Genealogy of Digital Platform Regulation*, 4]. See Deleuze, G. & Guattari, F. (1996). *Che cos’è la filosofia?*

² Gillespie, T. (2010). *The politics of ‘platforms’*, 348.

³ Ivi, 349.

from the physical materiality of the structure to a sort of metaphysical reference of the idea of an “opportunity and insight”. In this more *figurative* sense, a platform is used to define “the basis of an action, event, calculation, condition” and also a “position achieved or situation brought about which forms the basis for further achievement”⁴. Finally, from the architectural meaning - the actual stage constructed for a candidate to address an audience - the term drifted to some *political* beliefs being articulated. The curious fact, Gillespie notes, is that a word traditionally referring to something “flat, featureless and open to all” - thus implying a sort of neutrality towards use - now carries a specifically political valence “where a position must be taken”. As such, the political dimension of a platform emerges not simply as indicating a functional shape, but it suggests the idea of a vantage point and of “progressive and egalitarian arrangement, promising to support those who stand upon it”⁵.

Other authors, seeking to understand the origin of the platform metaphor, looked instead at the history of its use. Antonio Casilli wrote that the word platform had been first used in in a *theological* context⁶. Starting from the sixteenth century, the term is found both in the France of the *Ancien Régime* and in England, where it is used to indicate “fertile soil and more generally a productive resource”⁷. It is found, for instance, in the adaptation of 1582 of the work of the thirteenth-century encyclopaedist Bartolomeo Angelico. Later on, in the Seventeenth century, the Reformed Churches of England proclaimed a number of platforms in the Cambridge Platform (1648) for the Puritan Congregationalist Churches of New England. During Cromwell’s protectorate, the term platform is used *politically* to indicate a vision of society and the role of human beings with respect to the authorities and with respect to themselves. Casilli shows how it appears in *The Law of Freedom in a Platform* (1652), the foundational text of the proto-communist movement of the Diggers. Here platform has a political relevance and has freed itself from its religious origin; it now designates a pact between a plurality of political actors to negotiate access to common resources and prerogatives⁸. For Casilli, the convention between

⁴ Ivi, 350.

⁵ Ivi, 350.

⁶ Casilli, A. (2020). *Schiavi del click*, 62. Instead of the Polity by Commons, platformization has led to countless ‘independent contractors’ working in precarious conditions. That is also why Casilli considers the platform as a political theology that, in Carl Schmitt’s sense, meant that the political categories are structured like religious categories. We can also think about the incredible focus of platforms on the “community” - the Christian element par excellence. That is also why scholars have connected platform power to Foucault’s pastoral power. See Lovink, G. (2021). *Notes on the Platform Condition*: “we are part of that electronic herd”) and Ippolita (2016). *Anime Elettriche*, 47 -63, who studied those “confessional platforms” in relation to the quantified self and the greek *exagoreusis*, a continuous and analytical verbalization of thoughts achieved through complete obedience to the authority of the confessor.

⁷ Ivi.

⁸ It is worth noting that an intellectual of the time, Sir Winston Churchill, claimed that the revolutionaries who put to death Charles I in 1649 were motivated by the intention to “erect a new Model of Polity by Commons only” and to this end, “they set up a new Platform, that they call’d the Agreement of the People”. Winston Churchill, *Divi Britannici: Being a Remark upon the Lives of all the Kings of this Isle from the Year of*

religious entities had become a convention between political entities; ironically, the way the term platform is used nowadays as the base of the “sharing economy” seems like a distortion of its communitarian origin⁹. In contemporary English this political connotation is still present nowadays: to “no-platform” is used as a verb that means “to refuse someone an opportunity to make their ideas or beliefs known publicly, because you think these beliefs are dangerous or unacceptable”¹⁰. Also known as *deplatforming*, the act of preventing someone to speak from digital platforms turned famous on the 6th of January 2021 when the president of the United States was deplatformed by Twitter, Facebook, Instagram and Reddit, raising concern about the power of such private entities¹¹.

The contemporary use of the term is related with the advent of the so-called “Web 2.0”¹². The term started to be used to define an entity based on user-generated content, streaming media, blogging and social computing. Contemporary digital platforms work thanks to running computer code, and, for Gillespie, the central aspect is that they afford an opportunity to communicate, interact or sell. Hence, around 2010, the use of the word was not a random one: there was a continuous “discursive work” so that the rhetoric of the industry could permeate the vocabulary of politics and of law, which was an attempt to establish the very criteria by which these technologies are judged¹³. The discourse of platforms has thus been used to claim immunity from prosecution – with special regard to user-generated content – something now known as the “we are just a platform” defence¹⁴.

Gillespie came back on the topic of the usage of the platform metaphor in 2017, noting that , precisely as a metaphor, the ‘platform’ highlights some things, but it also downplays aspects that are not captured by the metaphor. The platform is a metaphor, and as such it is mobilized

the World 2855, unto the Year of Grace 1660, London, Thomas Roycroft, 1675 [1660], 356, quoted in Casilli, A. (2020). *Schiavi del click*: 64.

⁹ Casilli, A. (2020). *Schiavi del click*, 63.

¹⁰ Cambridge Online Dictionary, at <https://dictionary.cambridge.org/it/dizionario/inglese/no-platform>.

¹¹ For the deplatforming of President Trump, see Crichton, D. (2021). *The deplatforming of President Trump: A review of an unprecedented and historical week for the tech industry*. For Van Dijck and her colleagues, deplatforming should actually be distinguished from deplatformization. They write that “mainstream platforms that have the ability to cut off extreme platforms’ access to data flows and connectivity—the online equivalents of oxygen and electricity—claim to operate a neutral infrastructure in the public interest without accountability to that same public”. See Van Dijk, J., De Winkel, T. & Shafer, A. (2021). *Deplatformization and the governance of the platform ecosystem*.

¹² In conversation on the Internet, there used to be a distinction between the Web 1.0 or static Web, in which users acted as consumer of content, and the Web 2.0 or participative Web, characterized by user generated content and interoperability. It should be noted, however, that these categorizations are not technical, as the underlined technology have not changed since the Web 1.0.

¹³ Gillespie, T. (2010). *The politics of ‘platforms’*, 359.

¹⁴ See also Steinberg, M. (2019). *The Platform Economy*, 87. As the other essential logic that makes a platform work is data, this argument is usually paired with the “you have nothing to hide” argument in relation to privacy: why should a user be worried of being tracked if he has not committed any crime? For a detailed reconstruction of the flaws of this logic, together with a series of counter-arguments, see Zuboff, S. (2019). *The Age of Surveillance Capitalism*: 448.

pragmatically by some actors in the attempt to hide under the surface at least four features. First, digital platforms under no circumstances can be considered flat and egalitarian. Under the flat space there is an incredibly rich architectural dimension made of “intricate and multi-layered landscapes, with complex features above and dense warrens below”¹⁵. The central service is composed by the way in which platforms organize, structure, and channel information according to arrangements established by the platform itself. Second, their population is never made of general “users” but by “many, diverse, sometimes overlapping, and sometimes contentious communities”. Third, the platform metaphor helps to “elide questions about platforms’ responsibility for their public footprint”. If we take the case of train platforms, we see that they are clearly not responsible for the passengers; in the same way, digital platforms “suggests an impartial between-ness”, as they are not responsible for what users do inside them. Fourth, Gillespie suggests, the theme of the invisibility of the work and of the planning needed to build a platform comes back if we think about a spectacle. As the audience of a play is not supposed to see the director or the set decorators, but only the actors in the spotlight, platforms have hidden the huge amount of labour necessary to produce and maintain their services¹⁶. This reading of the platforms working on the public discourse is in line with the thought of philosopher Bernard Stiegler, for which digital platforms are to be considered the new sophists, performing techniques of psycho-technical manipulation¹⁷, and it resonates with those studies that exposed the rhetorical instrumentality of concepts such as the “sharing economy” as a “networked culture appropriating normative discourse on community, generosity, shared values of cooperation and participation”¹⁸.

¹⁵ Gillespie, T. (2017). *The Platform Metaphor, Revisited*.

¹⁶ Ibidem.

¹⁷ For Stiegler, “today we have to do with contemporary hypomnemata, what Plato did with the hypomnemata of the Sophists. [...] What is rhetoric? It was the Sophists’ attention-harnessing technology. Aristotle said we have to study the techniques of the Sophists to make them noetic techniques rather than techniques of psycho-technical manipulation”. Crogan, P. (2010) *Knowledge, Care, And Transindividuation: An Interview with Bernard Stiegler*, 168. In *Technic and Time*, Stiegler explains how the separation between *technê* and *epistêmê* was rooted in the political arena of fifth-century Athens, and it associated *technê* with the rhetorical skills of the Sophists. As professional rhetoricians, the Sophists were skilled in the construction of political arguments. Their skillfulness (*technê*) was perceived as indifference to establishing truth or as an attempt to make truth instrumental to power. As such, Sophists’ *technê* came to be opposed to true knowledge. Therefore, truth remained the only object of *epistêmê*, which in turn was identified with philosophy. This substantially political move deprived technical knowledge of any value. See Frabotti, F. (2015). *Software Theory*, 4.

¹⁸ Codagnone, C. et al (2019) *Platform Economics*, 48. In their extended literature review of the first year of 2010 decades, they identify three broad narratives each associated with corresponding grand narratives about the future: social utopianism (narrative of the great transformation); business optimism and economics laissez-faire (narrative of growth-oriented globalization); social pessimism (narrative of barbarization or uberization). See also Kennedy, J. (2016). *Conceptual boundaries of sharing*, for the discourse analysis, and Sundararajan, A. (2016). *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*.

A few considerations can be added to Gillespie's reading of the platform as a non-neutral metaphor that, historically, has been mobilized for certain purposes¹⁹. First, the abovementioned discourse of digital platforms has a performative nature²⁰. In his discussion of Korean streaming services, media scholar Thomas Lamarre named the specific performativity of platforms 'platformativity', a notion that he coined to "address the infra-individual intra-actions between platform and human, and individual and collective"²¹. Second, in both in public and academic discourse, the platform metaphor is described by employing other metaphors, thereby creating a recursion of metaphors²². Third, it is important to note that from Gillespie's article there have been several attempts to change the semantics of the word in order to make it the object of academic investigation: neither too optimist about it, nor catastrophist, trying to open up for the institutionalization of platform studies as a research field²³.

We have seen that Gillespie reported the connotation that links the platform to a political program. Similarly, philosopher Benjamin Bratton finds useful to investigate also the meaning of the word "program" as it relates to the platform both in terms of a plan and of the underlying programmable dimension of software. Originally a program was a public edict, and in the early modern era "it also comes to mean variously a plan or scheme, a list of events to be presented, a menu of proposed political ideas, and a way to organize how people will occupy architectural space"²⁴. It is only after World War II that 'to program' come to mean 'to write software'. Bratton notes that the domains in which platforms operate – architecture, computation and politics – the

¹⁹ During the beginning of the 2010-decade, western mass media portrayed platforms as Facebook – believing and supporting their discursive claims - as bringing democracy, empowerment and freedom. For instance, the Arab spring revolution has been called the social media revolution because Facebook was used as an *organizing* tool. If the importance of this tool should not be neglected, the enthusiasm of the democratizing would change some years later with scandals such as Brexit and Cambridge Analytica. For an analysis of the role of social media platform during the Arab spring, see Stepanova, E. (2011). *The Role of Information Communication Technologies in the "Arab Spring"*.

²⁰ This is consistent to the understanding of platforms as cybernetic machines, focusing on performance instead of representation, and as cybernetic as a non-modern "ontology of becoming". See Pickering, A. (2009). *The Cybernetic Brain: Sketches of Another Future*, particularly 234-237, "Ontology and Design".

²¹ Lamarre, T. (2017). *Platformativity: Media Studies, Area Studies*, 301.

²² As I argued elsewhere, platform studies retain a special connection with metaphors, having put one metaphor in the very name. In Cristofari, G. (2023). *The Politics of Platformization*, 194 -197, I have tried to argument on the cognitive value of metaphors and their importance in platform studies. As something founding language itself, the metaphor has resisted every attempt of explanation of what it is. It points at an inner circularity and tautology of language, something that Umberto Eco have called the "metaphorical scandal": the metaphor is "that artifice that allows to speak metaphorically". Instead of being caught by an analytical definition, the metaphor shows family resemblance between concepts. See Eco, U. (1984). *Semiotics and philosophy of language*. See also Melandri, E. (1969). *Per una filosofia della metafora*. See chapter 3.8 for a comparison of such metaphors.

²³ These attempts have been carried out mainly by Dutch scholars, starting from van Dijck, J. (2013). *The Culture of Connectivity*. On the contrary, the pessimist period of platform studies is portrayed by authors such as Lovink, G. (2019). *Sad by Design*, or Zuboff, S. (2019). *The Age of Surveillance Capitalism*. For a discussion of these three phases of platform studies – optimist, pessimist, and hopefully equilibrate – see my interview with Thomas Poell in Cristofari, G. (2023). *The Politics of Platformization*, 24 – 33.

²⁴ Bratton (2015). *The Stack*, 64.

word program “has central significance as a design problem and governing technique”. In political terms, for example, the power to decide the program of what is worth to be part of the discussion is known as agenda setting²⁵. In architectural terms, Bratton defines the program as “an intended organization of Interfaces in a particular arrangement so as to coordinate social contact and interaction (or prevent it), while in computational terms, a software program is a

set of instructions that a designer gives to computational systems with the intention of coordinating that system's internal and external interfaces in relation to itself, to compatible systems, and to *Users*. An interfacial image of that program, usually the graphical user interface (GUI), summarizes, reduces, and makes those instructions significant for *Users*²⁶.

For software studies scholar Wesley Chun, who explored the relationship between software and discourse, software should be understood as *logos*, as it “turn program into a noun - it turns process in time into process in (text) space”²⁷.

To sum up, it is important to keep track of the semantic territories when providing an analysis of platforms: architectonical, computational, figurative, theological and political. Furthermore, the usage of the platform metaphor should not be used to downplay the invisible dimension of the platform, their hidden complexity made of an architectonical dimension of the software that requires work to be built, work to be maintained and work to be presented as a neutral space.

In the following paragraphs, I attempt to organize the rather fragmented genealogy of the platform by combining two different branches. The first one is the corporate-based and ‘capitalist’ branch, interested in market optimization, profit, and innovation; the second is state-centered, socialist, cybernetic, and equally interested in system optimization. They both refer to the platform, with some similarities and some differences. In carrying out such reconstruction, I wish to extend the scope of platform conceptualization to state-centred and socialist

²⁵ Agenda setting is the ability of the news media to influence the importance placed on the topics of the public agenda. See Schlosberg, J. (2018). *Digital Agenda Setting: Reexamining the Role of Platform Monopolies*. In Moore, M. & Tambini, D. (Eds.). *Digital Dominance: The Power of Google, Amazon, Facebook and Apple*.

²⁶ Bratton, B. (2015). *The Stack*, 64.

²⁷ Von Neumann himself, in establishing the possibilities of source code as something “iterable and universal” - described with the metaphor of ‘source code as logos’ - relies on a circular movement: It must contain, in terms that the machine will understand (and purposively obey), instructions (further detailed parts of the code) that will cause the machine to examine every order it gets and determine whether this order has the structure appropriate to an order of the second machine. It must then contain, in terms of the order system of the first machine, sufficient orders to make the machine cause the actions to be taken that the second machine would have taken under the influence of the order in question. The important result of Turing’s is that in this way the first machine can be caused to imitate the behavior of any other machine”. Von Neumann, *The Computer and the Brain*, quoted in Chun, W. (2011). *Programmed Visions*, 166-167.

platformization. Historical studies on platforms so far have focus on business-oriented platform development in countries such as USA, Japan and Europe, with recent interests on Eastern platforms as WeChat and KakaoTalk²⁸. These studies correctly focus on platforms as private enterprises which must meet the needs and pressure of the capitalist environment. I however agree with Bratton's claim that the genealogy of the platform must include the attempt of socialist countries like Chile and communist countries like the Soviet Union to overcome the inefficiencies of centralized planning and to regulate life through technology. It is in cybernetics that we first encounter the dream to automate social interactions to improve people's life and the government relationship with the governed. As shown by Fred Turner, this dream has long-lasting reverberations in the birth the technologies companies of Silicon Valley²⁹. This also allows contextualizing the history of the platform in longer trends made possible by computation and cybernetics during the Cold War.

I believe that this second branch - the state-centric genealogical origin, besides the corporate one - is crucial for understanding the platform' form, and namely the fact that digital platforms are forms of government of users and complementors grounded in cybernetic normativity. This aspect is generally neglected in business-oriented platform studies and platform theory, but it becomes central if the platform is seen as a way of organizing and coordinating social action. Thus, I am going to divide the genealogy into two branches: the relationship between the platform and the state and the relationship between the platform and the firm³⁰, starting from the latter.

2.1.2 The genealogy of the corporate platform

Gillespie has captured the conceptualization of digital, global and corporate platforms such as YouTube (Alphabet), Amazon, Facebook, and Microsoft in relation to their data-driven business model and their discursive practices. Yet, this meaning of the word platform is just the final stage of a long path made of several semantic metamorphoses. From 1970, based on the temporal scale, the geographic context and the field of literature involved, the word platform came to gain several different meanings, that I wish to reconstruct genealogically in the present chapter, and through a literature review in the next one. In doing so, I am going to follow Marc

²⁸ See Poell, T., Nieborg, D., & Van Dijck, J. (2019). *Platformization*; Steinberg, M. (2019). *The Platform Economy* and the next chapter.

²⁹ See Turner, F. (2006) *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*; see also the documentaries by Curtis, A. (2011). *All Watched Over by Machine of Loving Grace*.

³⁰ In practice, it is clearly impossible to separate neatly between corporate and state dynamics. However, public institutions had been playing a central role in digital innovation in at least in two senses: first, because a great part of the technology used by digital platforms were developed thanks to the risky state-funded research projects, financed with taxpayer's money; second, because of the "sliding doors" of government officials and platform's managers. On the first point see Mazzuccato, M. (2018). *The Entrepreneurial State*; on the second Zuboff, S. (2019). *The Age of Surveillance Capitalism*.

Steinberg's work presented in his book *The Platform Economy*, who convincingly shows that to understand the platform economy we need to route the history of the platform through Japan, as well as recent media scholars' attempt to provide a holistic reconstruction of the platform genealogy³¹. In particular, there are three sites in which we find the application of the platform mentality and way of thinking in Japanese context: in the mode of production of Toyota's automobiles; in gaming console such as the Nintendo Game Boy; and in proto-smartphones such as I-mode.

The first part of the history of the corporate platform sets out with the discourse around the advent of the post-industrial society³² and the Toyotist mode of production³³, which Steinberg sees as "the unseen industrial and epistemological background against which the platform economy plays out"³⁴. Early theorists of platforms were preoccupied with what they perceived as a shift from an automobile-centric industrial economy to an information economy. The term "platform" becomes a standard around the beginning of the 1980s in the automobile sector³⁵, where in "car talk" a platform is considered the base model on which a number of different body

³¹ The most synthetic account can be found in Poell, T. et al (2019). *Platformization*.

³² See for instance Bell, D. (1974). *The Coming of Post-Industrial Society. A Venture in Social Forecasting*, with a focus on "information" and the figure of the professional. As political economist Devika Narayan explains, Fordist and post-Fordist firms were characterized by the fact that they achieved market expansion through long-term investment, vertical and/or horizontal integration, research and development (R&D) investment, and diverse cost-cutting strategies. On the contrary, platform-based expansion is the scaling up of underlying cloud infrastructure to support growth in usage and then the exploiting of second-order strategies such as: big data extraction, infusions of venture capital, manipulating platform design, exploiting the asymmetries between the platform and labor and making acquisitions. Narayan, D. (2022). *Platform capitalism and cloud infrastructure: theorizing a hyper-scalable computing regime*, 925.

³³ The Toyotist mode of production is a management system that organizes manufacturing and logistics for the automobile manufacturer and the interaction with suppliers and customers. Taiichi Ohno and Eiji Toyoda, two Japanese industrial engineers, developed the system between 1948 and 1975. This mode of production famously included the idea of "just-in time" and automation as opposed to mass-scale production: making only what is needed, only when it is needed, and only in the amount that is needed. As such, the Toyotist mode of production was looking for continuous virtuous circles and feedback loops. See Taiichi, O. (1988). *Toyota Production System: Beyond Large-Scale Production*.

³⁴ Steinberg, M. (2022). *From Automobile Capitalism to Platform Capitalism: Toyotism as a prehistory of digital platforms*, 1069, where he carefully outlines the "automobile lineage of platform capitalism". For Steinberg there is a need to keep the technological and organizational practices together as well as a to look at the trends historically already present in the lineage of platform theory and practice. The automobile industry as the crucial industry of the 20th century, "rescues the automobile platform from its erasure by digital platforms and suggests we may have something to learn from an increased focus on manufacture as a site of analysis", in particular regarding the role of just-in-time in both Toyotism and platform capitalism (p. 1083).

³⁵ Steinberg, M. (2019) *The platform economy*, 84. The importance of automobiles as platforms is due to two factors, one about car production, and one geographical. First, the automobile sector is deeply intertwined with logistics, optimization and a rethinking of the supply chain, something that turned out to be highly dependent on software. Second, the academic literature on the topic started to be developed in the Massachusetts Institute of Technology (MIT) where Japanese managers would also study, forming the bases on which future leading management scholars as Annabelle Gawer and Michael Cusumano would learn.

styles can spin off³⁶; according to Japanese authors, it is “the core technology of an automobile” that

determines the general outlines of an automobile’s basic structure (architecture), and is composed most centrally of parts like the floor pan and suspension³⁷.

We see here how the platform is the non-variable, stable part, to which complementary parts are added. While the Toyotist mode of production was achieving great success in the car industry, Japanese, American and European management studies in the 1990s started to investigate markets subject to network effects³⁸. They initially focused on two-sided markets, as well as on how to achieve what was called “platform leadership” of software-platform firms like Microsoft, Cisco and Intel³⁹. Computers and consoles for gaming are the objects of investigation here: economically, they presented the novelty of aggregating “on the one side buyers or end-users (e.g., players) and on the other side sellers or, such as game publishers”⁴⁰. Console such as the Nintendo Game Boy, besides the market for the console itself, created a market for several disc games that could be played by inserting them inside the console. The Nintendo Entertainment System is important also because it was the first to create a technology that prevented any efforts to play pirated or unauthorized third-party games on its consoles; a so-called “lockout chip” had a mechanism embedded in the game cartridge that required the other games to be build according to Nintendo’s standard. Besides automobiles, here computers and consoles are seen as platforms where users and producers of games converge.

In this sense, the genesis of the platform concept involves a shift that is at the same time material (the development of new hardware, with the commodification of computers and their decreasing cost around 1980), theoretical (with and increased emphasis put on information) and organizational (the new modes of production of the Toyotist model)⁴¹.

³⁶ Womack, Jones, and Roos, *The Machine That Changed the World*, 112, in Steinberg (2019) *The platform economy*, 85.

³⁷ Nobeoka, *Muruchi purojekuto senryaku* [Multiproject strategies], 34. Quoted in Steinberg, M. (2019), 85.

³⁸ See chapter 3 for a detailed analysis of platforms as multi-sided markets.

³⁹ Rochet, J. C. & Tirole, J. (2003). *Platform Competition in Two-Sided Markets*; Gawer, A. & Cusumano, M. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. This book is one of the earliest management books about hardware and software platforms in the early twenty-first century, and it differentiates the stack model of the product platform from a newer model of the platform, what they call ‘technology platforms’ or ‘industry platforms’. See Steinberg, M. (2022). *From Automobile Capitalism to Platform Capitalism*; Culpepper, P.D., & Thelen, K. (2020). *Are We All Amazon Primed? Consumers and the Politics of Platform Power*; see also *infra*.

⁴⁰ Poell, T, Nieborg, D. & van Dijck, J. (2019). *Platformization*, 2.

⁴¹ Steinberg, M. (2019). *The Platform Economy*, 14. See also Steinberg, M. (2022). *From Automobile Capitalism to Platform Capitalism*. Moreover, platform studies have been accused of being western-centric

2.1.3 Contents is king: Japanese discourse and the contents/platform dialectic

Based on his focus on Japanese platformization, Steinberg starts to trace the emersion of the platform keyword by analysing the dialectic relationship with the word *contents* (in Japanese, always used in its plural form). In the '90s, Japanese industry operators “believed that content is king”, meaning that they reasoned not starting from the design of the service offered, but from the presence of contents such as anime, manga and video games, which were meant to be remixed in into different media and contexts⁴². Contents as a keyword preceded and allowed the platform as a keyword. Before the introduction of smartphones, a great role in the transformation of the consumer internet was played by mobile phones, which at the time were taking over other informational contents like movies, radio and news from previous containers as DVDs, magazines and books. We can therefore start from the semantic transformations of *contents* as a keyword within digital culture. According to Steinberg, the use of the term is divided in three phases. First, contents emerged while other media were declining in the contexts of the digital shift, taking over the use of “software” (*sofuto*), because of the “growing need for an alternative revenue stream to computer hardware”. In this phase contents are separated from their material dimension and perceived differently in Japan than in the USA both in relation to its meaning and its circulation. In 1996, Bill Gates had given a speech entitled “content is king” explaining that for him, content was “first and foremost a term used by technologists to talk about cultural goods, *insofar as they are sent through internet infrastructure as data*” and “content industries” were hereafter “redescribed as information providers”. In Japan, instead, “the term *contents* [...] is associated with particular kinds of content: anime, manga, light novels” and “the locus of “media mix” practice”. As for the circulation, in Japan, *contents* became a common word in everyday language beyond business publications and it was included in both academic and popular journalistic work on anime, manga, games. For Steinberg, in this phase, the media have been surrounded by contents⁴³.

In the second phase of content discourse, Steinberg examines several Japanese white papers where he finds a certain ambiguity in its meaning: it could refer to something like large-scale software, or it could refer to the smaller-scale building blocks (image and sound “content”) of this software. In the passage to this multimedia phase, Steinberg believes that “contents” is perceived to be more important than “media”: when media were something distinct and easily recognizable (DVDs, books) they possessed a sort of “rarity value”, and contents accumulated around them. But in the multimedia age, where the rarity value of media is in decline, “what

in their approach and having ignored Eastern platformization for too long. See Davis, M.; Xiao, J. (2021). *De-Westernizing Platform Studies: History and Logics of Chinese and U.S. Platforms*

⁴² On remix culture and anime see also Steinberg, M. (2019). *Anime System: Il successo polimediale dell'animazione giapponese*. See also Jenkins, H. (2007). *Cultura Convergente*.

⁴³ Steinberg, M. (2019) *The platform economy*, 38.

becomes most valued is contents". That is why *contents* came to designate anime, manga, light novels, games, and other forms of Japanese "subcultural" media.

The third phase of the *contents* discourse is dependent on the transformation of marketing discourse from a concern with narrative to a concern with contents from the late 1980s to around 2005⁴⁴. Steinberg, building on the ethnographic work of Japanese writers such as Ōtsuka Eiji who had written the influential book *A theory of narrative consumption* in the late 1980s⁴⁵, describes the rise of "narrative marketing" that, after 1970s, signs "the shift from need or use value to sign value as the principal motive for consumption". For the school of thought of narrative marketing, it is narrative that produce desires and that gives these sign commodities meaning in a commercial environment characterized by the overproliferation of signs⁴⁶. It is only with writers such as Toshihiko Fukuda that both narrative and contents becomes a "schema for meaning making" that is also a shift in business model. In a moment of fast digitization and dematerialization of Japanese society, the package-based business model of the time was threatened, and it was necessary to find other ways to monetize. Here rather than a substance, *contents* has become a "schema for value creation in the digital world" and a "form of packaging, a filter that endows entertainment goods with economic value"⁴⁷. It is worth reporting Steinberg's quote of a key passage of Fukuda as an example of what will become the holistic platform mentality:

What we aim to do is not simply to market a single work (commodity); rather we aim to strategize how to develop markets based around the ripple effects of this work. Thinking "How should we sell this film?" involves not only trying to work at increasing the audience for the film, but also thinking about how to sell the original work as a novel or soundtrack, how the theme song might be downloaded by the largest number of people for use as their ringtones, how some of the film's dialogue might turn into buzz words—in other words, thinking about how to create a social phenomenon out of a single contents. We can say that

⁴⁴ Steinberg, M. (2019). *The Platform Economy*, 34.

⁴⁵ Ōtsuka Eiji. *Monogatari shōhiron: Bikkuriman no shinwagaku* [A theory of narrative consumption: Mythology of Bikkuriman]. Tokyo: Shin'yōsha, 1989. Ōtsuka had analyzed the success of chocolate candy called Bikkuriman Chocolates that were sold with sticker premiums or freebies bearing the image of, and information for, a number of different characters. The consumption of each fragment led to a greater desire to piece together the narrative whole.

⁴⁶ Steinberg, M. (2019). *The platform economy*, 60. The analysis is based on the work of Fukuda.

⁴⁷ Ivi, 51 - 58. He also focus on the shifts in marketing theory from 1960 onwards, and he distinguished three historical periods: first, an era of marketing based around needs; and second, an era of marketing based around affect, the play of signs, or ads without necessary reference to the things advertised; third, a time after the exhaustion with the play of signs, when marketers turn to narrative (narrative-based ads and narrative commodities and spaces) in order to incite consumer desire. In this, he also claims that marketing practices has been driven by semiotic theory of consumption but have functionalized theory and mobilited it for advertising practices. Funnily enough, Japanese creators were raised by reading post-structuralist authors such as Jean Baudrillard and Deleuze and Guattari, from which they got their ideas.

the whole concept of today's contents business is based around a total return that incorporates the ripple effect⁴⁸.

According to Steinberg, the point is that the word contents has become a schema for value production to package cultural goods that are connected within a diverse media environment, functioning as a "form of discursive and economic packaging that endows cultural entertainment goods with economic value, preparing them for the platform intermediation"⁴⁹. If "contents-speak is a tool for discursively packaging cultural goods within commodity forms in the era of digitally mediated transmedia consumption", and if "the model for media production is no longer a discrete commodity (a book) but rather a transmedia commodity array (book-anime- game-toy, and so forth)", then an ambiguous, open and inoffensive word like *contents* is better suited than something like intellectual property to describe a medium-agnostic sequence. Contents, therefore, becomes the first step in creating value out of digital data. Steinberg concludes his analysis of Japanese work on *contents* by saying that

contents discourse in Japan is hence configured as this unique combination of (1) contents as information or medium-agnostic media forms; (2) contents as anime-manga- games- film, as packaged, exportable IP; and (3) contents as a particular media mix formation, in the age when the very term *media* seems on the verge of disappearance⁵⁰.

The term platform, then, follows the emersion of the term contents with a sort of symbiotic relationship with it, quickly becoming the basis upon which contents take form, and are contained in economic value. Now that people look for *contents*, this can be used to lure them into a container which provides limitations to access and external reproduction thanks hardware and software-based digital rights tools that enables transactional mechanisms that support the creation and valuation of contents. The metaphor here becomes that of the "walled garden", and the success and monetization of particular contents (for example, a game software) are here seen as co-dependent with a platform (the game platform), so that "platforms beget contents that in turn beget platforms"⁵¹.

2.1.4 Platform is king: the case of i-mode

⁴⁸ Fukuda, Arai, Yamakawa (2004). *Kontentsu māketingu* [Contents marketing], 67, quoted in Steinberg, M. (2019). *The platform economy*, 63.

⁴⁹ Steinberg, M. (2019). *The Platform Economy*, 64.

⁵⁰ Ivi, 67.

⁵¹ Steinberg, M. (2019). *The Platform Economy*, 11.

“By about 2005” – writes Steinberg – “content was no longer king. Instead, the attention shifted to something else, something that would come to be called *platform*”. It is the merging of two models, envisioned by Bill Gates and America Online, but fully realized by global digital platform corporations, that by 2010 have become intermediaries of content⁵². An early distinction is that between open and closed ways of accessing the Internet⁵³. Websites as America Online (AOL) were an enclosed and wired way of accessing the Internet that operated by creating a walled garden: it gave users easy access to a limited scope of web pages and services, all contained within AOL itself, differing from the World Wide Web (WWW) model, in which the user could access to whatever pages and features.

Besides automobiles and videogame consoles, a peculiar precursor of platforms such as Android and Apple in the mobile phone market had been the Japanese proto-smartphone I-mode, that spread in Japan almost ten years before the iPhone’s launch in 2007. It functioned similarly to AOL, providing internet connection directly on mobile phones via the walled-garden model of the web experience: for the first time in history, users could access web pages specifically formatted by pressing the “I” button that would open a browser. From there, users could access a set of services. Some of them, like banking and plane reservations, were free; other contents such as weather, news, ringtones, wallpapers, games had to be paid⁵⁴. As Steinberg notes, the walled garden metaphor is deceptive here, as the goal of the platform is not to stop the information flow, but to regulate it⁵⁵. One of the peculiarities of this business model, which remains untouched today, is that it blocks portability as it creates restrictions using digital rights management: it prevents users from transferring particular contents from the device elsewhere.

Thanks to this model, I-mode turned out to be so successful in Japan that Docomo, the company behind I-mode, in only two years since its launch (1999-2001) became the largest Internet Service Provider in the world even if its entire subscriber base was in Japan. There are at least four reasons for this incredible success. First, the package-based internet connection business model resulted to be cheaper than the wired Japanese internet, whose prices were three times higher than the USA connection. Second, the company Docomo already had 60% of the mobile

⁵² Here I omit the history of the American-based corporate platforms now known as GAFAM or FAANG for two reasons: first, because they are much more well known; second, because contrary to what is commonly believed, they did not invent the platform concept, but they reproduce that schema with new computational capacities. For the history of Google, see Auletta, K. (2010). *Googled: the end of the world as we know it*; Levy, S. (2011). *In the Plex: How Google Thinks, Works, and Shapes Our Lives*; Ippolita. (2013). *The dark side of Google*. For Amazon, see Stone, B. (2011). *The Everything Store: Jeff Bezos and the Age of Amazon*.

⁵³ For an overview of open and close platforms interfaces, see the paragraph on the management view.

⁵⁴ Steinberg, M. (2019). *The Platform Economy*, 129.

⁵⁵ Nowadays, the circumstance that the platform regulated its ecosystem and complementors – that it acts via infrastructure, curation and moderation- is widely accepted in the literature. See cp. 3.8 and Poell, T., Nieborg, D. & Duffy, B. E. (2022). *Platforms and Cultural production*. A better metaphor could be that of a biological membrane, as we will see in the work of Stafford Beer in the next part.

market share in Japan and started to promote I-mode in all the stores. Third, both the price of the phone and of the subscription fee were launched not to be more expensive than traditional phones. Fourth, Docomo

deployed a number of “tricks” that prevented people from easily canceling a service once subscribed; one could not unsubscribe at certain hours of the night (when Docomo engineers found the largest number of people tended to unsubscribe), and anecdotally one hears about the numerous menus and pages one had to dig through in order to actually reach the unsubscribe option⁵⁶.

As for the incomes, I-mode was creating them in a number of different ways. Some came via network access fee (about three dollars per month), while other incomes would flow as it attracted contents providers – what the management literature calls complementors. These contents could be either free for the user or paid by the user with a subscription fee that would automatically renew each month. In this case, the company Docomo would take took 9% of the price (as opposed to 30% by Google Play and Apple Store today). Finally, a last important aspect of behind I-mode’ success were the changes in its value chain. Based on the work of famous Japanese manager Natsuno Takeshi (author of books *The I-mode strategy* and the *I-mode Wireless ecosystem*⁵⁷ and experienced in urban planning), Steinberg investigates the business model of this mediation platform. It is something that I would describe as the shift from a linear to a circular understanding of value production, based “on a series of feedback loops between multiple participants in the I-mode project”⁵⁸. For explaining the value chain of I-mode, Takeshi adopts a metaphor that we will encounter numerous times: that of the ecosystem⁵⁹, where value production becomes something dynamic involving producers of services that builds on the platform and users. Here the I-mode platform exerted a political control of the content providers, that needed to be officially approved by the platform, which acted as a gatekeeper, and regulated the information between consumers and producer. Therefore, the I-mode was a three-sided market, but still mainly based on a pay-per-use model that differed from the

⁵⁶ Steinberg, M. (2019). *The Platform Economy*, 133.

⁵⁷ The English translation were published three years after the Japanese edition. See Takeshi, N. (2003). *I-mode Strategy*. Takeshi, N. (2003). *The i-mode Wireless Ecosystem*. .

⁵⁸ As I will discuss later on, this model is extremely similar to Stafford Beer’ Viable System Model, developed in Chile in 1970.

⁵⁹ The comparison here is with the biological ecosystems. In the meantime, various notions of the “digital ecosystem” have been advanced, building on this comparison. A digital ecosystem has been defined as a “networked architecture and collaborative environment that addresses the weakness of client-server, peer-to-peer, grid, and web services” Boley, H. & Chang, E. (2007). *Digital Ecosystems: Principles and Semantics*. See also Briscoe, G. & al (2011). *Digital Ecosystems: Ecosystem-Oriented Architectures* for a relationship between digital ecosystems and computational architecture.

advertising model later developed by Google, which works by offering some services for free to the users in exchange of data collection and the deployments of personalized ads that are paid by advertisers.

However, soon after first American smartphones were launched, I-mode started to decline. In trying to understand the reasons of this decline, Steinberg identifies the following elements. The first is a material change in the underlying technology: when internet connectivity was slow and expensive, models such as AOL and I-mode were viable; but the arrival of broadband internet access by cable companies actually killed the walled-garden model. Initial smartphones did not have some important functionalities of i-mode, like a built-in pay system, TV reception; but despite their limitations, these smartphones could give users access to the whole internet, and they presented innovative shapes and large screens with touch interfaces. Together with the cultural values that the new iPhone symbolized and with a new regulation by Japanese government that prevented carriers from subsidizing phones, i-mode entered “a reversal of the virtuous circle between carriers, handset makers, and consumers, and the beginning of a “bad cycle” wherein carriers shifted from demanding phones with new features from handset makers to wanting the same phones at lower price points”⁶⁰. In such a way, historically Google and Apple emulated i-mode’s business model, which was in turn based on Nintendo’s first mechanism for exerting control over producers of services for the platform.

2.1.5 Platform thinking and an historical categorization of platforms

Marc Steinberg has proposed three folded categorization to account for the historical typologies of platforms. This platform categorization – in a sense alternative to the other, stacked model for described by the software studies view at 3.3 – is based on a modification of Japanese management writers Negoro Tatsuyuki and Ajiro Satoshi⁶¹. Steinberg’s categorization keeps an eye not only on what definitions have been proposed, but also on their geographic origin and comprises the following categories:

- 1) product-technology platforms;
- 2) contents platforms;
- 3) transactional or mediation platforms.

⁶⁰ Steinberg, M. (2019). *The Platform Economy*, 156.

⁶¹ Natsuno, T. (2012) *Naze daikigyō ga totsuzen tsuburerunoka* [Why do massive companies suddenly go bust?]. Tokyo: PHP Business. Quoted in Steinberg, M. (2019). *The Platform Economy*. This categorization is historically useful, but it does not escape the recursive problem of platform categorization, as he then it defines I-mode – the most important Japanese platform historically- as a hybrid of the three types.

Steinberg's first category, *product-technology platform*, "refers back to the genealogy of computer hardware seen as platforms". The central characteristic of this kind of platform is the layered aspect⁶². In this view, not only VHS, DVS and Microsoft operating system are seen as platforms, but – crucially – "standardized chassis that are the basis for multiple different models"⁶³. What is common in this variety of things is their attitude to "operate according to a layered model, wherein one layer forms the basis or support for the production of other things on the next layer". In this model, there is a core element (the platform) and other things that are stacked on it. The examples here range from computers (programmable platforms), consoles (game platforms) and automobiles (product platforms)⁶⁴.

The second category, *content platforms*, corresponds to Gillespie's account of digital platforms as social media networks and video streaming sites. Hence, it departs from the platform as computer hardware/software/game consoles/automobiles to include a broader meaning of the platform. Steinberg looks at Japanese writer Kawakami, who, writing for "contents platforms" explained that they are a "format" or "the framework that circulates content". According to the Japanese author, platforms as means of contents circulation play some important functions of offering a business model, a user base, some means of promotion, they define the framework (format) of contents, and they control the quality of contents. Steinberg notes that "insofar as platforms are defined by their goal of hosting and circulating contents" they are "in a position of superiority relative to these contents". In this sense, the platform is king: there is a fundamental imbalance with content producers. It is the platform that set the rules, conditions, and most importantly the prices for the distribution of contents. Hence, platforms are understood as medium agnostic: after an exercise of abstraction, they become the relational mediators rather than intermediaries, "a site of commodified encounter"⁶⁵. This definition is relevant, as it keeps

⁶² This is in contrast with the software studies view and particularly with Bratton's theory of platforms, as they consider the layered aspect to be the universal character of all platforms.

⁶³ Steinberg, M. (2019). *The Platform Economy*, 73.

⁶⁴ As to product platform, manager Cusumano claimed that the term 'platform' first came into wide usage in the management field as a word "meaning foundation of components around which an organization creates a related but different set of products (or services). Toyota's Corolla sedan, Celica sports car, Matrix hatchback, and Rav-4 sports utility vehicle are different products built in separate projects. But they share the same underbody as well as other essential components such as the engine". Cusumano, M. (2010). *Staying power: Six enduring principles for managing strategy and innovation in an uncertain world (lessons from Microsoft, Apple, Intel, Google, Toyota and more)*, 23, quoted in Steinberg, M. (2022). *From Automobile Capitalism to Platform Capitalism*, 1071.

⁶⁵ It is here useful to recall an STS distinction between mediators and intermediaries. Bruno Latour defines an intermediary as "what transports meaning or force without transformation: defining its inputs is enough to define its outputs. For all practical purposes, an intermediary can be taken not only as a black box, but also as a black box counting for one, even if it is internally made of many parts". Mediators, on the other hand, "cannot be counted as just one; they might count for one, for nothing, for several, or for infinity. Their input is never a good predictor of their output; their specificity has to be taken into account every time. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry". See Latour, L. (2005). *Reassembling the Social: An Introduction to Actor-Network-Theory*, 39.

together the central concepts of the management view (which, as I will show, sees the platform as an environment for creating and extracting value from groups) and the post-network focus on the 'community'.

The third category deployed by Steinberg is probably the more relevant for contemporary platformization: *transactional* or *mediation platforms*. These are defined in the broadest way as "the place where money, people and commodities meet"⁶⁶. What distinguished this category from the others is that the platform here is not necessarily *technological*, it is "technologically agnostic", dependent on some technological conditions but not technological itself: shopping malls, bars, credit cards and magazines are retroactively seen as platforms, working with a multi-sided dynamic. In this sense, computer and game consoles are considered platforms only because of their ability to coordinate markets. The four characteristics of *mediation platform* are the emphasis on platform as mediation; the emphasis on "place," usually figured as a site of generativity or emergence; the emphasis on social relations as the key to platforms; the emphasis on platforms as a business model, hence the formulation of the term *platform industries* or *platform business*. The essential point of this category is the increase in the level of abstraction, because the platform has become an "apparatus of mediation", it has lost its material substrate and has become "something of a relational entity, or intermediary as such"⁶⁷.

There are two takeaways that I consider relevant coming from the corporate side of platform conceptualization. First, the platform is a change in business model that depended on a change both the value chain and one in the manager's mentality. With platform thinking we are facing "a different model of the value chain, one in which there is a circular relation or series of feedback loops between multiple participants in the i-mode project"⁶⁸. Both in the USA and in Japan, there is therefore a shift of mentality that can be grasped by confronting the words of managers Natzuno and Sawney. Regarding the i-mode platform, Natzuno noted that they

⁶⁶ This definition is taken by Steinberg from Kadokawa Tsuguhiko, *Google, Apple ni makenai chōsakuken* [Copyright laws that can't be defeated by Google and Apple], 37.

⁶⁷ Steinberg I-mode It was a technological substrate, a mediator between contents layer and the platform layer, and a facilitator of transactions between third parties. I-mode was an interesting type of platform, as it encompassed all three categories proposed by Steinberg.

⁶⁸ Steinberg, M (2019). *The Platform Economy*, 136: "according to Porter's diagram, the creation of value within a firm moves from left to right, with the farthest right being the one-time intersection of the firm with the consumer via the market. In other words, this model posits one "side" or market, the moment the firm sends its completed product out into the world and into the hands of the consumer." It is also interesting to compare Porter's diagram with the image of the Viable System Model for showing their similarity.

leave the content creation to the service providers who excel at that; Docomo concentrates on our system for collecting fees, our platform, and signing our data warehouse. This is what we might call our platform concept⁶⁹.

Similarly, in US context Sawhney noted that firms

should manage their offerings as families with a common underlying logic, and not as portfolios of unrelated entities. This shared logic is the platform. Platform thinking is the process of identifying and exploiting the shared logic and structure in a firm's activities and offerings to achieve leveraged growth and variety. Platform thinking can be applied to the firm's products, brands, target markets, geographical markets, and business processes⁷⁰

The second takeaway is therefore that at a certain point of the managerial discourse a separation between the platform and the firm has become. This shift is significant because the firm is no longer conceived “as a closed box in competition with other such closed boxes, as the company had until then been conceived within management literature and organizational economics”⁷¹ but as an open ecosystem. The term platform becomes an abstraction separated from the technological infrastructure or base; it has become a channel or a mechanism that connects two otherwise discreet and noninteracting sides. Steinberg also traces what I would call a *conceptual* shift also back to Eisenmann, Parker and Van Alstyne article *Strategies for Two-Sided Markets*, and their claim that a platform is composed by two characteristics: first, an architecture (including infrastructure or design); second, rules, “that is, the protocols, rights, and pricing terms that govern transactions”⁷². Given that this new economic configuration has the platform at its core, the platform can also be considered a new specific form of mediation that happens on the internet, but which is distinguished from the internet as a media. It is a concept more than a

⁶⁹ Natsuno, T. (2003). *I-mode Strategy*, 61–62, quoted in Steinberg, M. (2019), 138.

⁷⁰ See Sawhney, M.S. (1998). *Leveraged High-Variety Strategies: From Portfolio Thinking to Platform Thinking*, 54 – 55. The advantages were identified in speed (faster development time), lower costs, enhanced design quality, coherence, referencability and option value. Furthermore, he distinguished between three kinds of platforms: product platform, process platform and brand platform.

⁷¹ Steinberg, M. (2019). *The Platform Economy*: 99. Steinberg then focuses on the management discourse in Japan in the 1990s, and how that actually preceded its euro-American version. Japanese theorists had the advantage of the periphery: they used to read western literature, while Western academics ignored Japanese theorizations. Steinberg identifies two stages of Platform Theory in Japan and claims that the idea of a mediation platform was developed in Japan.

⁷² Eisenmann, T. R. et al (2006). *Strategies for Two-Sided Markets*: 96.

technology that Natsuno has framed as the shift “from making things to making (mediation) mechanism”⁷³.

⁷³ Natsuno, *Naze daikigyō ga totsuzen tsuburerunoka*, 80–81. Quoted in Steinberg, M. (2019) *The platform economy*, 202.

The wishes of the people will be made known to the Government at all times. [...]

We shall use TECHNOLOGY, which belongs to the people, to do it.

Stafford Beer (1972) *Five Principles for the People toward Good Government*

2.2 The socio-cybernetic branch of platformization

2.2.1 Economic coordination and experiments with new forms of governance

The corporate branch of platform genealogy has analyzed automobiles, gaming consoles, smartphones, and the multimedia culture from 1980 onwards. However, it is in the science of cybernetics that we find the philosophical and organizational aspirations that lead to platformization⁷⁴. For this reason, in the present part I am going to reconstruct what I call the socio-cybernetic genealogy of platform conceptualization. In doing this, I wish to achieve two goals. First, I aim at showing that the genealogy of the platform does not only include corporations, but it starts also from state-centered socialist projects and so I am going to examine two relevant historical cases in which governments tried to build what can now retroactively be considered a state-controlled digital platform. I will try to show that the platform concept is not exclusively the result of capitalist experimentation, but also of experiments carried out by communist country like the Soviet Union and socialist countries Chile. After the advent of computers, those states attempted to use computer in government to achieve different goals. The most crucial question for centrally planned nationalized economy was how to make economic planning more efficient in order to overcome the limitation of the command economy by using automation and making it able to rapidly respond to external changes. In the encounter between cybernetics and socialism we find nothing less than the attempt to completely reorganize social life and top-down governance thanks to the new

⁷⁴ Cybernetics is where all the mythology of cyberspace and digital culture comes from. Etymologically, it comes from the Greek κυβερνάω (kybernáō), which means to steer, navigate or govern. It was the French physicist and mathematician André-Marie Ampère to first use the term *cybernétique* in an essay in 1834 to refer to the art of government in general. Without knowing it, Norbert Wiener also took inspiration from this word in coining the field of cybernetic as “control and communication in the animal and the machine”. See Wiener, N. (1961). *Cybernetics: Or Control and Communication in the Animal and the Machine*; Wiener, N. (1954). *The human use of human beings*. For the history of cybernetics see Rid, T. (2016). *The Rise of the Machines*; for the history of the first cyberneticians see Heims, S. J. (1994). *I cibernetici: un gruppo e un'idea*. An attempt to provide a global history of cybernetics can be found in Peters, B. (2016). *How Not to Network a Nation: The Uneasy History of the Soviet Internet*, 15 - 66. Even Foucault, M. (2005). *The hermeneutics of the subject*, 235, refers to it in discussing the image of government as the act of piloting a vessel, and points out that the three areas of curing, leading others, and governing oneself are bounded together.

potentialities of computer networks and feedbacks of data with the people. Stafford Beer, in fact, attempted to create what we can retroactively call the first digital platform managed by a state to improve the relationship between the governors and the governed (in Allende's Chile). However, networked computers gathering data of citizens and workers were also seen, especially in the Soviet Union, as tools having the potential to enhance control over the population. Second, I believe that the relationship between technology and politics in the Soviet Union and in Chile, as well as the comparison of cybernetics principles and design choices behind it, can provide useful insights for today's policy debate in the European Union on platform governance: many of the problems faced today have remained the same, especially the fundamental question of how to build a democratic digital infrastructure that does not end up being an instrument of data extraction and control at the detriment of the citizens' fundamental rights.

As it is hard to give a precise definition of the platform, it is equally hard to define precisely cybernetics, because this word has been used in many different contexts with several meanings⁷⁵. According to Paul Asaro, at the most general level, cybernetics meant a non-modern worldview that unfolded in three historical phases. The first phase - also called the "narrow view" of cybernetics - held that the mechanism of negative feedback control is metaphysically central to the order and organization of the universe⁷⁶. For the second "broad view", cybernetics was the acknowledgment that the mechanistic age of matter was over, while the age of form was coming: the cybernetic movement wanted to replace physics as the science upon which all others would be based on. If "physics had promised to give humanity domination over matter and energy, cybernetics now promised to give humanity domination over information and organization"⁷⁷. In this sense, the age of industry, symbolized by the steam engine, was giving way to the age of information, symbolized by the computer. The final and intermediate view, so-called "second-order cybernetics", turned into an epistemology as the science of observing systems⁷⁸. Cybernetics would be defined again by feedback, but now between a system and its

⁷⁵ For a review of the definitions see <https://asc-cybernetics.org/definitions/>. Cybernetics emerged during the legendary Macy conferences between 1946 and 1953, where several researchers from different fields such as mathematics, physics, philosophy, anthropology, and psychiatry gathered and made their fields communicate with each other. They managed to communicate agreeing on some broad and shared metaphors, as in the case of the feedback. For a brief review see also Pickering, A. (2015) *Cybernetics*.

⁷⁶ Crucially, Deutsch, K. (1948). *Toward a Cybernetic Model of Man and Society*, saw systems as "self-modifying networks", and by feedback he meant "a communications network which produces action in response to an input of information and includes the results of its own action in the new information by which it modifies its subsequent behavior". (390-391). See Richardson, G.P. (1991). *Feedback Thought in Social Science and System Theory*, 100-101.

⁷⁷ Asaro, P. (2007). *What ever happened to cybernetics?*

⁷⁸ Other authors distinguish between first order and second-order cybernetics, where the latter is seen, following the notion of autopoiesis, as the application of cybernetics to the cyberneticians themselves as observers. See Von Foerster, H. (2003). *Understanding understanding*. For Hayles, second-order cybernetics turned the cybernetic paradigm inside out: instead of seeing the feedback loop as connecting

observer, rather than merely being within the system being observed⁷⁹. According to this second-order view, cybernetics was the science that gave priority to relation over substance and difference over identity. It functioned “as a nullifier of traditional dichotomies such as material/life and animal/ human by reconstructing everything as difference/information; it is the horizon where "spirit" and "human" can no longer play their privileged, a priori roles”⁸⁰.

For the sake of the present work, I am particularly interested in the application of cybernetics to management as an essential element in the historical, genealogical account of platformization. This subfield named “management cybernetics”⁸¹ was created by the British cyberneticians Stafford Beer that Wiener once called the father of management cybernetics. With him, cybernetics became “the science of effective organization” - a direct precursor of platforms’ ecosystemic strategies⁸². Before looking at Beer’s attempt to create a ‘cybernetic socialism’, it is worth examining the case of cybernetics in the Soviet Union that in 1962 planned to build a platform spanning over the entire territory.

2.2.2 The Soviet case: a platform for the command economy

The Soviet Union is an interesting historical example of a failed attempt to network an entire nation before the creation of Arpanet and of the Internet. Cybernetics was ‘discovered’ in the Soviet Union in 1952 by military scientist Anatoly Kitov when he found a banned copy of

system and environment through information, “we only see what our systemic organization allow us to see. The environment merely *triggers* changes determined by the system’s own structural proprieties [...]. The emphasis is now on the mutually constitutive interactions between components of a system rather than on message, signal and information”. Hayles, K. (1999). *How we became posthuman*, 11. The concept of autopoiesis, strictly related to that of emergence, was initially developed to explain how organisms organize and reproduce themselves in time from a biological point of view. Niklas Luhmann has applied this conception to social systems by broadening it to “every case in which is possible to determine a specific mode of operation that is found only in that system”. See Baraldi et al (2021). *Unlocking Luhmann*, 39.

⁷⁹ Asaro, P. (2007). *What ever happened to cybernetics?*

⁸⁰ Karatani, K. (1997). *Architecture as Metaphor*, 18. This aspect was negatively addressed by philosophers such as Martin Heidegger. The ontic character of cybernetic would have led to the ‘end of philosophy’ - a philosophy no longer preoccupied with ontological problems. Heidegger claimed that the other sciences would have been “determined and steered by the new fundamental science which is called cybernetics”. See Heidegger, M. (1977). *The End of Philosophy and the Task of Thinking*, 374.

⁸¹ Beer initially worked as an international manager in the steel industry. In his *Cybernetic and Management* (1959), Beer sought homeostatic mechanisms in industry, and the social basis of his theory implied a harsh critique of the modern mechanistic categories for understanding the world, which he perceived as outdated. This was not only the idea of Beer, but, as shown by Gerovitch, also of Soviet scientist that “effectively got rid of a whole set of categories and principles characteristic of the dominant scientific and philosophical discourse”. Gerovitch, S. (2002). *From Newspeak to Cyberspeak*, 298. According to Beer, categorical knowledge itself suffers from immanent stability, which is a terrible reduction of the world in general, and the new cybernetic world in particular. In his preface to Maturana and Varela’s *Autopoiesis and cognition*, Beer writes that science itself is “ordered knowledge that began with classification”, but that modernity has adopted a world view in which “real systems are annihilated in trying to understand them, in which relations are lost because they are not categorized, in which synthesis is relegated to poetry and mysticism, in which identity is a political inference”. Beer, S. (1980). *Preface*, 64 in Maturana, H. & Varela, F. (1980). *Autopoiesis and Cognition*.

⁸² See in particular the history of Beer in Pickering, A. (2009). *The Cybernetic Brain*, 215 - 308.

Wiener's *Cybernetics* in a military library⁸³. From there, cybernetics followed a strange path: it went from being considered a "reactionary pseudo-science" and opposed by the party, to a movement meant at revolutionizing the establishment, and it finally turned into a pillar of the status quo of the establishment itself. For the popular press, at a certain moment, computers were even labeled as the "machines of communism"⁸⁴.

In the state of Soviet Union, the form of government was that of a centrally planned communism working with nationalized factories and with an officially centralized command economy. During the Cold War, soviet scientists and economists understood that the advent of computation could help them to address the central governmental concern of the coordination problems that had long beset the command economy⁸⁵. The problem was precisely the same that digital platforms are solving nowadays, that of political planning, and the advent of networked computers promised to deliver "electronic socialism". Here the different nature of the organization of the communist state was seen as having an inner potential in relation to automation greater than in capitalist countries. In the latter, different companies created individual automated control systems for themselves, while Soviet cyberneticians wanted to organize a unified complex system where the Soviet Union was managed as a single company⁸⁶. Soviet cyberneticians assumed that the main problem of the Soviet economy lay in the inefficient mechanisms of data collection, information processing, and control, and proposed a solution based on mathematical modeling and computer-aided decision-making. Soviet 'economic cybernetics' wanted to apply Game Theory to the national economy while envisioning a hybrid planning system that would provide for some decentralization of decision-making while preserving the national plan. In this view, optimal planning could be achieved by a radical decentralization of economic decision-making and regulated use of the market mechanism; moreover, computer modeling was supposed to be used to provide quasi-market stimuli for individual enterprises. As such, the view of Soviet cyberneticians countered many central mechanisms of bureaucratic communism.

Since automation and computerization of the entire country could have resulted in optimal control and coordination, the Chairman of the Academy Council of Cybernetics once declared that the main task of Soviet cybernetics was "the development of methods and the application of tools for controlling the entire national economy, individual technological processes, and various forms of economic activity to ensure the optimal regime of government [*upravlenie*]". "Optimal

⁸³ Peters, B. (2016). *How Not to Network a Nation*.

⁸⁴ Gerovitch, S. (2002). *From Newspeak to Cyberspeak*.

⁸⁵ The Soviet economy, proceeding with five years plans of the Gosplan, was fully centralized but worked unofficially with a network of bureaucrats and with a black-market economy. See the discussion of Peters, B. (2016). *How Not to Network a Nation*.

⁸⁶ Peters, B. (2016). *How Not to Network a Nation*.

planning and control” became the motto of the soviet cybernetic movement⁸⁷, and in 1967 the authors of the fifth volume of *Cybernetics—in the Service of Communism* even wrote with pride that

the view of society as a complex cybernetic system with a multi-dimensional network of direct and feedback links and a mechanism of optimization, functioning towards a set goal, is increasingly gaining prestige as the main theoretical idea of the ‘technology’ of managing society⁸⁸.

In 1962, the Soviet Union planned a secret project to build a national computer network to network the command economy. It was named the OGAS Project (All State Automated System for Gathering and Processing of Information for the Accounting, Planning and Governance of the National Economy)⁸⁹. The main character behind this project to build what would have been a national platform for managing the Soviet economy was mathematician Victor Glushkov, who thought of the OGAS as a

complex three-tiered hierarchical computer network that would transfer economic information along as many as, in its most ambitious proposal, twenty thousand local computer centers, several hundred regional centers, and one central computer center in Moscow ⁹⁰.

Such a platform was supposed to be a technocratic experiment meant at reducing “the influence of the subjective factor in the making of administrative decisions”⁹¹. To build the OGAS, no less than thirty years would be needed, and the costs would have been so high to surpass the military and nuclear expenses combined. As mentioned, behind the OGAS there was the idea of the Soviet economy imagined as a single factory, with one interactive industrial control system serving it

⁸⁷ Gerovitch, S. (2002) *From Newspeak to Cyberspeak*, 254.

⁸⁸ Ivi, 285.

⁸⁹ Peters, B. (2016). *How not to network a nation*, 107.

⁹⁰ Ivi, 191. As reported by Gerovitch, in 1969, the proposed information system of Central Economic Mathematical Institute (CEMI) would have combined several layers: 1) a communication system for fast and reliable collection, distribution, and transmission of information; 2) a computation system; 3) integrated data-processing system; 4) an information-management system; 5) an information-gathering system; 6) an directive-organization system; 7) an optimization system; 8) an experience-accumulation system; 9) a controlling system, which included monitoring of all decisions and persons responsible for their implementation, and informing the superiors of the fulfillment (or non-fulfillment) of their decisions at all levels. Gerovitch (2002) *From Newspeak to Cyberspeak*, 284.

⁹¹ Peters, B. (2016). *How not to network a nation*, 108.

across a national computer network in real time. According to Peters, hence, the OGAS was not to be a 'dumb network' that would merely exchange data and communication across great distances, but a real precursor of Cloud Computing, with decentralized command and control protocols would automate, model and optimize the profound inefficiencies that beset the command economy⁹². Glushkov designed the OGAS to be both global (spanning over the entire soviet territory) and local (with decentralized access point), and, according to Peters, it seriously threatened the economic bureaucracy that it was meant to reform and serve⁹³. In practice, because of the costs of the project and the internal sabotage by other Soviet officials⁹⁴, the original vision of a three-tiered pyramid network was scaled back to a technical network where one central computing center in Moscow would regulate only twenty-five to thirty computing centers in city sites of "information flow concentrations" and some "regional calculating center and points of information gathering"⁹⁵.

As Slava Gerovitch pointed out, soviet cyberneticians were "looking for a technological solution to an inherently political problem; by its own nature, however, their project was doomed to play a political role"⁹⁶. For Benjamin Peters, the Soviet attempt paradoxically failed because of the capitalist feature of the Soviet state, where an unregulated internal competition between institutions and bureaucrats produced inefficiencies and a lack of coordinated action; on the opposite, the ARPANET project – the military-founded US project that led to the Internet - took shape thanks to well-managed state subsidies and collaborative research environments. In the Soviet Union cybernetics ended up becoming a discursive tool of the establishment and the attempt to create a nationalized platform failed. In any case instead of facilitating the decentralization of power through computer simulation of market mechanisms, computer technology could have been used to strengthen centralized control and reinforce existing power structures. As such, the Soviet model emphasized rationalization but neglected the question of democratic control of the state apparatus.

2.2.3 The Chilean case: Stafford Beer and socialist planning

⁹² Ibidem. The decentralized network was designed so that information for economic planning could be transmitted, modified, and managed in relative real time up, down, and laterally across the networked administrative pyramid.

⁹³ Peters, B. (2016). *How not to network a nation*, 151.

⁹⁴ The politics of this failure involved a resistance from at least five groups: met resistance from at least five groups: (1) the military wanted nothing to do with civilian affairs, especially when that meant fixing the command economy that already fed its coffers; (2) the economic ministries (particularly the Central Statistical Administration and the Ministry of Finance) wanted the OGAS Project under their control and fought to the point of mutiny to keep competing ministries from controlling it; (3) the bureaucrats administering the plan feared that the network would put them out of a job; (4) factory managers and factory workers worried that the network would pull them out of the informal gray economy; and (5) liberal economists fretted that the network would prevent the market reforms that they sought to introduce".

⁹⁵ Peters, B. (2016). *How not to network a nation*, 109.

⁹⁶ Gerovitch, S. (2002). *From Newspeak to Cyberspeak*, 260.

Another attempt to build a governmental platform for real-time economic control to run an entire nation was carried out in the socialist and democratic country of Chile during the government of Salvador Allende from 1971 to 1973, more than twenty years before the Internet became a feature of everyday life. It was the governmental project to create a digital platform named Cybersyn to control the relationship between workers of the nationalized factories and factories managers appointed by the government. According to the author of the most complete study on Cybersyn, Eden Medina, the case of Chile is interesting because of the specific historical, political, and technological circumstances that made that project a unique experiment and allowed the Chilean government to use computers and apply cybernetic ideas in ways that were not replicated in wealthier nations⁹⁷.

At the time, Chile was an exception among Latin American countries. In a context characterized by the cold war between the Soviet Union and the United States of America, Chilean democratic rule was in fact lasting from 1932. After winning the elections, Allende wanted to implement socialist change peacefully and through existing democratic institutions, a methodology harshly criticized by Fidel Castro during his visit to Chile⁹⁸. However, this attempt to make Chile the 'third way' to democratic socialism had to face countless problems: a narrow parliamentary majority, the resistance of private enterprises involved in the process of nationalization, the United States' eventually successful attempt to destabilize Chilean economy, and finally the

⁹⁷ Medina, E. (2011). *Cybernetic Revolutionaries*, 10. Medina identifies three specificities of the Chilean case. First, the progressive nationalization policy allowed engineers to focus only on industrial production rather than financial information, so that Beer did not have to worry about financial losses or to concern about prices, but only focused on how to increase production levels. Second, the American financial and commercial restrictions caused Chile to work with severely limited technological resources, forcing Beer and his team to use "the human and material resources available". Instead of looking for more advanced machines, they tried to use existing computer technologies to develop more advanced systems of organization. Third, in Allende's view computers would have been used in a way that did not lead to unemployment, but to a raise in employment levels. Another example of imagined 'cybernetic communism' was the Eterea project. Eterea is an imagined city where a computer-controlled network of pneumatic tubes connecting individual households with a central distribution and collection hub. It was designed by the architect Celechovsky, who "saw cybernetics as a missing link in the transition from bureaucratic socialism to humane communism" and therefore as "an expansive worldview where everything, from territorial planning to the economy, and from nature to human well-being, was thought of a system in balance". See Krivy, M. (2021). *Socialist Cybernetics*. In Moertenboeck, P. & Mooshammer, H. (Eds.). *Platform Urbanism and Its Discontents*, 198-211.

⁹⁸ Castro said that "all decadent social systems have defended themselves with tremendous violence throughout history," and that "no social system has ever resigned itself to disappearing of its own free will". See Davis, N., *The Last Two Years of Salvador Allende*, quoted in Medina, E. (2011), 77. The marriage between cybernetics and socialism was made possible by their similarities, as they both focused on decentralized governance and "on the question of how to create a system that can maintain its organizational stability while facilitating dramatic change and safeguarding the cohesion of the whole without sacrificing the autonomy of its parts" (p. 17). "Chilean democratic socialism, like management cybernetics, thus wanted to find a balance between centralized control and individual freedom" (p. 30).

collaboration of the Central Intelligence Agency (CIA) that ultimately contributed to the military *coup d'état* by general Pinochet 1973⁹⁹.

In this context, the socialist government needed to win the “battle for production” to stay in power and arrange enough goods and services for the population. The young engineer Fernando Flores, who was working for the Chilean government and had read the work of cyberneticians Stafford Beer, thought that he could seek his help and he sent him a letter. Flores asked Beer to come to Chile to apply the science of cybernetics to the management of the progressively nationalized sector of the Chilean economy. Beer agreed and started to lead a group of Chilean scientists, supported by British consultants, for building Cybersyn. As Beer is the main character behind the creation of Cybersyn it is useful to understand the way of thinking of this pioneering organizational theorist.

As a cyberneticians, Beer was more interested in studying how systems behaved in the real world than in creating exact representations of how they functioned, of understanding what an organization does instead of what it is. He looked at the company as an organism struggling to survive within a changing external environment but prioritized the long-term survival of the company over the short-term goals of any one department. He therefore was a supporter of a holistic approach to understanding systems dynamics and was convinced that effective management functioned like the human nervous system, in the sense that the company had to learn from experience with an adaptive brain¹⁰⁰. Beer’s starting point was that, for the company, the outside world is exceedingly complex and unknowable. In such a context, every attempt of creating a representation could only be provisional; instead, what the manager needed to care about was “performance”. As the environment of the firm is always changing, and as new technologies appeared in the field of production and consumption, its aim of had to be only to survive. For the cybernetic firm, policy making emerged in real-time interaction¹⁰¹ and its management implied a need to black-box complexity:

⁹⁹ Allende refused to be captured alive and committed suicide, and with General Pinochet in power thousands of people were killed. In the declassified American files these formerly secret statements can be read: “A documented case can be made for the proposition that the current regime in Chile is militaristic, fascistic, tyrannical and murderous” (Internal State Department Dissent Memo, February 1974); “In the United States, as you know, we are sympathetic with what you are trying to do here...We want to help, not undermine you.” (Henry Kissinger speaking privately to Augusto Pinochet, June 8, 1976); “The USG wishes to make clear its desire to cooperate with the military Junta and to assist in any appropriate way”; “We welcome General Pinochet’s expression of Junta desire for strengthening ties between Chile and U.S.” (Classified cable from the White House Situation Room dated September 13, 1973). All quotes from Kornbluh, P. (2013). *The Pinochet Files*, 209.

¹⁰⁰ Medina, E. (2011). *Cybernetic Revolutionaries*, 25. Beer was part of the British wave of cybernetics, which focused more on the brain and psychiatry. On British cybernetic, see Pickering, A. (2009). *The Cybernetic Brain*.

¹⁰¹ Pickering, A. (2009) *The Cybernetic Brain*, 244.

a model of performance in any field may be inadequate: predictions and judgements based upon it will be effectual only insofar as the model *is* adequate. But in exceedingly complex and probabilistic systems *no* analytic model can possibly be adequate. The answer to this paradox, which I have used successfully for 10 years, is to load the raw predictions of any analytic model with a continuous feedback measuring its own efficiency as a predictor. In this way, everything that went unrecognized in the analytic work, everything that proved too subtle to handle, even the errors incurred in making calculations, is “black boxed” into an unanalyseable weighting which is error-correcting¹⁰².

In trying to understand how to manage complexity while facing an unknowable outside world seen as an “exceedingly complex” system, Beer took inspiration from the “living machines” of biology. For instance, the organs of the human body are able to perform different activities independently of each other’s, resulting in self-organization. In order to do it, different organs need to black-box their complexity in recursive ontological layers in which both the organisms and the other organs do not know each other’s behavior¹⁰³. After years of attempts with previous models such as ‘biological computers’, Beer elaborated what he called the Viable System Model (VSM): a universal model for managing complexity in organizations that aimed at transplanting the organic into the social¹⁰⁴. It was inspired by the human nervous system, and it was organized fractally a hierarchy of five systems composed of viable subsystems that recursively had the same five-level structure. Like the soviet cyberneticians, Beer believed that the VSM could balance centralized and decentralized forms of control in organizations; moreover, the computational capacities allowed to structure flows of communication in a reflexive computational system. In this sense, the VSM was both *adaptive*¹⁰⁵ (the various levels of the viable system were intended to be coupled adaptively to one another) and *recursive*, as the company was also part of the larger national economy. For Beer, recursivity was a necessary

¹⁰² Stafford Beer quoted in Pickering, A. (2009). *The Cybernetic Brain*, 228.

¹⁰³ The concept of the black-box is central plays a central role in Beer’s view of exceedingly complex systems, as it is the device for reducing the variety of the system, a ‘device for absorbing variety’. Beer: “Only variety in the control mechanism can deal successfully with the variety of the system controlled”. Here there are relevant differences in the use of the concept of feedback itself: for cyberneticians such as Jay Forrester, it was something needed to understand complexity by quantifying, while Beer and the management tread “seek to use the concept of feedback to control a complex system without understanding”. See Richardson, G. P. (1992). *Feedback though in social science and system theory*, 173-174. Ashby’s Law of Requisite Variety states that “control can be obtained only if the variety of the controller...is at least as great as the variety of the situation to be controlled” (Beer 1972, 41).

¹⁰⁴ To which he dedicates a trilogy of books *Brain of the Firm* (1972), *The Heart of the Enterprise* (1979), and *Diagnosing the System for Organizations* (1985). See also the influential conception proposed by political scientist Deutsch, K. (1963). *The Nerves of Government*.

¹⁰⁵ Cyberneticians such as Walter Ashby had created devices with fixed goals that organized their adaptation. The homeostat, for instance, reconfigured itself so as to keep its essential variables within preset limits. On the contrary, Beer’s conception of the VSM specified no goals whatsoever except adaptation itself.

property of all viable systems. Systems had to be nested inside one another “like so many Russian dolls or Chinese boxes” in a chain of embeddings that “descends to cells and molecules and ascends to the planet and its universe”¹⁰⁶. For Beer, the object of the VSM was to design social organization as to

to reorganize the firm around the computer - to effect a transformation that was social as well as technological, to rearrange the human components as part of an adaptive technosocial system of information flows and transformation¹⁰⁷.

Moreover, Beer challenged the common definition of control as domination, which he viewed as “authoritarian and oppressive” and therefore undesirable, “a crude process of coercion”¹⁰⁸. In the mind of Beer this sociotechnical apparatus was needed for creating a system of mediation not for maximizing control of the population, but to allow people to be freer than with other forms of organization – a “Liberty Machine” in which freedom meant a *programmable function of effectiveness*. With the VSM, he literally aimed at “designing freedom” by creating “a diagram of social relations and information flows and transformations that could serve to guarantee the most freedom possible within organized forms of life”¹⁰⁹. In other words, in order to achieve a more effective – as well as worker-centered – management, Beer focused on designing the system rather than concentrating on changing the behavior of that system. Crucially, he thus saw the manager as a designer. In his book *Platform for Change: A Message from Stafford Beer* he stated that the sensible course for the manager was to *change* the system’ *structure* – with a modern wording, to reprogram itself - so that its natural systemic behavior becomes different¹¹⁰.

2.2.4 Cybersyn’s design choices and sociotechnical engineering

In the context of the present work, the value of the history of Cybersyn lies in the historical attempt to explicitly embed certain values in a decentralized infrastructure controlled by a centralized authority. It is also relevant for assessing the design of Cybersyn as a governance

¹⁰⁶ Stafford Beer quoted in Pickering, A. (2009). *The Cybernetic Brain*, 250. Recursivity is also an essential feature of platformization: an app such as Facebook can be downloaded from an app store; they are both platforms, and therefore these markets are nested on each other.

¹⁰⁷ Pickering, A, (2009). *The Cybernetic Brain*. Pickering elegantly defines cybernetic as a non-modern ontology of becoming.

¹⁰⁸ Beer, S. *Cybernetics and Management*, 21. Quoted in Medina, E. (2011). *Cybernetic Revolutionaries*, 28.

¹⁰⁹ Interestingly, the western press of the time described Cybersyn as a totalitarian instrument of control. As Pickering discusses, this was not the case; however, the entire construction of Beer did rely on a “good government” that avoided the immanent potential for control of the population made possible by such a technosocial platform. See Pickering, A. (2009) *The Cybernetic Brain*.

¹¹⁰ Beer, S, (1976). *Management in Cybernetic Terms*, quoted in Medina, E. (2011). *Cybernetic Revolutionaries*, 29.

system. The name chosen for the project, Cybersyn, is the synthesis of the word *cybernetics* and *synergy*. The name pointed to the project's cybernetic foundations "and the team's belief that the whole system—humans and machines—exceeded the sum of its parts"¹¹¹. With the words of one of the participants in the Chilean experiment, Cybersyn was created to tackle the following issue adopting the division of the system inside and outside:

Given a complex system called nationalized industry, subject to very fast changes (size, product design, price policies, etc.), inserted in a broader system (the national economy, inserted in turn in the whole of the national socio-political life), and subject to very specific political boundary conditions, it is required to develop its structure and information flow in order that decision-making, planning and actual operations respond satisfactorily to a program of external demands and the system remain viably¹¹².

On the most general level, the Cybersyn system aimed at connecting the nationalized factories thanks to new communications channels. It was composed of four parts, plus a fifth one that remained only imagined. What is nowadays called "data infrastructure" was named *Cybernet*. It consisted of a physical network of cables, telex, telephones and computers that connected nodes such as the state-run factories in order to transmit data about current production to the government. These data were fed into *Cyberstride*, a statistical software program used to synthesize data about factory input and output. The third component, *Checo*, was an economic simulator that used several indexes for allowing policy makers to play with economics model before taking decisions. All of these parts were connected to the control center, named *Opsroom*, where the government officials would sit. The control center was a futuristic operations room where "members of the government could convene, quickly grasp the state of the economy, and make rapid decisions informed by recent data"¹¹³. The control room was meant to reproduce the atmosphere of a "gentlemen club" or a "saloon" and displayed several screens for visualizing information, called "datafeed".

The design choices are interesting because they show the attempt to embed socialist values in the infrastructure as part of a "larger effort by the Industrial Design Group to create a new material culture that furthered the aims of Chilean socialism and broke from the aesthetic of the

¹¹¹ Ivi, 88. In this way, Beer's approach is consistent to STS methodologies that study simultaneously human and non-human actants. See Latour, B. (2005). *Reassembling the Social*.

¹¹² Schwember, H. (1977). *Cybernetics in Government: Experience with New Tools for Management in Chile 1971 - 1973*, 81.

¹¹³ Medina, E. (2011) *Cybernetic Revolutionaries*, 6.

past”¹¹⁴. One of these attempts emerges from the design of Opsroom, which contained only seven seats, a number that was considered optimal for decision-making. Each seat presented an integrated mechanism for controlling the datafeed by pushing different combinations of geometric buttons instead of letters. By this token, Beer and his team tried to achieve two goals: first, avoiding centralized control of the datafeed by only one person; second, allowing people who did not know how to type to be part of the government¹¹⁵.

A second and even most explicit attempt was the fifth part of Cybersyn, namely *Cyberfolk* - the public feedback. This stands as the most interesting component of the platform in terms of public design choices and worker-centered design. The premise is that Beer moved an early cybernetic critique to mass communication tools such as television, since communication flowed only in one direction, and “the people could not communicate in the same way with their representatives”¹¹⁶. Hence, Beer proposed to create Cyberfolk, a system for gathering data about the worker’s self-reported happiness. These data would have been sent to the control room anonymously, avoiding the use of polls and surveys about workers – a method that limited or prompted answers by asking pre-determined questions. Beer instead proposed to use a new technology that he called “algedonic meters”, making it up from *algos*, pain, and *hedos*, pleasure. The worker/user simply had to move “a pointer on a dial somewhere between total dissatisfaction and absolute happiness”. For Beer, this design used “the brain as a computer structured and programmed by individuality”¹¹⁷ to foster values such as autonomy and participation. The system was also designed to avoid standardized definitions:

unlike many survey techniques, the meter did not require users to rationalize their level of happiness or normalize it to fit on a uniform scale. Instead, the meter recorded the user’s gut feeling at a particular moment; the position of the knob on the meter would determine the voltage output on the device. Beer wrote that the meters could be installed in any location with a television set, such as in a Chilean home or in select community centers. Government officials could collect public responses easily by adding up the voltage output from the various machines and dividing the figure by the number of machines present. The meters therefore offered a representation of public satisfaction that was easy to generate, possible

¹¹⁴ Ivi, 137.

¹¹⁵ Ivi, 43. Medina also carries on a critique of the gender bias of Beer and the socialist government, that designed male-oriented solutions.

¹¹⁶ Beer, S. “Project Cyberfolk,” March 1972, box 61, Beer Collection. Quoted in Medina, E. (2011). *Cybernetic Revolutionaries*, 89.

¹¹⁷ Ibidem.

to update continuously, and simple to understand. Beer argued that the government could then use this information to improve public well-being¹¹⁸.

As it was an attempt to quantify public opinion avoiding the use of polls, Beer recognized the potential for political oppression of the meters. He insisted that the devices should have been analog instead of digital, which would “make it more difficult to identify individual meters and, by extension, individual users” and talked about adding a layer of anonymity¹¹⁹. In Beer’s mind, displaying the aggregated data about workers happiness or dissatisfaction had political and organizational consequences. For instance, happiness or dissatisfaction would alert workers and managers alike to when they needed to make changes¹²⁰. It would also provide a continual reminder of when management had ignored workers’ concerns, which could then increase workers’ solidarity or allow management to head off potential strikes or lengthy labor negotiations. According to Beer, the meters could make “explicit the outcome of continuous dialogue among the workers themselves, as to their satisfaction with the conditions in general, which would otherwise remain implicit in a host of small encounters never fully articulated”¹²¹. This signal also alerted higher levels of management: a potential threat to the factory’s freedom that was nevertheless necessary, as not alerting higher management might have posed a greater threat to the system’s survival. But even in this case, Cyberstride governance tried to find a balance between autonomy and cohesion: when a production anomaly was detected by the National Computer Corporation, both the State Development Corporation (CORFO) and the factory manager would be contacted. The government would then give the manager a limited period of time to resolve the problem on his own, and only if it did not solve it in time CORFO would intervene. According to Medina, this alerting mechanism stands as another innovative feature of project Cybersyn, namely the attention paid to sociotechnical engineering in the attempt “to build values not only into the function of the technology itself but also into the social and organizational relations of its construction and use”. Finally, another example of sociotechnical engineering can be found in Beer’s proposal that Chilean technologists would have to collaborate with Chilean workers in building factory models.

In practice, however, the implementation of Cybersyn could not fulfill many of its promises. To put it simply, the many political and cultural problems of Chile could not be resolved only by applying cybernetic principles. For instance, when the project was presented to the factory managers as political creation meant at fostering Chilean socialism and at including workers,

¹¹⁸ Medina, E. (2011). *Cybernetic Revolutionaries*, 91.

¹¹⁹ Ibidem.

¹²⁰ In the process of nationalization of the economy, factory managers were appointed directly by the state.

¹²¹ Beer, S. (1972). *Brain of the Firm*, 285. Quoted in Medina, E. (2011). *Cybernetic Revolutionaries*, 91.

they turned out to be skeptical about it, while presenting it as neutral and technocratic made it easier to get managers' participation¹²². Moreover, the technical sophistication of the cybernetic system actually prevented the participation of workers, if they even knew the system actually existed, as it was kept secret during the development phase. For Medina, Cybersyn also continued some established management practices that had dehumanized workers in the past, such as Taylorism. It also fell short in avoiding Chilean managers to exert control over labor through an abstract technological system¹²³.

On the contrary, the telex machines installed through the country helped the Chilean government to survive in critical situations. During the October Strike of 10 October 1972 that involved forty thousand truck drivers trying to block the county economy, Cybersynrk allowed the government to send and receive messages from one end of the country to the other (about 5,152 kilometers) and to connect the presidential palace to what was going on in factories and distribution centers to maintain the distribution of essential goods throughout the country. The network enabled the government to "address distribution, such as locating trucks that were available to carry the raw materials and spare parts needed to maintain production in Chilean factories, or determining which roads remained clear of obstructionist strike activity", while "enterprises could send requests to the sector committees and have these requests addressed immediately"¹²⁴. Hence, the platform allowed faster communication and real-time data exchange and it helped the Chilean government to assess the rapidly changing strike environment and come up with ways to adapt and survive.

2.2.5 The platform as a form of governance

We have seen how both the OGAS and Cybersyn were understood as digital platforms in the sense of a computational infrastructure in which a centralized entity connected different groups via different access points. By looking at project Cybersyn one notes that all its five parts are familiar to and resonates with modern studies on digital platforms: computational ubiquity; dependence on economic simulators; the existence of algorithmic systems to make data sets useful; the presence of feedbacks loops between the user and the platform; the presence of rating system and interfaces for detecting the user's feelings and emotions are all basic features of nowadays' digital technologies¹²⁵. Cybersyn was thus conceived as continuous feedback between two parties – the workers on one side, the factory managers on the other – that would be both controlled by the central authority collecting data about them. A governmental platform

¹²² Medina, E. (2011). *Cybernetic Revolutionaries*, 131.

¹²³ Ivi,132. Both Ford and Lenin relied on Taylor's idea of the scientific organization of work.

¹²⁴ Medina, E. (2011). *Cybernetic Revolutionaries*, 149.

¹²⁵ See also the documentary by Plastic Pills (2022). *Cybersocialism:Project Cybersyn and the CIA Coup in Chile*.

where control was needed for allowing communication between all the sides, as well as balancing and redirecting their relationship. Beer wrote that his organic approach to planning “destroyed centralization and decentralization alike”, as it was based

on the idea of “roll- up,” an iterative process wherein policies traveled down to the factories from the government and the needs of the factories traveled upward. He positioned management in the middle, where it formed a homeostat that coupled the needs of the lower levels with the resources allocated from above. Government officials could therefore change and adapt government policies to meet the needs of the factories, so long as such changes did not have substantial negative effects on other areas of the economy. [...] The roll- up approach was also continual and adaptive in accordance with Beer’s vision of cybernetic control¹²⁶.

Moreover, the similarities are not limited to the existence of a hardware and software infrastructure but are far-reaching in the philosophical foundations of platformization. One first similarity is the focus on anticipatory action rather than *ex-post* intervention. Beer’s critique of soviet methods of planning - top-down, slow, overcentralized – was because the autonomy of the component of the system was not respected. Soviet planning mechanism produced dysfunctional outcomes, as managers had to fake data to meet high production goals. Instead, Beer wanted the relationship between managers and the government to be honest and accountable. He believed that thanks to the Cyberstride software, the government could poise “anticipatory action instead of attending the wake”¹²⁷. Instead of waiting for changes in society and then planning how to redirect them, the government had to actively participate in their creation and in real-time policy making. As I will discuss in the management view of the platform, this preoccupation is shared by platform leaders, who need to be drivers of change and gain the ‘first mover advantage’. A second similarity lies in Beer’s conception of the working environment. The cybernetician’s way of working resembled more the start-up culture of the 1990s “than the chain-of-command bureaucracy that flourished in the 1960s 1970s and was characteristic of Chilean government agencies”¹²⁸. Beer refused to stick to the nine-five work schedule; he viewed his position as a scientific director more as that of a “free agent” than a manager and he summoned teams’ members only when required. Consistent with his background theory of self-

¹²⁶ Stafford Beer, “Cybernetic Notes on the Effective Organization of the State with Particular Reference to Industrial Control,” November 1971, box 64, Beer Collection. Quoted Medina, E. (2011) *Cybernetic Revolutionaries*: 70.

¹²⁷ Stafford Beer, telex to Ron Anderton, 21 March 1972, box 66, Beer Collection. Quoted in Medina (2011), 86.

¹²⁸ Medina, E. (2011). *Cybernetic revolutionaries*.

organization, he divided the main project into several subprojects that could be addressed quickly by autonomous, smaller groups, which did not need the approval of the larger group to carry on. The only necessity was communication between the subgroups, the need to keep each other informed about their respective work. He favored brainstorming moments and he prohibited to use of writing in the Opsroom¹²⁹. This working environment is coupled with Beer's attitude to experiment and engage in an act of playful creation. Checo, the economic simulator, was conceived and designed to enhance human expertise "by the act of play" and acted as a medium with which economists, policymakers, and model makers could experiment and "expand their intuition about economic behavior and the interplay of price controls, wages, production levels, demand, taxation policies, foreign exchange reserves, import and export rates, and other factors"¹³⁰. At the same time, Beer and his team progressively realized the importance of the discourse around Cybersyn, and they had long discussions and disagreements on when and to what extent they should have made Cybersyn the object of national and international media attention. They consequently tried to create the conditions for a favorable reception of their new "product" by using folk music and books. Beer asked a famous Latin American songwriter to produce a song on Cybersyn¹³¹ and wrote an illustrated booklet that he titled *Five Principles for the People toward Good Government* to popularize his ideas from management cybernetics.

There are however several differences between the platform concept as developed by Japanese managers and socialist cyberneticians that depended on the different geographical, political and cultural contexts. The first difference relates to the communist organization of the economy. The absence of a market economy implied that the complementors or producers of services were the nationalized factories, and the users were the factory workers. A second difference is material, and it deals with the lack of computational capacity of a time where computers were still big, expensive and could process only a limited amount of information. A third difference between the Cybersyn platform and contemporary digital platforms is the inverse relationship between transparency, visibility, and anonymity. Nowadays there is a widespread consensus about the political and economic value of data, so that digital platforms thrive thanks to a mechanism of creation and extraction of value that makes the activity of the user and his behavioral patterns of interaction transparent and visible to the machine (*infra*). On the contrary, the way in which these data infrastructures are designed and built remains opaque and hidden from public scrutiny. Far from being built on user-centered design, platforms seek what has been called the

¹²⁹ Medina, E. (2011). *Cybernetic Revolutionaries*, 97.

¹³⁰ Ivi, 87.

¹³¹ It was the famous Latin America folk musician Violetta Parra, who named it *Litany for a Computer and a Baby about to Be Born*. Medina, E. (2011). *Cybernetic Revolutionaries*, 135.

“design of the user”¹³². Cybersyn, instead, was a platform for managing the nationalized factories connected to it. Beer’s view was that - at least in theory - the platform could be used for both protecting workers and for creating a channel of communication for their requests. The activity of the worker was to be protected not only from the government, but also from the factory managers, whose activities would be transparent to the government in case of anomaly. As such, Beer chose to limit the number of production indicators collected by Cybersyn in order to prevent information overload. Beer’s view was that the platform could be used for both protecting workers and for creating a channel of communication for their requests. Therefore, Beer wanted Cybersyn to prevent information overload safeguard against state micromanagement and abuse. For this reason, I see Beer’s choice as an attempt to embed what I will discuss as “check and balances” mechanism inside the design of the platform¹³³.

To conclude this overview on the prehistory of state-centered platformization, we have seen in the previous section that Japanese managers thought of the platform as business model with a different value chain than traditional firms, in which value production takes place in ecosystem with circular feedbacks. The state-centered genealogy of the platform has instead shown that the platform is also a specific form of governance. There are three elements of this form of governance that can be singled out as new: the relationship between centralization and decentralization in organization; the different forms of its planning; the governance by algorithms.

First, philosopher Benjamin Bratton, following Stafford Beer, contends that the novelty of this form of planning of computational platforms is a shift in the relationship between centralization and decentralization. The platform - and this is a crucial point- centralizes and decentralizes at once: it centralizes data collection and political planning, but it distributes interfaces (now in the form of smartphones) in the population, allowing decentralized access decision-making. Platforms “centralize and decentralize at once, drawing many actors into a common infrastructure. They distribute some forms of autonomy to the edges of its networks while also standardizing conditions of communications between them”¹³⁴. Like centralizing systems, platforms

consolidate heterogeneous actors and events into more orderly alliances, but they themselves are *not necessarily situated in a true central position* in relation to those alliances

¹³² Bratton, B. (2015). *The Stack*. See also the discussion of nudging and technological management in chapter 3.

¹³³ The legal-political idea of constitutional check and balances can be also read in cybernetic terms. It is in fact a processual attempt to continually recreate a homeostatic balance between different powers that check on each other. The concept of feedback also appears in the paper of Madison.

¹³⁴ Bratton, B. (2015). *The Stack*, 43.

in the same way that, for example, a master planning committee or federal capitol building would be. Like some decentralized systems, platforms rationalize the self-directed maneuvers of *Users* without necessarily superimposing predetermined hierarchies onto their interactions¹³⁵.

The relationship between centralization and decentralization in achieving economic coordination is one of the fundamental themes of the economic models of the as 20th century. A fully decentralized coordination model is the metaphor of the market as famously depicted by the Austrian school of economics, and especially by Friedrich Von Hayek. For Hayek (and also for Beer), the market was a complex system, and the “socialist pricing problem”, the essential failure of planned economies depended on the fact that central planners could never know or process the real information, as centralized systems could be too slow to sense and calculate individual price signals. On the other hand, however, Bratton identifies the “capitalist pricing problem” of market economies¹³⁶ in the fact that they always relied on imprecise market models that are far from being a representation of the market, and so they can “confuse the emergent effects of transaction liquidity with system planning and do so at the expense of artificially segregating and suppressing the real cost of near and long-term externalities”¹³⁷. In this context, the digital platform constitutes something like a middle ground between the two, what Bratton defines as a “synthetic catallaxy” and cyberneticians Warren McCulloch had called “heterarchy”¹³⁸. But different nature of platform markets is also widely recognized by scholars in platform economics, as “the operations of platforms put into question the way many academic economists have thought about the functioning of markets”¹³⁹. Even the experts of the EU Commission

¹³⁵ Bratton, B. (2015). *The Stack*, 69.

¹³⁶ To be more precise, one should distinguish between capitalism and market economy, as the latter preceded the former by several centuries. See Screpanti, S. & Zamagni, S. (2005). *An Outline of the history of economic thought*,

¹³⁷ Bratton, B. (2015). *The Stack*, 379.

¹³⁸ Bratton stresses the use of Hayek’s term “catallaxy” to refer to “the shared values, knowledge, information, and communication of those participating in a market economy”. Instead, Peters writes that the concept of heterarchy “offers a third way and an alternative model between market and hierarchy that helps make sense of the Soviet cyberneticists and informs later network analysis of how Soviet cyberneticists tried to build computer networks to match the institutional networks running the command economy”. Peters, B. (2016). *How Not to Network a Nation*, 22. As I analyze in chapter 3 on the part on network theory, with the advent of the commercial internet both investors and network theorists saw the creation of networks as new organizational forms in direct opposition to the bureaucratic structures of the 20th century, and especially the communist party. See for instance Powell, W. (1990). *Neither market nor hierarchies: network forms of organization*. See also my interview with Geert Lovink, “*The Platformization of the Network Ideal*”, in Cristofari, G. (2023). *The Politics of Platformization*, 121 - 131. I contend that this form was fully realized only with the platform.

¹³⁹ Belleflamme, P. & Peitz, M. (2021). *The Economics of Platforms*, 1 – 2. “First, the way markets operate (and which allocation will result) depends on the incentives and means of a platform operator that monitors and controls the interaction between its users. Second, processes like the exchange of information and even, possibly, the formation of prices are no longer decentralized but controlled by the

recognized that “existing economic theories based on foundational notions of 'markets' and 'firms' (which lead to regulation) may not be sufficient to interpret the behavior of online platforms correctly”¹⁴⁰. As legal scholar Orly Lobel noted, platforms allow unique fusions, because they “centralize some important aspects of the market transaction like, for example, the methods of payment, search and review, and information and trust. Simultaneously, these companies are decentralizing other fundamental aspects of the exchange controlled by users, such as pricing in the lodging apps and work hours in the transportation and cleaning service apps, aspects which once determined the supply infrastructure of a business”¹⁴¹. The invisible hand, in certain sense, has become visible: the equal ignorance about the market is no more¹⁴². According to Bratton, the consequence is that contemporary platforms radically complicate any strong distinction between planned and market economies.

The second point relates to the different form of political planning and governance allowed by the platform model. It is a real-time policymaking where great quantities of data imply the possibilities of predictions and experiment on the ecosystem. With the word of Bratton, platforms “set the stage for actions to unfold through ordered emergence as opposed to bureaucratic desired outcomes”¹⁴³. In other terms, bureaucratic planning used to operate by

platform. An example of a platform with centralized price-setting is Uber, which sets the prices at which drivers and travelers can interact. This stands in sharp contrast with standard microeconomic teaching, which imagines markets operated by some “invisible hand” that brings supply and demand together. Instead, what we describe here are situations in which trade is carried out under the *visible* hand of the intermediary managing the platform”.

¹⁴⁰ Gawer, A. & Snircek, N. (2021). *Online platforms: economic and societal effects*, VII.

¹⁴¹ Lobel, O. (2016). *The Law of the Platform*, 144. On a very similar line see Lehdonvirta, V. (2022). *Cloud empires: how digital platforms are overtaking the state and how we can regain control*, chapter 6, “Centrally planned free markets: a Soviet Union 2.0?”. Birch (2023). *There are no markets anymore: from neoliberalism to Big Tech*, in Buxton (2023). *Digital Power*, 13 -23. For a similar argument on centralization/decentralization from a more organizational perspective see Kornberger, M., Pflueger, D. and Mouritsen, J. (2017). *Evaluative Infrastructures: Accounting for Platform Organization*. Rolf, S., & Schindler, S. (2023). *The US–China rivalry and the emergence of state platform capitalism*.

¹⁴² It should be noted that this criticism has come not only from political economists traditionally critical of economic theory, but directly from liberals who envisioned a different path for capitalism. The best example in this sense is Zuboff, S. (2019). *The Age of Surveillance Capitalism*, where she reviews Smith’s and Hayek’s ideas of decentralized markets working based on “the equally divided knowledge” (“In Hayek’s framing, the mystery of the market is that a great many people can behave effectively while remaining ignorant of the whole. Individuals not only *can* choose freely, but they *must* freely choose their own pursuits because there is no alternative, no source of total knowledge or conscious control to guide them”, 464). In other terms, markets worked because everybody was equally ignorant about the whole. But the division of learning cause by platforms points at a new, “raw” capitalism, where surveillance capitalists mastered the rhetoric and political genius of the neoliberal ideological defense while pursuing a novel logic of accumulation that belies the most fundamental postulates of the capitalist worldview. It’s not just that the cards have been reshuffled; the rules of the game have been transformed into something that is both unprecedented and unimaginable outside the digital milieu and the vast resources of wealth and scientific prowess that the new applied utopianists bring to the table”. The argument of the visible hand had been used in 1977 - albeit with a completely different meaning, referring to the ongoing revolution of American management - also by Chandler in his book *The Visible Hand: Managerial Revolution in American Business*.

¹⁴³ Bratton, B. (2015). *The Stack*, 47.

identifying a potential objective in the future (outcome) and then organizing the means to get there – Weber’s goal rationality. Bureaucracies worked by “remodeling desired outcome and working back to codify interaction that would guarantee this: means are a function of ends”. Digital platforms, instead, “begin by fixing equally strict means but are strategically agnostic as to outcomes: ends are a function of means”¹⁴⁴.

This also depends on the distinctive mode of governance of digital platforms, which is discussed by many authors in terms of algorithmic governance¹⁴⁵. This new kind of societal steering “appears to transcend established categories and modes of governance - and thus seems to call for new ways of thinking about how social relations can be regulated and ordered”¹⁴⁶. According to Pascal König, in the platform individuals do not have to trust each other, but they expect that the mediation through the algorithmic coordination “will produce satisfactory outcomes by working not only behind their back but also behind that of the others”¹⁴⁷. For Latzer and Festic, this algorithmic governance is visible, first, in the growing reliance on algorithms in traditional corporate and bureaucratic decision-making systems, and second, in, the “outsourcing of decision-making authority to algorithm-based decision-making systems”¹⁴⁸. For philosophers as Bernard Stiegler and Antoniette Ruvroy, what is at stake is a new regime of truth that they call “algorithmic governmentality” whose target is the “unrealized part of the future, the

¹⁴⁴ Ibidem.

¹⁴⁵ Since the work of Bratton, the literature has grown and spans over many issues and different notions have been proposed. See Airoidi, M. (2022). *Machine Habitus. Toward a Sociology of Algorithms*, who builds on the theories of Bourdieu; see sociological work of Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, where they talk about algorithmic management; Kitchin, R., & Dodge, M. (2011). *Code/Space: Software and Everyday Life*, where they discuss “automated management”; Lucy, W. (2023). *The death of law, talks “technological management”*. Other authors have instead used the term “algorithmic *aletheia*” to describe the circumstantial dimension for which truth is no longer the object of reflective knowledge but enunciated by systems endowed with a power of expertise considered superior and destined to be exercised on any occasion, and which is no longer exposed to gestures of re-appropriation. Sadin, E. (2019). *Critica della ragione artificiale*. For Sadin it is truly a new phase of the history of normativity, which sees unprecedented mechanisms at work: that of taking shape within devices that act in an automated manner; that of being called to intervene in an increasing number of individual and collective actions; that of being attributed a presumably objective value. On platformed and algorithmic subjectivities, see also; Langlois & Elmer (2019). *Impersonal Subjectivation from Platforms to Infrastructures*; Armano et al (2022). *Platforms, Algorithms and Subjectivities: Active Combination and the Extracting Value Process – An Introductory Essay*.

¹⁴⁶ König, P. (2019) *Dissecting the Algorithmic Leviathan: On the Socio-Political Anatomy of Algorithmic Governance*, 2.

¹⁴⁷ Ivi, 8, for which there are notable similarities with Hobbes’ Leviathan: Like Hobbes’ Leviathan, algorithmic governance draws its acceptance from its effectiveness. It entails individuals giving up a part of their autonomy—that of intervening into the very coordination process—so that algorithmic governance can produce outcomes from which these individuals benefit and that would otherwise not be possible” (15).

¹⁴⁸ Latzer, M. & Festic, N. (2019). *A guideline for understanding and measuring algorithmic governance in everyday life*, 2.

actualization of the virtual”¹⁴⁹. For infrastructure scholar Francesca Musiani, algorithms are pervasive artifacts of governance whose political implications are a core issue of our time both in terms of information ecosystem and underlying cultural norms, as they “contribute to the shaping of the information we access and of its organization”¹⁵⁰. What is relevant is that in this is governance driven by algorithms, like per Foucault technologies,

its mechanisms are not representative of governance, they *are* governance. But unlike Foucault's archeology, its primary means and interest are not human discourse and human bodies but the calculation of all the world's information and the world *as* information¹⁵¹.

In the present chapter I tried to outline how the word ‘platform’ has been understood in different geographical, politico-economic and temporal contexts, and how this word managed to be stretched to become a schema for meaning-making and for planning the coordination of different groups while creating value between them. Hence, I am going to further discuss this understanding of the platform as a form in the next chapter, where I conduct a literature review of what I identify as six most relevant traditions of platform research that has been emerging during the last twenty years.

¹⁴⁹ Ruvroy, E.; Stiegler, B. (2016) *The Digital Regime of Truth: From the Algorithmic Governmentality to a New Rule of Law*. The term “governance” originated as “corporate governance” and refers to the field corporate management rather than political philosophy. See cp. 3 for the notion of governance.

¹⁵⁰ Musiani, F. (2013). *Governance by algorithms*, 3. Tarleton Gillespie, by his side, has listed six critical dimensions of the *relevance* of algorithms in society, where relevance refers also to their acts of *giving* relevance to things: first, they are patterns of inclusion, as they make choices behind the constitution of an index, and they decide how data is “prepared” for the algorithm; second; they allow to make predictions about future behavior of users in “cycles of anticipation”; third; they give relevance (as well as appropriateness and legitimacy) to other things through their own criteria; fourth, they are presented as objective and impartial, particularly in case of controversy; fifth, users engage in a process reshaping of their practices to suit the algorithms they depend on, and turn algorithms into terrains for political contest; finally, algorithms produce “calculated publics” intended as the process of algorithmic presentation of publics back to themselves, and how this shapes a public’s sense of itself. Gillespie, T. (2013). *The Relevance of Algorithms*, 2-3.

¹⁵¹ Bratton, B. (2015). *The Stack*, 8.

What was thought of as management by participation becomes participation by management.

Niklas Luhmann, *Politische Planung*

3. The platform as an organizational form

3.1 Six traditions of platform research

In the present chapter I wish to continue my genealogical analysis of the platform concept by other means. If in the previous chapter I have analyzed and compared different historical attempts to organize, plan and govern via computational means, in the present chapter I am going to look at how several research fields have been dealing with platformization from their own perspective. In doing so, I aim at providing a comprehensive review of what I identified as the main academic field that are currently studying the phenomenon of platformization. The six traditions of platform research are, first, the management literature, which provides the economic principles behind platformization, as well as their mentality and ideology. Second, the digital labor literature, which deals with the political economy and ethnography of platforms users and workers and the intra-capitalist competition between platform firms. Third, the software studies literature, that deals with the changes in the fields of possibilities for organizations opened by computation and by the ubiquity of software. Fourth, the literature on infrastructure studies and internet governance, which provide a fundamental understanding of platforms as having acquired an infrastructural role in the organization of society; fifth, the literature on platform urbanism, which address the problem of platformization at the level of the city in terms of urban planning and architecture. I conclude with a discussion of the sociological literature that deals with others form of organization, with special regard to the transition from the “network” organizational form to the platform. In carrying out such interdisciplinary mapping, I try to reconstruct the way of reasoning, the questions asked, and the problem identified by these different traditions of research. I conclude the chapter by reviewing the definitions, metaphors, and categories that we encounter during the literature review and by discussing problem of platform governance.

The fact that so many different fields ended up researching platforms, together with the growing relevance of the ‘platform question’ inside them, stands, in my opinion, as a first empirical argument for understanding the platform as a form, even though as a contested one. My analysis focus on platform conceptualization, but as the narrative approaches to the present

day, the history of a *concept* turns out to be the history of a *process*, namely a process of platformization¹.

My thesis here is that the digital platform can be considered a peculiar organizational form that fully emerged during the first two decades of the 21st century. It is “organizational” because it is a way of bringing together people, money, services, to achieve a coordination of different actors. It is a “form” in the sense of the unity of a difference – something that creates a distinction and separates an inside from an outside². It is “new” in the sense that it produces organizational possibilities that were not present before the advent of digital technologies. Moreover, this organizational form is not reducible to – hence, not understandable as – other historical organizational forms that coordinate through prices (such as markets) or via commands (state, hierarchies) or others (communities or networks)³. On the contrary, all these concepts are necessary for grasping what the platform does. As we have seen in the previous chapter, with the platform comes a different notion of “orchestration of value” that passes through and overcoming of the centralization/decentralization dichotomy. In this chapter we will therefore see how platformization has complicated the application of established categories of each field.

Only very recently scholars have attempted to provide a general conceptualization of the platform, one that made the already existing body of work of different academic fields communicate with each other in the emerging field of platform studies. Besides this field, initially concerned with understanding the feature and technicalities of platform software, the more theoretical attempts to conceptualize how the platform develops can be reconducted under the label of “platform theory”. As discussed by organizational sociologists, there is a growing academic consensus “that the digital age comes along with the distinguishing organizational form of the platform”, but its discussion tends to lack a coherent theoretical

¹ The word has been used for the first time by Anne Helmond in her PhD thesis on *The Platformization of the Web* (2013) in the narrow sense of the transformation of the web with interconnected APIs to allow platforms to more easily collect data.

² This idea of form is presented by Luhmann in many of his writings, in the distinction medium/form. It is based on the mathematical and philosophical elaboration of George Spencer Brown in his *Laws of Form* (1969). A form is a distinction that implies itself; it is the paradoxical and autological foundation for other distinctions to be made. The unity is provided by the fact that there is no platform without the groups forming it, and these groups must be at least two: producers of services and users; users and advertisers; etc.

³In the sense of the non-linear evolution described by Rosenberg, N. (1976). *Perspectives on technology*. See also Greenfield, A. (2017). *Radical Technologies: The Design of Everyday Life*. The most complete positioning of platform capitalism from a historical and explicitly 'braudelien' perspective can be found in Peck, J., & Phillips, R. (2020). *The Platform Conjuncture*. The authors try to counter the tendency of tech-exceptionalism “with its self-regarding technological hubris, its excitable assertions of unprecedented novelty, and its tendency to minimize both historical precedents and constitutive conditions of (co)existence with financialized capitalism”.

framing⁴. In other terms, there is no consensus on the forms of this form. The main finding of this chapter shows that recent academic productions have provided a more precise understanding of what a platform is, but it ultimately remains an ‘umbrella term’, an abstraction needed to indicate fast-changing digital assemblages whose complexity would otherwise be prohibitive for research.

⁴ Rachlitz, K. (2023). *Platform Organizing and Platform Organizations*, 1. Similarly, Langley & Leyshon (2017). *Platform capitalism: the intermediation and capitalization of digital economic circulation*, see the platform as a “discrete mode of socio-technical intermediary and capitalist business arrangement”. Similarly Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, who directly ask “What are platforms as a social organizational form?” (*infra*); Schüßler, E., Attwood-Charles, W., Kirchner, S., & Schor, J. B. (2021). *Between mutuality, autonomy and domination: Rethinking digital platforms as contested relational structures*.

That's the beauty of platforms: they are democratizers. Everybody's welcome.

Anant Agarwal, *A platform for digital education*, Platform Strategy Summit (2017)

3.2 Platformization and management

3.2.1 Creating and extracting value from groups

As we have seen in the genealogy, one of the main branches involved in platform conceptualization is management studies. In the following section, I am going to review some recent management work on digital platforms to achieve the following goals: first, to outline the main economic principles behind the platform economy and especially their notion of value creation, as they are key to understanding the driving logic of platformization; second, to investigate how the management literature frames the relationship between the firm and the platform; third - a question related to the previous one - to show how contemporary management studies have, implicitly or explicitly, adopted a cybernetic and ecosystemic view of the platform. In the final part of the review, I will analyze the platform categorizations offered by management and I will outline their purposes, namely the focus on optimization, profit and innovation for value capture and for outsmarting competitors. I therefore seek to identify the themes tackled and the questions posed by the management literature more than investigating the degree to which their answers can be considered economically sound. In doing so I follow those authors who see the management literature as the “medium offering the most direct access to the representations associated with the spirit of capitalism in a given era”⁵. I consider a discourse analysis of what Steinberg has called “mediation management” particularly relevant because of the proximity and affinity of these scholars to those who have built the platforms and have carried out the financial investment. Moreover, my interest on the management literature depends on the manager’s account of a complex, holistic, anti-mechanist platform view. Managers ask operational questions meant at solving practical problems. The dialectic between platform discourse and platform building is evident in this field: the interest in the study of digital platforms has grown together with their success, while their success has grown together with the discourse around efficiency and economic success.

We can set out by starting with the metaphor used by the management literature: THE PLATFORM AS A MARKETPLACE. In a recent book named *The Economics of Platforms*, economists Belleflamme and Peitz explain that marketplaces as meeting points of traders and consumers have existed for thousands of years:

⁵ Boltanski, L. & Chiapello, E. (2017). *The New Spirit of Capitalism*, 57.

traders and consumers in ancient Greece could find a meeting place in the *agora*, while in the Roman Empire, the *forum* and the *macellum* served as, respectively, open-air and indoor marketplaces. These marketplaces operated under local rules and were not privately run. Meeting places (such as the Roman forum) also served for the exchange of news, which again features network effects because, with more participation, more diverse and more credible news could be obtained⁶.

The authors identify the problem of old, non-organized marketplaces in the fact that they “failed to properly solve coordination problems and asymmetric information problems”, while digital platforms as intermediaries have managed to “provide a safe trading environment, attract key participants with special offers, and make infrastructure investments that facilitate trade or interaction”. In such a way, “they may thus fully or partially replace other forms of markets or institutions; they may also create markets that previously did not exist”⁷. It is worth quoting Belleflamme and Peitz’s use of history for setting the stage of the management discourse:

according to historians, European trade took off at the end of the twelfth century in what is now the North of France, in the county of Champagne. It is in this period that this county started to host regular trade fairs, which lasted for six weeks and rotated among six cities. Merchants came from all over Europe because they were confident that they would meet each other at these fairs. This confidence was instilled by the count of Champagne through his authoritative and clever running of the fairs. Everything was done to provide merchants with a safe and efficient business environment. The count of Champagne actively selected the participants, especially by keeping away dubious businessmen. *Once admitted, all participants were on a level playing field, as the count carefully avoided granting any privilege to anyone.* The fair locations were fortified, and impartial institutions were put in place to enforce contracts and resolve disputes. The count also guaranteed loans and the replacement of cash by notary bills to settle transactions. In exchange for all these services, the count took a small share of each transaction and quickly amassed a fortune. What the count of Champagne started around 1180 is known today as a “platform”⁸.

The authors consider the count (or the city) as the platform and the merchants as the groups that would join it. Their use of the metaphor, as we know, is somehow misleading, as they point

⁶ Belleflamme, P. & Peitz, M. (2021). *The Economics of Platforms*, 20.

⁷ Ivi, 2.

⁸ Ivi, 10. Emphasis added. In here, the total lack to any reference to the political aspect of platform can be seen as a continuation of the discursive attempt that Gillespie had criticized.

at the egalitarian aspect of platforms without mentioning the inherently political rule-setting mechanism that they embody. Moreover, another metaphor used in the economic literature the PLATFORM AS A CATALYST. This metaphor describes the platform business model in relation to its “catalytic value creation” of platforms: if in the chemical catalysis is necessary to get the catalytic agent and the chemical agents in the right proportions to ignite and accelerate a reaction, the same goes for economic catalysis, as “both economic agents have to be present on the platform in the right parts and levels to create any value at all and to accelerate value creation”⁹.

In order to look at the management discourse more closely, however, we shall start from a recent paper that mapped all industry-specific works on digital platforms inside the management literature named *Multi-sided Platform as a New Organizational Forms*¹⁰. This text is the best paper to analyze the management view because it explicitly tries to go beyond industry-specific account of platforms to a more holistic theory “toward platforms as both planned organizational forms and strategic levers by which managers can proactively create and capture value”¹¹.

The starting point of the paper is that seven out of ten of the most valuable companies by market value in 2019 – Apple, Amazon, Alphabet, Microsoft, Facebook, Alibaba, and Tencent - operated as platforms. Here the platform is seen as a special kind of firm participating in the market. For managers, the main difference between a firm and a platform lies in the fact that the latter actually *creates* a market by matching two sides with a set of strategies. In the paper under scrutiny they therefore distinguish the owner of the firm – sometimes called “platform leader” - from the platform itself, which is the organizational form being applied. The emergence of this distinction is relevant, as platforms are not firms, but firms organize themselves as platforms.

What becomes clear by looking at the management literature is that building a successful platform is far from easy. If the platform works, it does manage to allocate resources, services and people in such a way that the platform itself can extract value from the groups managed. However, as managers say, “the biggest downside [of platforms] is the fact that they’re almost

⁹ Evans (2016). *Platform Economics: Essays on Multi-sided Markets*, 50. The same metaphor is also used by Luhmann to describe how power works in modern society as what “makes the improbable probable”. See Luhmann (2017). *Trust and power*.

¹⁰ McIntyre, D.; Srinivasan, A.; Allan, A.; Gawer, A.; Kretschmer, T. (2020). *Multi-sided Platforms as New Organizational Forms*. I will quote the pages from the open access version. I have chosen this paper not only because it is an explicit attempt to bring together something like twenty years of transnational management research, but also because is written by coauthor Annabelle Gawer – a leading scholar in the field, who was also invited by the EU to write the most recent report on the societal effects of platforms. To the best of my knowledge, however, the first to point out the idea of the platform as a new organizational/institutional form had been Bratton, B. (2015). *The Stack*.

¹¹ McIntyre, D. & al (2020). *Multi-sided Platforms as New Organizational Forms*. For an analytical and empirical critique of the ideological bases of the “sharing economy”, see Codagnone, C. et al (2019). *Platform Economics: Rhetoric and Reality in the ‘Sharing Economy’*.

impossible to build”¹². To reduce the complexity, the questions posed by the management literature are normally divided into some broader themes, and management scholars specialized in one at a time¹³.

The first theme can be described as what goes on inside the platform¹⁴ - in systemic term, the platform as an environment - i.e. the most effective way for maximizing value extraction for the owner of the platform. The platform novelty consists in the fact that firms “often need to bring a critical mass of two or more distinct groups of participants together as such” and so “they require unique strategies that allow them to bring multiple sides on board”. The first question thus deals with the array of tactics to get users on board while (from a certain moment onwards) making money out of it: “How can platform firms create maximum value for their users while at the same time capturing some of that value?”¹⁵

The second theme emerges by looking at the intra-capitalist competition in the global market, and corresponds to what is external to the platform – the environment in which the platform operates, which they understand as a competitive environment. The question asked in relation to the platform outside - given that they often involve broader ecosystems of firms – deals with the incentives and outcomes associated with platform firms expanding their scale and scope. While doing this analysis, the platform must worry also about the fact that “the relationship with complementors should remain informal”¹⁶ (one can think about the tasks carried out by employees that have become outsourced to private contractors, in a process of “taskification”). In other terms, the platform needs to avoid formalizing relationships and interactions, because it would remain contractually anchored and it would abandon the possibility of swift change. Based on this need, the second question becomes how such firms can effectively manage a portfolio of complementors when such relationships are frequently not bound by formal

¹² Rothman, S. (2017). *The Vc View of The Platform Market*. In Platform Strategy Summit (2017), 32.

¹³ McIntyre, D. & al (2020). *Multi-sided Platforms as a New Organizational Forms*, 2.

¹⁴ I take the opposition inside/outside from the cybernetics vocabulary, which mirrors the system/environment division.

¹⁵ McIntyre, D. & al (2020). *Multi-sided Platforms as a New Organizational Forms*.

¹⁶ Complementors are businesses that directly sell a products or services that complement the product or service of another company by adding value to mutual customers. They are those who build on the resources of the platform, but also one group of their environment. They have been called “platform-dependent entrepreneurs”, since they generate complements (e.g., applications, functions, interfaces) for the platform. See Cutolo, D., & Kenney, M. (2021). *Platform-Dependent Entrepreneurs: Power Asymmetries, Risks, and Strategies in the Platform Economy*. Van Dijck, J. et al (2018). *The Platform Society*, 20, rightly ask *who complements whom* in the case of complementors: “obviously, connectors are dependent on “complementors”— be it businesses, individual citizens, institutions, or governments— to provide the necessary content and services to run their businesses. Uber needs individual drivers with cars. Airbnb needs individual homeowners with real estate. Facebook needs news organizations to produce (accurate) articles. Coursera needs universities with teachers.”

contracts, and the answer is investigated in relation to the degree of heterogeneity of the various sides¹⁷.

The third theme that emerges deals with the ever-changing role technological change and its temporal implementation. The question related to this topic deals with how the platform competitive dynamics change as underlying technologies evolve over time. In the following subparagraphs, I am going to discuss these themes in more detail.

3.2.2 Economic principles: multi-sided business model, network effects, cross-subsidiarization

The most important managerial and economical principle – and the first to be researched¹⁸ – is the multi-sided nature of the platform. In the platform inside there are at least two groups with matching interests: product developers and users; users and advertisers; hosts and costumers. As more users join the platform, the incremental benefit gained by an existing user for each new user that joins the network also increases. This principle, called “direct network effects” (or same-side effects)¹⁹ occurs when the value of a service increases as the number of users goes up. As network effects were already present in telecommunication markets, we may take the telephone as an example: the more people use phones, the more useful it is to own a phone because more people can be reached. In the case of “indirect network effect” (or cross-side effect) there are two or more user groups exchanging value with one another. If we take app developers and smartphone users as an example, as new users join the network, the value for developers also increases, because more people can download their apps. In the case of delivery platforms, the more riders join the platform, the more useful and valuable it is to drivers offering deliveries, creating a feedback loop²⁰. When platforms are designed in such a way to achieve positive feedback loops, the classical trade-off between quantity and quality may fade away,

¹⁷ McIntyre, D. & al (2020). *Multi-sided Platforms as a New Organizational Forms*.

¹⁸ Rochet, J.C. & Tirole, J. (2003) ; Rysman, M. (2009). *The Economics of Two-Sided Markets*, 127 suggests that in a technical sense, the literature on two-sided markets could be seen as a subset of the literature on network effects.

¹⁹ A more precise definition can be found in Bellefemme, P. & Peitz, M. (2021). *The Economics of Platforms*, 10: “network effect describes the impact that an additional user of a product or service, or an additional participant to some interaction, has on the value that other users or participants attach to this product, service, or interaction. When users belong to the same group, one talks of within-group or direct network effects”.

²⁰ Note the cybernetic origin of the idea of network effects, which is based on the concept of “feedback loop” and circularity of causality. Based on the work of Norbert Wiener, a feedback loop is a circular arrangement of causally connected elements, in which an initial cause propagates around the links of the loop, so that each element has an effect on the next, until the last “feeds back” the effect into the first element of the cycle. The consequence of this arrangement is that the first link (“input”) is affected by the last (“output”), resulting in self-regulation of the entire system, as the initial effect is modified each time it travels around the cycle. In a broader sense, the feedback idea has come to mean the conveying of information about the outcome of any process or activity to its source Capra, F. & Luisi, P. L. (2016). *The System View of Life*, 89. For the history of feedback though see Richardson, P. (1991). *Feedback thought in social science and system theory*.

giving rise to what have been called “attraction loops” and “attraction spiral”²¹. To go back to the example of app developers, if there are many developers producing good apps on a given platform more consumers will be drawn to that platform and will go out and buy phones. As the number of phone users grows, more and more people will learn how to develop apps to jump on the market demand, thereby opening the doors to a wider array of apps.

Hence, network effects are the second economic principle of digital platforms. This principle is considered together with the cost of joining a network²². In order to join a network, a hardware such as a smartphone is needed; it is only “when a platform attains a critical mass of users” that “the cost of joining the platform is outweighed by the value of joining, with most of that value being derived from the power of the network”²³. Prior to critical mass, the cost of joining is greater than the value derived from joining, so the platform will need to employ strategies to incentivize early usage, such as subsidizing initial user acquisition²⁴.

Based on these economic principles, the operational questions asked by the management literature deal with finding the right balance between trade-offs of the various sides. The first question asked deals with which side to charge to make profit, and it is related to the more general choice of the pricing strategy to be adopted. In building a multi-sided platform based on network effects, before aiming for positive feedback loops, one needs to overcome a trade-off known as the “chicken and egg conundrum”²⁵. The problem lies in understanding which one of the two groups creates value (the chicken) and which one shall be charged (the egg), as well as which one should be attracted first to the platform. The manager will need to make a guess; if it will be rightly put, in fact, the participant of one group of users will draw the attention of other users from the same group and attract the opposite side²⁶. This problem comes together with the revenue model adopted by the platform and how to switch from one to the other, or how to combine them. For instance, the advertising revenue model “may exploit the network effect property of the platform by subsidizing the more price-elastic side to increase the size of the

²¹ An attraction spiral takes place “if a higher activity level in one group makes it more attractive for the other group’s members to increase their activity level and vice versa, such cross-group effects give rise to an attraction spiral”. Bellefemme, P. & Peitz, M. (2021). *The Economics of Platforms*, 12.

²² However, it is important to note that not all platforms are subjects to network effects. See the lucid analysis of Knee, J. (2021). *The Platform Delusion*. Knee identifies what he calls the four ‘pillars of the platform delusion’, commonly believed sentences that may not be true as we think. According to his economic analysis, digital platforms are not necessarily structurally superior to analog platforms; not all platforms exhibit powerful network effects and network effects do not lead inexorably to winner-take-all models.

²³ Srnicek, N. (2017). *Platform Capitalism* cp. 2. According to Srnicek, with network effects a tendency towards monopolization is built into the DNA of platforms.

²⁴ Srnicek, N. (2017) *Platform Capitalism*, cp. 2. Ebook.

²⁵ This problem was initially formulated by Rochet, J.C. & Tirole, C. (2003). *Platform Competition in Two-Sided Markets*.

²⁶ Nguyen, H. (2017). *Solving chicken and egg dilemma in online platform startup: value proposition in focus*, 29.

network, while charging the more price-inelastic side for the right to interact with the other side”²⁷. Other revenue models considered in the management literature are the “razor and blade” model, the freemium model, and licensing model²⁸.

This leads to the third economic principle used by platforms, which is cross-subsidization. In this case, the platform business model really diverges from classical economic theory and shows a more holistic approach to the management of the ecosystem. Cross-subsidization takes place when one arm of the firm reduces the price of a service or good - even providing it for free or below marginal cost²⁹ - but another arm raises prices in order to make up for these losses³⁰. It was Rochet and Tirole initially that first showed that optimal pricing strategies in platform markets could entail pricing below marginal cost to one side and above marginal cost to the other side³¹.

To further increase the degree of complexity, the question of which business model should be adopted also depends on the *quantity* and the *moment* of value extraction: how much and when to charge and how much and when to subsidize are strategic choices that need to calibrate risk-taking. To this, I would add that if the platform under consideration is a public entity, subsidization does not have to seek monetary gains, but it can be used only for attracting citizens to the platform³². As reported by McIntyre et al, in a more recent generation of management studies, the focus is shifting towards “dynamic pricing strategies”: for instance, during “rush hours” Uber charges more because demand is high.

Another relevant economic aspect is that platform firms compete with each other offering equivalent services. Since platforms need to reach and maintain a critical mass of users for being profitable, competition is based on convincing users to switch sides. In order to prevent it, the management literature has investigated how to increase the possibilities of lock-in of the users or service providers by creating switching costs, which is, “to make it costly for users of a focal platform to switch to another platform”.³³ One of the strategies involves the lack of reputation

²⁷ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 9.

²⁸ The “razor and blades” is a business model in which one item is sold at a low price (or given away for free) in order to increase sales of a complementary good, such as consumable supplies. For example, inkjet printers require ink cartridges, and video game consoles require accessories and software. The freemium business model a company offers basic or limited features to users at no cost and then charges a premium for supplemental or advanced features.

²⁹ See Evans, D. S. (2003). *Some Empirical Aspects of Multi-sided Platform Industries*.

³⁰ Srnicek, N (2017). *Platform Capitalism*.

³¹ Rochet, J.C. & Tirole, J. (2003). *Platform Competition in Two-Sided Markets*.

³² See the example of the Italian app of public services named “IO.it” that I discuss in Cristofari, G. (2023). *Bratton and the double movement of state platformization and platform institutionalization*, where citizens were paid to download the app and several gamification strategies and nudging techniques were applied.

³³ McIntyre, D. & al (2020). *Multi-Sided Platforms as new Organizational Forms*, 11. The problem of trust creation has been researched also by more sociological literature. For some case studies and for the “trust pyramid” see Lobel, O. (2016). *The Law of the Platform*, “System of Stranger Trust”, 146 - 156; for an

portability and, more generally, the problem of trust portability between platforms. A platform usually induces members of both sides to rate each other to signal trustworthiness, and if the platform owner prevents users from taking their ratings with them when they switch to other sites, “it is building an additional switching cost for the user, since a user that switches have to build a new reputation on a new platform”³⁴. Ultimately, users will not leave the platform because they don’t want to restart their identity and reputation-building from scratch. An example can be found in the case of Microsoft Office, in which “Microsoft benefited from significant switching costs for users of their Microsoft Office suite due to users’ significant investments in learning, and the ubiquity and need for compatibility with the Windows operating system”³⁵.

From the perspective of users, it also makes sense to multi-home, which is to say to work and be affiliated with more than one platform at the same time. For example, Uber and Ola are both taxi-like services. Multi-homing can be a problem for the platform, as it tends to mitigate opportunities for value capture. For example, if a seller on eBay multi-homes, eBay loses out on the commission on the items that the seller sells on another auction site. Even if we look at it from the sides of multihoming complementors, the result would be to reduce a “platform’s scope for competitive differentiation”, as competing platforms offer the same, or similar, complements. For these reasons, “platforms may be motivated to buy exclusivity from complementors, i.e. to offer especially valuable complementors better conditions or privileged access in return for exclusivity”³⁶.

But strategies for value capture are only one part of the equation, as value derives from the difference between revenue benefits and the costs of generating and monetizing the benefits. Therefore, another obvious imperative of the platform is to keep costs low. The problem, in this case, deals with how to balance the tradeoff between lower infrastructure costs with higher coordination costs. The infrastructure can be owned or rented to reduce costs, while the crowdsourcing business model can create value while keeping costs very low. Crowdsourcing takes place when the platform, rather than performing a task by itself or contracting it to a

investigation of trust creation see the work of Gandini, A. (2016). *The Reputation Economy. Understanding Knowledge Work in Digital Society*; Bodó, B. (2020). *Mediated Trust: A theoretical framework to address the trustworthiness of technological trust mediators*; for a more historical account, Bodó, B. (2021). *The Commodification of Trust*. On trust from a sociological perspective see Giddens, A. (1990). *The Consequences of Modernity*; for the societal function of trust as a mechanism for reducing complexity see Luhmann, N. (2017). *Trust and Power*.

³⁴ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*.

³⁵ Ivi, 11.

³⁶ Ivi, 12. For instance, this has been the case with TikTok and its star influencers. See Stokerl-Walker, C. (2021). *Tiktok Boom: China's Dynamite App and the Superpower Race for Social Media*.

designated contractor, outsources the task “such that anyone anywhere can self-select and perform the task with no *ex ante* contract”³⁷.

3.2.3 Platform’s scale and scope

Two others important principles explored by the management literature applicable to digital platforms corporations are economies of scale and economies of scope³⁸. Generally, economies of scale are efficiencies formed by volume. In the case of platforms, there are economies of scale when “the high up-front investment and fixed costs of creating services are coupled with low or near-zero marginal costs of additional users”³⁹. For example, Facebook could expand exponentially from a few million users to 2.4 billion in slightly over a decade. On the contrary, economies of scope are efficiencies formed not by volume, but by variety. A company may benefit from selling different products - like coffee at the gas station. A platform can also operate simultaneously across adjacent markets, for instance by “sharing and merging consumer data and sharing branding, supplier relationship, or technical expertise”. As such, economies of scope are one reason why “the same small number of large digital platform companies have successfully built ecosystems across several adjacent markets”⁴⁰.

The questions identified here range from why and how platforms should expand their scope to the adoption of a dynamic view on the drivers and the consequences of shifts in platform boundaries. In this regard, there are two major themes identified in the management literature. The first is concerned “with the expansion of the scope of the platform-owning firm”, while the second is concerned “with the opening up of technological interfaces and rules of access to the platform”⁴¹. When a platform is launched (or a new version of the platform is launched) there is a need to offer complements on one side of the platform in order to attract users on the other side of the platform. For instance, the console Nintendo offered some games at launch, and Apple “provided few bundled applications that it had developed in-house, including a web browser

³⁷ McIntyre & al (2020) *Multi-sided platforms as new organizational forms*, 13.

³⁸ Choudary, P. (2015). *Platform Scale: How an Emerging Business Model Helps Startups Build Large Empires with Minimum Investment*, distinguished between three layers of platform thinking: a network or community layer, which consists of platform participants and the relationships between them; an infrastructure layer, which is made up of software tools, rules and services; and third, a data layer, which allows the platform to attempt to match supply with demand. See especially section 1.4 “*The Platform Stack: A Framework to Explain All Platforms*” (Ebook 16%). To this we could add also what Shoshanna Zuboff calls, in relation to behavioral surplus, economies of action: “behavioral surplus must be vast and varied, but the surest way to predict behavior is to intervene at its source and shape it. The processes invented to achieve this goal are what I call *economies of action*. In order to achieve these economies, machine processes are configured to intervene in the state of play in the real world among real people and things. These interventions are designed to enhance certainty by doing things: they nudge, tune, herd, manipulate, and modify behavior in specific directions [...]”. Zuboff, S. (2019). *The Age of Surveillance Capitalism*, 193-194.

³⁹ Gawer, A. & Srnicek, N. (2021). *Online Platforms: Economic and Societal Effects*, 30.

⁴⁰ Ibidem.

⁴¹ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 14.

(Safari), Mail, Photos, iTunes, Notes, Contacts, and Calendar”⁴². As to the first theme (expanding platform scope) an important concept is platform envelopment⁴³, which occurs when competing platforms want to overcome entry barriers. Envelopment “entails entry by one platform provider into another’s market by bundling its own platform functionality with that of the target’s, to leverage shared user relationships and common components”. Platform envelopment, therefore, affects the scope of the platform, which extends into other markets⁴⁴. A platform monopolist can also use strategies known as “tying” (when a product cannot be sold without another product) of a good subject to network effects in a newly emerging complementary market to expand its monopoly to another complementary market.

Another technique used by digital platforms is the possibility to work on the degree of openness and closure of the interface⁴⁵. The examples range from open to close and from close to open. For example, a platform like Apple decided to selectively close its interface to Adobe’s Flash player in 2010. CEO Steve Jobs publicly explained that the main reason was a refusal to become dependent upon a third-party, so that Adobe could not decide “if and when they will make our enhancements available to Apple’s developers”⁴⁶. Similarly, in 2012 Twitter changed its application programming interface (API)⁴⁷, “preventing users’ Tweets from appearing on the rival social networking platform LinkedIn (previously perceived as a complementor), as an attempt to cease adding value to LinkedIn and therefore stop fueling the growth of LinkedIn with Twitter content”⁴⁸. On the contrary, platforms may decide to turn the interface from closed to open, as it is usually the case. As shown in the digital labor literature, platforms benefit from third parties’ innovation, when they are not completely dependent on it. Studies have found that opening up platform’s interfaces stimulates the generation of innovation by external complementors, since complementors also start competing with each other⁴⁹. The necessity to keep open or closed platforms translates into a trade-off between control and maintaining the

⁴² Ivi, 15.

⁴³ Eisenmann, T. et al (2011). *Platform envelopment*. Curious to note that envelopment is a military term.

⁴⁴ Eisenmann, T. et al. (2011). *Platform Envelopment*, make a distinction on whether the “target” market is a complement, a substitute, or unrelated.

⁴⁵ For a more detailed analysis see Eisenmann, T. R., Parker, G., & Van Alstyne, M. W. (2009). *Opening platforms: how, when and why?* In Gawer, A. (2009). *Platforms, Markets and Innovation*. See also Benlian, A., Hilkert, D. & Hess, T. (2015). *How open is this platform? The meaning and measurement of platform openness from the complementors’ perspective*.

⁴⁶ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 18.

⁴⁷ An application programming interface (API) is an interface that connects computers or pieces of software to each other, as opposed to the user interface, and that allows flows of data between them. See the paragraph on software studies for a more detailed explanation.

⁴⁸ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 18.

⁴⁹ Boudreau, K.J. (2010). *Open platform strategies and innovation: granting access vs. devolving control* examined over 14 years the evolution of complementary innovation associated with mobile handheld platforms. He found that granting greater levels of access to platform complementors (in this case independent hardware developer firms) resulted in up to a five-fold acceleration in the rate of new handheld device development. This depends on the competition between complementors. See McIntyre, D. et al (2020) *Multi-sided platforms as new organizational forms*, 19.

coordination among the system. In their analysis entitled *Opening platforms: how, when and why?*, Eisenmann and his colleagues reviewed the research on factors that motivate managers to open or close mature platforms” focusing “on a subset of platforms: those that exploits network effect by mediating transaction between platforms users”⁵⁰. They defined an open platform as follows:

A platform is ‘open’ to the extent that: (1) restrictions are not placed on participation in its development, commercialization or use; and (2) any restrictions – for example, requirements to conform with technical standards or pay licensing fees – are reasonable and non-discriminatory, that is, they are applied uniformly to all potential platform participants.

Moreover, according to McAfee and Brynjolfsson, who analyzed Apple’s opening, opening a platform provide several economic benefits, such as an increase in consumer surplus, an increase of selling of complementary products, the gathering of data about apps and preferences, and new revenue opportunities⁵¹.

It is important to note that the strategic decision on how to structure the platform internally has at least two characteristics according to the literature examined. First, they are dependent on the larger ecosystem, so they integrate with the other strategic decisions already listed; second, they must be understood not as fixed, but in temporal and processual terms. As McIntyre and colleagues write,

the issues of drivers of investment incentives and control of critical assets across the ecosystem are dynamic issues that require more research on the identification of the multiple ways in which platform owners govern their ecosystem and specifically how they manage the various platform sides⁵².

Finally, the last theme relevant in the analysis of platforms scope is the role played by merger and acquisition. The history of what nowadays are the major global platforms is characterized by a great number of acquisitions; the start-up mentality aspires at creating the so-called “unicorn that disrupts the market in order to sell it to larger platforms for a considerable price. The other side of this coin is the widespread use of “killer acquisitions” - acquisitions with the

⁵⁰ Eisenmann, T. R. et al (2011). *Platform Envelopment*, 131.

⁵¹ McAfee, A. & Brynjolfsson, E. (2017). *Machine, Platform, Crowd*. Ebook, 40%.

⁵² McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*.

sole intent of taking the target out of business – which have been raising concerns of regulators, together with the role of data acquisition to raise barriers to entry⁵³.

3.2.4 Heterogeneity among platform sides

McIntyre and colleagues identify another peculiar problem posed by the platform organizational form in the fact that the groups (or sides) to be mediated present a fragmented nature. This means that

while it is not uncommon that consumers tend to be highly fragmented and heterogeneous in their preferences, many platforms, most notably “sharing” platforms, will have entrepreneurial providers or even individuals contributing complements to the platform. This fragmentation tends to change the supply dynamics, as contracts with bilateral bargaining between strong partners are less likely to dominate⁵⁴.

For these reasons, they raise questions such as what kinds of complementors the platform owners want to attract to their platforms, and the strategies involved with such a goal. The problem is again understood in processual terms; how to achieve the “right mix or balance of complementor heterogeneity to drive success?”⁵⁵ The answer to these questions is complex, and the authors denounce the lack of the right toolbox for such a purpose. The instruments available for the platform managers are the usual economic incentives and nudges⁵⁶. As we have seen, the platform is dependent on third parties and users as much as third parties depend on the platform, because a platform is the entity that makes them come together in a controlled environment. Consequently, if a complementor “tightly coupled” to the platform becomes successful, the platform itself will benefit for it. In order to do it, the complementor needs to align their knowledge and routines around a given platform’s architecture. This is a good thing for platform owners, as this alignment makes them more dependent to the platform and makes it harder to migrate to competing platforms. The famous case of Facebook’s complementor Zynga games illustrate this point: its games were designed to work specifically only inside

⁵³ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 21. See chapter 4 for the antitrust analysis.

⁵⁴ Ibidem.

⁵⁵ Ibidem.

⁵⁶ Nudging is defined as “any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives” See Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions about Health, Wealth, and Happiness*, 6.

Facebook. As it came to be used by Facebook' users, the success of Zynga's game accounted for about 15% of Facebook's revenues⁵⁷.

To recap, the management literature on the heterogeneity of platform sides shows how for a platform is not only about the *quantity* of the relationships established with complementors, but also about the *quality* of them, as they can determine the extent to which a platform continues to thrive. Focusing too much on quantity may lead to negative results, as "the overcrowding of platforms with complements can lead to the availability of many poor-quality complements, which in turn can negatively affect the user experience and subsequently the dominant position of the platform"⁵⁸. For the management view, the central point is therefore not so much about managing one single complementor as much as creating an ecosystem in which several complementors can be successfully managed. Hence, an emerging line of research focuses on the platform-complementor interaction⁵⁹.

Another key driver of platform success can be found in the choices that the platform makes about its architecture to achieve a competitive advantage. Platforms are supposed to be built to benefit from indirect network effects so that third parties "consciously align their products with the platform's architecture"⁶⁰. This has led to the creation of toolkits called software developer kits (SDKs) for complementors that need access to specific technological resources to be able to successfully launch complementary products and cope with the complexity of these settings. The platform thus creates a system for providing the necessary knowledge to complementors. It also provides "training, interface guidelines, and libraries of common modules that new ventures can use in their applications"⁶¹. As such, the stronger the relationships that platforms can establish with complementors through the provision of these resources, the higher the likelihood of receiving preferential advantages from complementors in the form of superior or exclusive complements.

3.2.5 The dynamic role of technology

⁵⁷ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 22.

⁵⁸ Boudreau, K. J. (2011), quoted in McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 22.

⁵⁹ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*. Again, here there is a pretty direct link with the idea of cybernetic governance, intended as the science of controlling the environment. As such, platforms make investments in generating an ecosystem of complementors, who in turn devote resources to support one or more core platforms.

⁶⁰ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 25. For the architecture of platforms, their three key elements are: core components with low variability, complementary components with high variability, and interfaces for modularity between core and complementary components. Baldwin, C.Y. & Woodward, C.J. (2008). *The architecture of platforms: a unified view*, 8-9. See also Kelkar, S. (2018). *Engineering a platform: The construction of interfaces, users, organizational roles, and the division of labor*.

⁶¹ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 26.

To further complicate all these considerations on platform economic principles, management strategies and governance mechanisms, the management perspective values the impact and introduction of new technologies over time. All incentives and tactics can be of little use if the dynamic nature of many platforms is not considered, because competition can change every time technologies progress opening new possibilities. The questions asked here deal with identifying the key technological parameters that determine the success of a platform and the optimal rate of technological progress of platforms in a dynamic environment. Accordingly, the management view focuses on the platform agency vis-à-vis technological change. The premise is that, to a certain extent, some decisions fall under the scope of interventions of the platform. In other terms, when it is the platform itself that introduces technological changes, that introduction can be the object to strategic choices about how the new technology will influence end-users, complementors and complementor's markets. While a better baseline technology is generally associated with a more successful platform (especially if the platform is in competition with others of similar or lower quality), studies conducted in PC games market showed a higher complexity. The problem arises both in terms of technological quality and technological complexity, because a higher quality baseline technology "will attract better complements on average, it also imposes a higher cost of investment on complementors, creating entry barriers for them". Moreover, consumers "may not have access to the latest baseline technology, which then implies that not all complements are available to all consumers, reducing the market size for some complements"⁶². In other terms, if a new technology is introduced by the platform, it is not automatic that complementors will keep up with it. When the technological complexity increases in context of multihoming complementors, the cost of producing a complementary product also increases. This can lead to "change the structure of complements to contain fewer, but higher-quality complements as the higher costs have to be justified by higher revenues"; but this also means to invest more specifically in one type of architecture rather than a generic one.

As for platform's improvements, the problem again becomes that of figuring out when and how to introduce them. Platform improvements are often introduced in batches and at discrete time intervals in order not to resent users with constant updates and new functionalities. Consumers and complementors desire compatibility with their existing platform generation, and the fixed costs of the new technology should not be higher than the expected benefits of launching it⁶³. For managers, the relationship with complementors can be managed through the introduction of new technology by limiting the information they gave to third-party software developers. However, the case of Windows shows how this may come with a trade-off: limiting information "may have strengthened the market position of, say, the Microsoft Office Package", but it "may

⁶² McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*.

⁶³ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 30.

have come at the cost of lower variety and complementarity of third-party software with the platform product itself”.

As digital platforms compete with each other, other scholars have investigated the functional and technical innovation in the attempts of “platform overthrow”, which are “situations in which a platform leader loses its architectural control of the platform for the profit of a challenger that, initially, is strategically weaker”⁶⁴. The premise is that even when a platform manages to consolidate its ecosystem acting as a sort of environmental monopolist, it still has to worry about other platforms’ attempts to overthrow it. Consistent with the eco-systemic nature of the metaphor, the authors see the attempt of overthrow as a fight between the platform leader (owner) and the platform challenger. In order to carry on the attack, the latter can use two methods: first, it engages in functional expansion by introducing “new functions that are neither an optimization nor a combination of existing functions” (new services); second, it tries to “increase the genericity of their technical core”. That is to say that the challengers “change their technical core in order to increase its capacity to address many existing and emerging functions and create value across a broad range of applications”⁶⁵. In this sense, the authors conclude, platform ecosystems present a stability in the presence of a monopolist (the “winner take all” effect) but not necessarily in who is the monopolist.

To recapitulate, the questions asked by the management literature can be divided in three main lines of research platforms studies: the platform perspective (that I have called the platform inside), the firm perspective, the ecosystem perspective. The more traditional “platform perspective” is the one focusing on network effects and value creation for the groups involved, as well as managing the relationship with complementors. Its emphasis “has been on explaining the existence of direct and indirect network effects in diverse settings, and the subsequent emergence of dominant technological standards”⁶⁶. Distinguished from this perspective is the “firm perspective”, which focuses on “platform leadership, ranging from platform firms’ decisions around optimal entry timing, to pricing strategies and platform feature and quality considerations”. This perspective initially dealt with the quantity of users, but it is now focusing

⁶⁴ Thomas, M. & al (2021). *The future of digital platforms: Conditions of platform overthrow*. Among the 27 cases analyzed in the paper, 15 resulted in a success and 12 in a failure. For similar studies on competitions among platforms see also Zhao, Y. et al. (2020). *The evolution of platform business models: exploring competitive battles in the world of platforms*.

⁶⁵ Thomas & Al (2021) *The future of digital platforms: Conditions of platform overthrow*, 81. The authors aimed at challenging the straightforward models of platform dynamics for which establishing a “healthy” ecosystem for the platform is sufficient to keep control of it. Instead, several studies on platform ecosystem evolutions based on empirical observations now point out “that industry platforms are dynamic structures that experience different stages over time”. Other scholars have identified the reasons for platforms decline and fall in several “failure to optimize openness; failure to engage developers; the failure to share the surplus; failure to launch the right side; failure to put critical mass ahead of money; failure of imagination”. Alstyne, M., Parker, G. & Choudary, P. (2016). *Six Reasons Platforms Fails*.

⁶⁶ McIntyre, D. & al. (2020), *Multi-sided platforms as new organizational forms*, 4-5.

on “a more nuanced view, illustrating that developing loyalty or strong ties among users may be more relevant considerations than the total number of users in creating platform value”⁶⁷. The third line of research is the “ecosystem perspective” that deals with “the types of complementarities amongst ecosystem members”. The problem here is that “of the optimal openness of the platform in influencing their ability to attract third-party complementors”. Studies of strategic interactions with complementors have recently incorporated a more dynamic view of platforms, acknowledging that effective strategies around complements - made of changes in the technological architecture and in the governance principles - may evolve as platforms mature⁶⁸.

I believe that all the above-mentioned lines of research (the platform, the firm, the ecosystem) are necessary for understanding what platforms do. It should be noted that here platforms are treated as the organizational form and the company as the owner when they write that “increasingly, companies such as Microsoft, Uber, Netflix, GE and others recognize the importance of platforms”⁶⁹. In this sense, the focus is more on the platform as a form than on the nature service being organized. What was previously peripheral to the service has become its core⁷⁰. However, even if isolating a particular element can be useful for understanding which strategy to adopt in a particular moment, McIntyre and colleagues rightfully point towards the shift of studying the dynamic nature platformization as an evolving process that considers several ecological pressures⁷¹. The way of reasoning goes as follows: the process of building a platform must include the creation of a market *ex nihilo* in which a societal need – previously organized offline or with means others than the platform model – gets platformed. This space of interactions between groups and competition between individuals it is also the space of their

⁶⁷ McIntyre & al. (2020) *Multi-sides platforms as new organizational forms*, 5. In other words, as the Airbnb CEO have put it, the focus is on building a safe community for users: “I think one of the things that makes Airbnb a bit different from other technology companies is that at other technology companies the product is something you can hold in your hand - It’s a piece of software. Our product is our community. It’s you. It’s people”. Airbnb (7 March 2017). *Celebrating Our Community*, Youtube video, quoted in Muldoon (2022). *Platform Socialism*, 44. We may recall a relevant distinction between community (*Gemeinschaft*) and society (*Gesellschaft*), introduced by Ferdinand Tönnies, that saw communities as “comprehensive social institutions that penetrate all areas of life, endowing them with meaning”, while modern society is characterized by the “functional separation of sectors and spheres, and the individual is freed from multifarious relationships”. Stalder, F. (2018). *The Digital Condition*, 81-82.

⁶⁸ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*.

⁶⁹ McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*: 22.

⁷⁰ Mazzucato, M. (2018). *The Value of Everything: Making and Taking in the Global Economy*, 202.

⁷¹ It is interesting to note that the management literature therefore indirectly applies the distinction system/ environment (Umwelt). Environment or “Umwelt” as described by von Uexküll. I here use it in the sense imported from system theory by Niklas Luhmann. For Luhmann, the universalist claim of system theory is that it can be applied to anything: from a card game to the functioning of contemporary society. On the most basic level it implies looking at any phenomenon through the division system and environment, where the environment is always more complex than the system. However, as complexity increases over time, the system becomes the environment in which new systems are created, in a process known as functional differentiation. For a discussion of the “epistemological status” of system theory see Zolo, D. (1983). *Autopoiesis, autoreferenza, circolarità: un nuovo paradigma della teoria dei sistemi?*

management and government - an environment inhabited by the different groups that shall be controlled according to certain techniques and strategies. However, outside the platform needs to participate in the broader capitalist market, where other firms or platforms offer a similar service. In that case, the platform is then seen not as the environment, but as the system participating in the competitive logic of the broader environment of the capitalist market.

3.2.6 Management definition and categorization

We can now report the definition given by McIntyre and colleagues of the platform business model, which strikes as clear and simple:

A platform business model is a set of activities for building resources and using them to generate, deliver, and monetize the benefits that users perceive in the platform—that is, the set of activities for creating and capturing value on the platform⁷².

Other management definitions are consistent with it. Belleflamme & Peitz – whose focus is on network effects - define platforms “as facilitators of interaction and trade and, more specifically, as managers of network effects”, and the platform as “an entity that enables interactions between users so as to generate value from these interactions”. For them, the two central issues of for-profit platforms are (i) how to create value for participants and (ii) how to manage interaction or trade on the platform⁷³.

The second takeaway of the management literature is their categorization of platforms business model. Gawer and Cusumano initially proposed a categorization between two main types of platforms. In 2015 they still conceded that, even among managerial research on platforms, “there is considerable confusion [...] as to what the term ‘platform’ refers to in practice”⁷⁴. For a more shared understanding of platforms, they proposed to categorize between *product* platforms and *industry* platforms. They report that the first popular use of the term platform was used “in relation to product development incremental innovation around reusable components or technologies”. They referred to *product platforms* as “a firm, either working by itself or with suppliers, [that] can build a family of related products or sets of new features by deploying these components”. In this broad sense, a product platform could refer to automobiles, consumer electronic devices, and even supply chains. On the contrary, *industry platforms* were defined as “products, services, or technologies developed by one or more firms, and which serve as foundations upon which a larger number of firms, organized in an ecosystem, can build further

⁷² McIntyre, D. & al (2020). *Multi-sided platforms as new organizational forms*, 9.

⁷³ Belleflamme, P. & Peitz, M. (2021). *The Economics of Platforms*, 6.

⁷⁴ Gawer, A. & Cusumano, M. (2015). *Business Platforms*, 37.

complementary innovations and potentially generate network effects”⁷⁵. The authors used to include in this category “Microsoft Windows and Linux operating systems; Intel and ARM microprocessor designs; Apple’s iPod, iPhone, and iPad designs along with the iOS operating system; Apple’s iTunes and App Store; Google’s Internet search engine and Android operating system for smartphones; social networking sites such as Facebook, LinkedIn, and Twitter; video game consoles” and even “the Internet itself”. What is common in these two categories is that “they provide a foundation of reusable common components or technologies”, but they differ in the design rules that they follow and on the degree of openness (that can change over time). According to Gawer and Cusumano, an industry platform is not “master designer” or assembler, but it starts with a “core component that is part of an encompassing modular structure, and the final result of the assembly is either unknown *ex ante* or incomplete”. By the same token, the end-use of the end product or service “does not seem to be fully predetermined by the platform owner”⁷⁶. This is consistent with Beer’s idea of the manager as a designer that continuously reshapes the structure according to environmental changes.

Gawer, Cusumano and Yoffie later changed the categorization to make it even more general and with some typologies based on *how platforms create value*⁷⁷. They now distinguish between:

- 1) Transaction platforms;
- 2) Innovation platforms;
- 3) Hybrid platforms.

Transaction platforms “facilitate transactions between many individuals and organizations that otherwise would have difficulty finding or transacting with each other and that capture and transmit data, including personal data, over the internet (e.g., Tmall, Google Search, Amazon Marketplace, MercadoLibre)”. They reduce search and other transaction costs for billions of users, customers, and providers. Second, innovation platforms “serve as a technological building block on top of which innovators can develop complementary products or services (e.g., iOS, Google Android, Linux)”. Other examples of innovations platforms spams from *force.com* (from *Salesforce*), *Azure* (*Microsoft*), *AWS* (*Amazon*), and *iOS* (*Apple*)⁷⁸. Third, hybrid platforms “combine characteristics of innovation platforms and transaction platforms. Google, Amazon, Microsoft, Apple, Facebook are all hybrid platforms”.

⁷⁵ Ivi, 38.

⁷⁶ Ivi, 39.

⁷⁷ Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power, 19 -20.

⁷⁸ Ivi. For a discussion of the importance to distinguish between innovation and transaction platforms, see Rachlitz, K. (2023). *Platform Organising and Platform Organisations*, 14 -16.

The analysis carried out have shown that management practices are not limited to the internal management of a company, but they take the entire social field as its site of managerial control. For Steinberg, this is the true reason platforms not only become ubiquitous but also extend their control over entire societies, leading to platform capitalism as such⁷⁹. This is not only because society produces content or data by using platforms and interacting in them, but also because in so doing they “literally form part of the production process, at the very moment they enter into one of the multisided markets that platforms generate”⁸⁰. In this sense, as we shall see in the next paragraphs, management scholars agree with Marxists political economists on the description of the platform: it is an infrastructure for creating and extracting value. Only their normative evaluation diverges⁸¹.

⁷⁹ Steinberg, M. (2019). *The Platform Economy*, 96.

⁸⁰ Steinberg, M. (2019). *The Platform Economy*, 124.

⁸¹ “Even if platforms provide many of their services for free, not only this does not imply that we are moving beyond capitalism, but, on the contrary, it means that Capital has found ways to increase the amount of unpaid work. This, and not a post-capitalist horizon, is what emerges from free digital labor” Miconi, A. & Marrone, M. (2021). *Digital Surplus: Three Challenges for Digital Labor Theory*, 45.

3.3 Platformization and software studies

3.3.1 The affordances of computation: themes and lexicon from software studies

A second research field that has been involved in researching and theorizing platforms is software studies, which was born within the media studies field. Digital platforms are in fact made by technical components which allows the orchestration of the human components of the platform, and those technical components are formed by hardware and software. Hardware (computers, data centers) is the material precondition of the platform' functioning, but platforms as application creates a detachment from hardware because exclusively run on software⁸². The importance of software in the organization of everyday life can be hardly overestimated: one early example of the consequences of malfunctioning of software can be found in the legendary "millennium bug" in 1990, which triggered a wholesale overhaul of software systems in many nations and resulted in devastating economic losses for both governments and businesses across the world. There is also a distinct *spatiality* of software that nowadays plays a central role in the organization of the world, so that code and space are now mutually constituted. For Kitchin and Dodge, new modes of governance and empowerment arise as "the production of space is increasingly dependent on code, and code is written to produce space". A significant example of how space is produced by software can be found in the check-in area at an airport. If the software crashes, the area reverts from a space in which to check in to a fairly chaotic waiting room. There is no other way of checking a person onto a flight because

⁸² Edwards, P. (2021). *Platforms are infrastructures on fire*, 318, which corresponds with a layering phenomenon commonly observed in computing: software depends on and operates within hardware, yet it can be described and programmed without any knowledge of or even any reference to that hardware. Higher-level applications are built on top of lower-level software such as networking, data transport, and operating systems. Each level of the stack requires the capabilities of those below it, yet each appears to its programmers as an independent, self-contained system. Historically, one important moment in the separation of software from hardware was IBM decision – prompted by antitrust court actions in 1968 - to split its software section off from its hardware section. In such a way, software was legally reordered as a separate entity. As a result, software also became a commodity, "an entity the prime or sole motive for the production of which is to generate a monetary profit for those who own the entities, such as companies, by which it is made". Fueller, M. (2008). *Software studies, Introduction*, 3. The latter point connects software studies with early internet debates – still ongoing – between the free software and open software community. An initial text that distinguished between two development styles of software: the "cathedral" of the commercial world and the "bazaar" model represented by Linux is that of Raymond, E. (1996). *The Cathedral and the Bazaar*. For a reconstruction see Ippolita (2017). *Tecnologie del dominio*. See also Himanen; Torvalds; Castells, M. (2001). *The Hacker Ethic and the Spirit of the Information Age*.

manual procedures have been phased out due to security concerns, so the production of space is dependent on code⁸³.

Before investigating the emersion of software studies as a field it is therefore necessary to define software. One first broad definition largely used in software engineering sees software as a language. It focuses on the *development* of software “as an advanced writing technique that translates a text or group of texts written in natural languages (namely, the requirements specifications of the software ‘system’) into a binary text or group of texts (the executable computer programs) through a step-by-step process of gradual refinement”⁸⁴. According to this view, software is the “totality of all computer programs as well as the written texts related to computer programs”. A second and more practical definition is given by software scholars Kitchin and Dodge:

software consists of lines of code — instructions and algorithms that, when combined and supplied with appropriate input, produce routines and programs capable of complex digital functions. Put simply, software instructs computer hardware — physical, digital circuitry — about what to do (which in turn can engender action in other machinery, such as switching on electrical power, starting a motor, or closing a connection)⁸⁵.

In many cases, the word software comes together with others words as computer code and algorithm, which are often used interchangeably in the humanities discourse. Given their frequency and recurrence, it is however useful to try to distinguish such notions according to their degree of abstraction. The word algorithm comes originally from the Persian mathematician Muhammad ibn Musa al-Khwarizmi (780-850)⁸⁶. The inventor of the computer Alan Turing understood the algorithm as an effective process for solving a problem⁸⁷. Computer scientists Aurélie Jean has compared cooking recipes to algorithms: they are some instructions to be followed. The specificity of a digital algorithm lies in the fact that it is designed to be implemented in computer code intended to run a simulation or a calculation on one or more microprocessors of a computer, and that it is evolutive, in the sense that it is created to reduce complexity and solve

⁸³ Kitchin, R. & Dodge, M. (2011). *Code/Space*, 17.

⁸⁴ See Frabotti, F. (2015) *Software Theory: A cultural and philosophical study*, xx.

⁸⁵ Kitchin, R. & Dodge, M. (2011). *Code/Space*, 3- 4.

⁸⁶ Jean, A. (2021). *Nel paese degli algoritmi*. An algorithm is not something necessary specific to computers. For instance, Euclid’s algorithm to compute the greatest common divisor - which uses recursion to reiterate the same operation until a specific condition is met - is an example of an algorithm. For the detailed history of algorithms from Leibniz and Peano to Turing, see Berlinski, D. (2000). *The Advent of the Algorithm*. For a discussion of algorithms between technic and culture and imagination see Finn, E. (2017). *What Algorithms Want: Imagination in the Age of Computing*.

⁸⁷ For the history of the computer, see Dyson, G. (2012). *Turing’s Cathedral: The Origins of the Digital Universe*.

new problems⁸⁸. Andrew Goffey synthetically describes the algorithm as “logic+ control”, remarking its importance as “the unifying concept for all the activities which computer scientists engage in”⁸⁹. The algorithm, therefore, is an abstraction, as it is independent of, and not embodied in, programming languages. It is also independent of the machines that execute the programs composed of these algorithms. For Goffey, however, that does not mean that algorithms are merely technical; on the contrary, they are techno-cultural artifacts that possess a pragmatic, performative dimension: like language, they “do things in the world”. Under no circumstances, therefore, algorithms can be considered neutral; they always carry the traces and biases of their creators and the cultural contexts in which they are embedded⁹⁰.

Computer code can also be distinguished from algorithms and software⁹¹. If computation is a field that investigates what can and cannot be calculated, code is a

general term for a wide variety of different concrete programming languages and associated practices. When we want to look at the code, we see a number of different perspectives and scales depending on what kind of code we are viewing (assembler, C++, Pascal), on its state (source, compiled, disassembled), location (embedded, system, application) or its form (textual, visual, mapped as a graph)⁹².

The source code of the software, instead, is the textual form of programming code that is edited by computer programmers. For Andrew Berry, there are two separated but connected dimensions of code. Code is first a *textual* artifact that relies on language and of people reading that language. As it is written, code also becomes “*executable*, in the sense that the computer can understand and run”. This process of articulation as a running program is distinct from the textual form, and code differs from software insofar as the latter is a symbolic form of writing

⁸⁸ Jean, A. (2021). *Nel paese degli algoritmi*, 36.

⁸⁹ Goffey, A. (2008). *Algorithm*, 15, in Fuller, M. (2008). *Software Studies: a lexicon*.

⁹⁰ Jean distinguishes between explicit and implicit biases that are present when building an algorithm: the first one depends on the background of the scientists building a particular algorithm; the second depends on the logic of machine learning. Biases can depend, for instance, from the data that is used to set up the algorithm - whether it comes from an unrepresentative sample, or whether it results from measurements or observations that are themselves biased, or on the origin of the parameters used. See Jean, A. (2021). *Nel paese degli algoritmi*, 79. That has given rise of what we can call “critical algorithm studies”, as best-seller O’Neil, K. (2016). *Weapons of math destruction: How Big Data Increases Inequality and Threatens Democracy*, in which she explained how the use of algorithmic systems can lead and did lead to a series of discriminations in the school system (for example, in the selection of teachers) and in the judiciary system, and Noble, S. U. (2018). *Algorithms of Oppression: How Search Engines Reinforce Racism*. For a study on the cultural dimension of algorithms, see Finn (2017). *What algorithms want: imagination in the age of computing*.

⁹¹ For a practical and interactive guide in trying to understand computer code see Ford, P. (2015) *What is code?*

⁹² Berry, A. (2011) *The philosophy of software*, 33.

involving cultural practices of its employment and appropriation⁹³. The difference is therefore that code implies a close reading of technical systems, while “software implies a form of distant reading”. Nevertheless, Berry describes them as two sides of the same coin, since code is the static textual form of software, and software is the processual operating form⁹⁴. What these elements allow is the *re-programmability* of computers, and, consequently, digital platforms: they have the capability to change, to be rewritten, to accept a new set of instructions that alter their behavior.

If these are relevant terms for analysis of digital platforms it is because software underwent phenomenal growth in recent years. Software acts in the world it, codifying it into rules and allowing for emergent and executable properties. Software does things in an autonomous fashion, as it can receive data and “process information, evaluate situations, make decisions, and, most significant, act without human oversight or authorization”⁹⁵.

3.3.2 The emergence of software studies: reprogrammability and APIs

The academic field of software studies has recently emerged to account for the ubiquity of software, and from there, the complementary field of platform studies has also emerged⁹⁶. Born within the field of media studies, software studies provide the fundamental technical and computational understanding of how software platforms function from a computational point of view. Lev Manovich, in his 2002 contribution *The Language of New Media*, in trying to make sense of what new media was, saw software as the convergence of two separate historical trajectories: computing and media technologies. For Manovich, this convergence meant the translation of all existing media into numerical data accessible to computers. The result was “new media”: graphics, moving images, sounds, shapes, spaces and text which become computable with a shift from media studies to software studies and from media theory to software theory. Together with it came the need to understand and use the lexicon and categories and operations of computer science⁹⁷.

⁹³ Fuller, M. (2008). *Software Studies: a lexicon*, 173. Quoted in Berry (2011). *The philosophy of software*, 32.

⁹⁴ Berry, A. (2011). *The philosophy of software*, 33.

⁹⁵ Kitchin, R. and Dodge, M. (2011). *Code/Space*, 5, distinguish *capta* from data. *Capta* are “units that have been selected and harvested from the sum of all potential data”, while data are “the total sum of facts that an entity can potentially give”. They add: “with respect to a person, data is everything that it is possible to know about that person, *capta* is what is selectively captured through measurement (p. 261).

⁹⁶ Some of the main western software studies researchers and publications are listed at https://monoskop.org/Software_studies. A detailed overview of the texts from the software studies tradition can be read in Berry, D. M. (2011) *The philosophy of software*, 4-5. The term platform studies initially denoted a focus on the technical components of platforms (software, hardware), but it has grown more to include all studies of platforms, including sociology and political economy.

⁹⁷ Manovich; L. (2002). *The language of new media*, 48. Manovich identified five principles of new media - general tendencies of culture undergoing computerization - in their numerical representation (new media objects can be described mathematically and manipulated via algorithms, making them programmable);

Software studies is a necessary passage point in the humanities' understanding of a phenomenon as platformization simply because there is no digital platform without software. Kitchin and Dodge explain the object of software studies with the following insightful metaphor:

The difference between software studies and those more broadly studying the digital technologies they enable could be characterized as the difference between studying the underlying epidemiology of ill health and the effects of ill health on the world. While one can say a great deal about the relationship between health and society by studying broadly how ill health affects social relations, one can gain further insight by considering the specifics of different diseases, their etiology (causes, origins, evolution, and implications), and how these manifest themselves in shaping social relations. Software studies focuses on the etiology of code and how code makes digital technologies what they are and shapes what they do⁹⁸.

Other fundamental software studies books have been Galloway's *Protocol: how control exists after decentralization*, in which he explained the notion of protocol to the humanities: originally referring to diplomatic agreements within a specific system of conventions, the term shifted to describe technical software-driven procedures and standards that orchestrate data exchange. According to Galloway, this data exchange, in turn, allows for distributed form of control that counter the idea of the network horizontality, so that "code is protocol, and protocol is technological power: built-in control of the behavior of all network nodes, be they computers, interfaces, individuals, or organizations⁹⁹.

Of particular relevance is the Software Studies series launched in 2009 by the Massachusetts Institute of Technology. For the editor *Software Studies* proposes that software can be seen as an object of study and an area of practice for kinds of thinking and areas of work that have not historically "owned" software, or indeed often had much of use to say about it. Such areas include those that are currently concerned with culture and media from the perspectives of politics, society, and systems of thought and aesthetics or those that renew themselves via criticism, speculation, and precise attention to events and to matter among others¹⁰⁰. More

modularity (the recombination of pixels, images, text, sounds, frames and code); automation (software allow users to create or modify media objects), variability (digital objects exists in potentially infinite versions); and finally, "transcoding" as the sociocultural layer of new media. Technically, transcoding refers to the "translation of a new media object from one format to another (for example, text to sound) or the adaptation of new media for display on different devices". Broadly, transcoding designates the ways in which media and culture are being reshaped and transformed by the logic of the computer. Sorapure, *Five Principles of New Media: Or, Playing Lev Manovich*, 5.

⁹⁸ Kitchin, R. & Dodge, M. (2011). *Code/Space*, 12-13.

⁹⁹ Galloway, A. R. (2006). *Protocol: How Control Exists after Decentralization*; for an overview see Van Boomen, M. (2014). *Transcoding the digital*.

¹⁰⁰ Fueller, M. (2008). *Software studies*, 2.

recently, the new editors of the series have recapitulated the questions asked by the software studies tradition in the following list:

how do we see, think, consume, and make software? How does software—from algorithmic procedures and machine learning models to free and open-source software programs—shape our everyday lives, cultures, societies, and identities? How can we critically and creatively analyze something that seems so ubiquitous and general—yet is also so specific and technical? How do artists, designers, coders, scholars, hackers, and activists create new spaces to engage computational culture, enriching the understanding of software as a cultural form?¹⁰¹

According to Wendy Chun - author of the influential book *Programmed Visions: Software and Memory* and one of the new editors of the software studies series - software studies is still so important because it is nebulous, it exceeds traditional categories listed and “it touches and reshapes—and is touched and reshaped by—almost everything. Software studies enable us to think in broad and/or interconnected terms, to move beyond, between, and beside the various layers and programs”¹⁰². Finally, software studies were also useful to move beyond the supposed “immateriality” of software. Notwithstanding that software cannot be touched and therefore it is opposed to hardware, which is materially fabricated and crafted, Fuller considers the idea of software’s immateriality “trivializing and debilitating”¹⁰³. As we have seen, software is operative at many scales.

Of particular interest in our context is software studies as a tradition of research of digital platforms. A first relevant conference was *Digital Arts and Culture Conference* from 2009, where the relationship between platform studies and software studies was framed in terms of related interdisciplinary fields of research that approach computational topics as technical artifacts from the perspectives of the social sciences, humanities, and arts. Platforms here were considered “the layers of hardware and software relationships that enable and constrain software expressions”. If software studies “investigate the interrelated questions of how software is implicated in culture at the macro-level and how software signifies at the micro-level”, platform studies were distinguished for the different emphasis; they were seen as

¹⁰¹ Chun, W. et al (2022). *Software Studies*, Revisited.

¹⁰²Ibidem. And they continue: to know software has become a form of enlightenment—a way to comprehend an invisible yet powerful whole—and this conception of software grounds its appeal. Software has become a metaphor for the mind, for ideology, and for the economy: cognitive science comprehends the brain/mind in terms of hardware/software; molecular biology conceives of DNA a series of genetic “programs”; and culture itself has been posited as a form of “software” in opposition to nature, which is “hardware.”

¹⁰³ Fueller, M. (2008). *Software studies, Introduction*, 4.

investigating the relationships between the hardware and software design of computing systems and the creative works produced on those systems¹⁰⁴.

There are two important passages in the developments of platform studies from that of software studies. The first one platform studies publication series of MIT named *Platform Studies*, that was launched by Ian Bogost and Nick Montfort in 2009. As we have seen in the genealogy, one of the early objects of study of platforms were game consoles and hardware. Here platform studies are considered as a subset of game studies, and all the case studies of the MIT series were consoles such as Atari, Commodore, and the Nintendo Game Boy. Platform studies, therefore, was seen as investigating how computer systems supported creative work. From an economic point of view, those consoles are now seen as platforms because besides the console itself, matching discs and games were produced by third parties, giving rise to a multi-sided dynamic. As we have anticipated in the genealogy, this approach to platforms gave rise to a semantic contestation to the meaning of the term platform, because software scholars were judging it from their own perspective. Mark Andreessen, in a series of blog posts that received notable attention, starting from the software view of the platform, defined it as a system that can be programmed and therefore customized by outside developers and users. He famously stated: “if you’re thinking about computing on the Internet, whenever anyone uses the word “platform” ask: “*Can it be programmed?*”¹⁰⁵ In this sense, the programmability by outside developers was the crucial element of a platform for software scholars. A platform could be therefore distinguished from an application, which is “a closed environment that does whatever its original developers intended it to do, and nothing more”, and Steinberg has noted that in this context, a “platform means a fundamentally open and hence transformable technology”¹⁰⁶. For Bogost and Montfort, the platform would also be “the set of material constraints that suggests the contours of any creative practice” which can “only be understood through and by a literacy in the computational hardware” to ultimately “reverse engineer aesthetic decisions as technical ones”¹⁰⁷. As such, a notable difference between the software studies tradition and the management one is that the latter was not interested to investigate the business model of platforms, but their programmability. To be more precise, following the unified view of Baldwin and Woodward, the platform architecture is composed by three key elements: core components with low variability, complementary components with high variability, and interfaces for

¹⁰⁴ Douglass, J. (2009). *Software/Platform Studies*. See also http://bogost.com/projects/platform_studies/. For an analysis of the limitations of the book series see Leorke, D. (2012). *Rebranding the platform: The limitations of ‘platform studies’*.

¹⁰⁵ Andreessen, M. (2007). *Analyzing the Facebook Platform, Three Weeks In*; Andreessen, M. (2007). *The Three Kinds of Platforms You Meet on the Internet*.

¹⁰⁶ Steinberg, M. (2019). *The Platform Economy*, 78.

¹⁰⁷ Steinberg, M. (2019). *The Platform Economy*, 82.

modularity between core and complementary components¹⁰⁸. This is a central aspect of the platform studies tradition according to infrastructure scholars (3.5), that see platform studies as exploring

how modularity and power are negotiated between a core unit with low variability and heterogeneous components of high variability. Their perspective is cultural, economic, and critical, forming a continuum ranging from cultural studies to political economy. Collectively, they highlight how platforms' affordances simultaneously allow and constrain expression, as well as how technical, social, and economic concerns determine platforms' structure, function, and use¹⁰⁹.

As second important passage in the development of software studies goes on in Europe. In 2013, software studies scholar Anne Helmond' published a study on *The Web as a Platform* in which she applied the tools of software studies, understood in relation to "the consequences of the software infrastructure", to map the relationship that social media platforms have with the rest of the web. For Helmond, platform studies were intertwined with software as they try to "analyze not only how platforms enable and constrain particular use and development practices but also how they employ their software infrastructures to weave themselves into the web and to format external web data according to the logic of the platform"¹¹⁰. We see here how the focus is less on software *per se* and starts to be more about the software infrastructure and the economic and governmental configurations that systems of interconnected software allow, so that Sarah Barns has recently defined platform studies as "software studies rearticulated in an era when software had extended its reach into the realms of online participation and content distribution, as infrastructure for the flourishing of digital creativity and culture"¹¹¹.

The focus on programmability and on the software infrastructure are, in my opinion, two important legacy of software studies. Finally, there is a third technological innovation which is extremely relevant because it resulted in a new and fundamental mechanism of governance: the Application Program Interface (API). One of the first API was released by the e-commerce

¹⁰⁸ Baldwin, C. Y. & Woodward, C.J. (2008). *The architecture of platforms: a unified view*. For a discussion of modularity see Baldwin, C.Y. (2015). *Modularity and organizations*; Baldwin, C. J. & Clark, K. (1997). *Managing in an age of modularity*.

¹⁰⁹ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 298.

¹¹⁰ Helmond, A. (2013). *The Web as a platform*.

¹¹¹ Barns, S. (2020). *Platform Urbanism*, 48.

companies Salesforce and eBay in the early 2000s, and it rapidly spread in the entire web¹¹². APIs are gateways that permits other systems to interact with the platform to form a seamlessly interactive network¹¹³. APIs have been compared to electrical sockets, as they permit other programs to “plug in,” in order to exchange data or perform other functions. The fundamental difference with electrical sockets, however, is that APIs create a two-way flow of data – something that recalls Beer’s double directionality of feedback in the platform model. Anne Helmond have instead described the APIs as follow:

APIs enable programmatic communication and the exchange of data and functionalities between different software system and allow the software to “talk” to each other and to exchange data. As such, they also govern the data access of platforms such as social media by providing the technical rules and conditions for this access. So they function as important governance mechanisms for platforms, and to understand how this works it helps to be able read their API documentation. This documentation is publicly available the developer pages of platforms and provides important information about what data is available, under what conditions, and specific rules of access¹¹⁴.

The fundamental role played by APIs in the organization of the Web, of platform’ relations between each other and of the platform-complementor relationship has also been recognized by the European Commission, which has defined APIs as “a set of rules and specifications followed by programs to communicate with each other, and an interface between different programs that facilitates their interaction”. The Commission considers APIs as key nodes in platform ecosystems, as they enable the “bundling of various financial services, often from various service providers such as payments services, payment accounts, lending, investment, and insurance products”¹¹⁵. APIs therefore are the fundamental tool of the platformization of the web.

These concepts are expressed also by the metaphors used by software scholars. For instance, Benjamin Bratton has theorized the stacked model of the platform which encapsulates the mutable form of its organization in the metaphor of the PLATFORM AS A STACK¹¹⁶. Similarly,

¹¹² Plantin, J.C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 303.

¹¹³ Ibidem.

¹¹⁴ See the interview with Anne Helmond, “*The Infrastructures and data flows of social media platforms*” in Cristofari, G. (2022). *The Politics of Platformization*, 112. for an analysis of reprogrammability in relation to Facebook’s API, see Mackenzie, A. (2019). *From API to AI: platforms and their opacities*.

¹¹⁵ Ferrari, V. (2022). *The Platformization of Digital Payment*, 129, quoting from the EU Commission (2021). *Request to EBA, EIOPA and ESMA for technical advice on digital finance and related issues*.

¹¹⁶ Bratton, B. (2015). *The Stack*; Choudary, P. (2015). *Platform Scale: How an Emerging Business Model Helps Startups Build Large Empires with Minimum Investment*

accounting for platform evolution, Bratton also mobilized the metaphor of the PLATFORM AS THESEUS' SHIP, referring to the popular Greek myth of the paradox of identity and change, which is consistent with the metaphor of PLATFORM AS LEGO suggested by Anne Helmond¹¹⁷. According to the authors, the reprogrammability and the modularity of the digital platform are the central elements which permit the platform to stay the same not despite its change, but because of it. Helmond has also described the increasing dependence of complementors toward the platform and the power imbalance with the metaphor of PLATFORM AS A SQUID¹¹⁸. According to this metaphor, the evolving API permits service producers to be captured but remain divided, each one for each tentacle, all in a process of taskification¹¹⁹.

In the present paragraph I tried to briefly reconstruct the software studies tradition as a fundamental component in the emergence of platform studies. Software studies allows to grasp the technical preconditions for the discourse around platform power: in particular, the programmability of platforms as infrastructures, their modularity, and APIs as the main tools in the governance of the platform ecosystem.

¹¹⁷ See my interview with Anne Helmond, "The Infrastructures and Flows of Social Media Platforms", in Cristofari, G. (2023). *The Politics of Platformization*.

¹¹⁸ Helmond, A. et al (2019). *Facebook's evolution: development of a platform-as-infrastructure*.

¹¹⁹ See Gerlitz, C. et al (2019). *Reprogramming the Platform: Infrastructural Relations between Apps and Social Media*; Helmond, A. et al (2019). *Facebook's evolution: development of a platform-as-infrastructure*; the Digital Service Act has tried to tackle the problem of researcher's access to data with the provision of art. 40 on "Data access and scrutiny".

Most people don't want Google to answer their questions. They want Google to tell them what they should be doing next.

Eric Schmidt, former Google CEO

3.4 Platformization and political economy

3.4.1 Value production, digital labor, and its taxonomies

A third field of academic research involved in the study, conceptualization, and critic of platformization is that of political economy. In the political economy literature on digital platforms, the perspective shifts from the platform manager to the platform user insofar as it produces value, and on platforms as extractive infrastructures of value appropriation. Consequently, the focus is either on the human element of the platform, the one without which value on the platform cannot be produced, or on the economics of platform organization that led to what is called “platform capitalism”¹²⁰. The debate here has focused on terms such as “digital labor” that, like the platform, is a broad, contested, and difficult to avoid. It is one of the various umbrella terms that we encounter in the analysis of the platform discourse. Methodologically, digital labor usually starts from a combination of ethnography (with interviews with platform workers as delivery riders, content moderators and microworkers), self-ethnography, and social analysis with the tools of the Marxist tradition. Perhaps not surprisingly, one of the central focuses is again the notion of value creation and circulation. The main metaphors used here are the PLATFORM AS A MECHANISM OF COORDINATION or orchestration of different actors, PLATFORM AS A VAMPIRE and as an extraction mechanism, and PLATFORM AS A FACTORY and PLATFORM AS THE OWNER OF A SHOPPING MALL with a multi-sided dynamic¹²¹. As Sadowski has put it:

¹²⁰ As famously developed by Srnicek, N. (2016). *Platform Capitalism*; but see also the analysis of Boyer, R. (2021). *Platform Capitalism: a socio-economic Analysis*, and Montalban, M. et al (2019). *Platform Economy as a new form of capitalism: a régulationist research program*. Langley, P. & Leyshon, A. (2017). *Platform capitalism: the intermediation and capitalization of digital economic circulation*; Boyer, R. (2021). *Platform Capitalism: a Socio-Economic Analysis*; Van Doorn, N. (2022). *Platform capitalism's social contract*; Narayan, D. (2022). *Platform capitalism and cloud infrastructure: Theorizing a hyper-scalable computing regime*. For a historical contextualization of platform capitalism from a non-marxist perspective, see Peck, J., & Phillips, R. (2020). *The platform conjuncture*. Ivana Pais has identified six lines of research inside the debate on platform capitalism. The first is about the definition of labor; the second about platform governance; the third trend concerns the division of labor in platforms, starting from the traditional meaning of technical division of tasks and skills and their allocation to different categories of people; the fourth one on social inclusion; a fifth deals with social protection and a last final strand concerns the protection of rights, the representation of interests, and the contractual fragility of digital workers. See Pais, I. (2019). *La Platform Economy: aspetti metodologici e prospettive di ricerca*, 152.

¹²¹ See for instance Healy, M. (2020). *Marx and Digital Machines: Alienation, Technology, Capitalism*; Fuchs, C. (2020). *Communication and Capitalism: a Critical Theory*. On platformization and Marxism see the work of Miconi, A. (2022). *On Value and Labor in the Age of Platforms* and Miconi, A. (2021). *Digital Surplus: Three Challenges for Digital Labor Theory*.

Don't think of the platform as the landlord who owns a rental home. Think of it as the owner of a shopping mall who invests in property in order to facilitate productive activity. [...] The mall's owner takes their cut of the value generated. Whether that value is money added to the price of everything or data about human behaviors and preferences [...]. By investing in the construction and maintenance of property, which "mediates the production and circulation of surplus value", the rentier platforms capture part of that value¹²².

In his genealogical reconstruction, Alessandro Gandini explains how the term digital labor emerged in the early 2000s as a theoretical proposition to express the Marxist critique of the political economy of digital media, which saw "the leisure-driven, unpaid activities of social media users as unremunerated forms of work contributing to Internet companies' profits"¹²³. It is only over the years that this expression – as conceptualized for instance by Christian Fuchs¹²⁴ - has become an umbrella term "used to describe a variety of practices and instances concerning the broader relationship between labor and digital technology – including paid work – often with little or no relation to the original theory"¹²⁵. The notion of digital labor has become controversial precisely because of the difficulty to describe how value is produced online, as well as the blurring of the theoretical concepts such as work, labor, play, leisure. In 2013, Trebor Scholtz introduced the concept of digital labor by asking: "what does it mean to be a digital worker today?". He continued:

The Internet has become a simple-to-join, anyone-can-play system where the sites and practices of work and play increasingly wield people as a resource for economic amelioration by a handful of oligarchic owners. Social life on the Internet has become the "standing reserve," the site for the creation of value through ever more inscrutable channels of commercial surveillance¹²⁶.

In here, the advent of the Internet (first moment) and contemporary platformization processes (second moment) are read through the theoretical lenses of Marxism and critical political economy studies. If, on the one hand, these studies were among the first one to point out that beyond the rhetoric of empowerment and freedom lied the hidden political and economic

¹²² Sadowski, J. (2019). *The Internet Landlords*, 8.

¹²³ Gandini, A. (2021). *Digital Labor: An Empty Signifier?*, 1. One of the first contributions in this sense is that of Fuchs, C. (2010). *Labor in informational capitalism and on the Internet*, further developed in Fuchs, C. (2014). *Digital Labor and Karl Marx*.

¹²⁴ Fuchs, C. & Seignani, S. (2013). *What is Digital Labor?*

¹²⁵ Gandini, A. (2021). *Digital Labor: An Empty Signifier?*

¹²⁶ Scholz, T. (2013). *Why Does Digital Labor Matter Now?*, in Scholz, T. (Eds) (2013). *Digital Labor: The Internet as Playground and Factory*.

dimension of exploitation and capture of user's behavioral data, on the other side the literature appeared fragmented and divided in terms of how this exploitation actually functioned.

With a focus of social media platforms, scholars such as Fuchs and Sevignani based on Marx's distinction initially tried to frame the debate by distinguishing between "digital work" and "digital labor". They pointed out that political economy studies diverged from cultural studies in answering the question of whether the usage of commercial social media resulted in exploitation of digital labor or a of the creative and participatory culture. They also tried to bypass this division "with the help of Marx's characterization of work in capitalism as a process of concrete labor that creates use values and abstract labor that creates the value of commodities". Fuchs and Sevignani noted that users of social media are "creative, social, and active prosumers" – producers and consumers at once – "who engage in a culture of sharing, doing, connecting and making and in these work activities create social use-values (content, social relations, co-operation)". The problem was that this creativity was capture by targeted advertising, becoming the source of the value of a data commodity that is sold to advertisers and results in profits¹²⁷. Furthermore, they identified the central problem in Marxists reading of digital technology: those readings paid attention to the communication process and the communicative character of work, but have instead neglected the question "if communication is work"¹²⁸. Consequently, the basic argument in the debate was that "the dominant capital accumulation model of contemporary corporate Internet platforms is based on the exploitation of users' unpaid labor, who engage in the creation of content and [...] create value that is at the heart of profit generation". This online activity, which is "fun and work at the same time", was thus called "play labor"¹²⁹. They also claimed that on platforms such as Facebook, "labor power is predominantly informational work" and divided information in a threefold process of cognition, communication and co-operation. For Fuchs and Sevignani, since information has become a productive force in contemporary economies "one should not separate information and work as two realms of human existence, as Habermas did. Hence, digital work was considered a "specific form of informational work that makes use of digital media as an instrument of work that is employed together with the human brain to organize human experiences in such a way that symbolic representations, social relations, artefacts, social systems and communities emerge as new qualities"¹³⁰. On the contrary, digital labor was linked to alienation. It is based on

¹²⁷ Fuchs, C. & Sevignani, S. (2013). *What is Digital Labour? What is Digital Work? What's their Difference? And why do these Questions Matter for Understanding Social Media?*, 287-288.

¹²⁸ Ivi, 252.

¹²⁹ Ivi, 237.

¹³⁰ Ivi, 256.

a fourfold alienation of the human being: the alienation from oneself, the alienation from the objects of labor (instruments and objects of labor) and the alienation from the created products. This fourfold alienation constitutes an alienation from the whole production process that is due to the existence of class relations and results in exploitation¹³¹

Based on this idea, Fuchs and Sevignani concluded that Facebook users were not paid for their labor, and they therefore could be considered unpaid workers: “the main *instruments of labor* on Facebook are the platform itself and the brains of its human users. Facebook’s *objects of labor* are human experiences”. However, several critiques have been moved to Fuchs’ notion of digital labor based on a flawed understanding of value creation in digital platforms that is delinked from time-based quantification typical of the Marxist labor theory of value and “instead revolve around the financial valorization of affective exchanges, in a way that is akin to how brands behave on financial markets”¹³².

In parallel, another branch of the Marxist tradition had started to raise similar questions well before the advent of digital technologies. They were the Italian autonomist *operaisti*, who viewed information technology as a potentially liberating force, something that could help unleash workers’ cognitive and communicative skills after their long period of suppression under the physical-labor regime of Taylorism¹³³. This newly empowered figure also created value outside the firm, what they named the “social factory.” For Morozov, this “seemingly innocuous assumption challenged orthodox leftist theories that restricted membership in the working class to factory workers while ignoring immense toil on the invisible margins of the social factory—e.g. women’s housework—which was essential to continuous production”. Hence, the autonomists saw “value-extraction from the social factory as just another form of rent: an unnecessary tax on the social activity”¹³⁴. Other authors of this tradition had coined similar notions, such as Maurizio Lazzarato’s *immaterial labor*, defined as “labor that produces the informational and cultural content of the commodity”¹³⁵, or as Hardt and Negri’s work on labor

¹³¹ Ivi, 257.

¹³² Gandini, A. (2021). *Digital Labour: An Empty Signifier?*, 3; Arvidsson & Colleoni (2012) *Value in informational capitalism and on the Internet*.

¹³³ Morozov, E. (2019). *Capitalism’s new clothes*, in which he compares the work of Zuboff with the autonomist program. Zuboff wrote about the “mass consumer”, while the autonomist about the “mass workers”. If their vision of technology was similar, they nevertheless diverged in terms of normative program: “since work was increasingly collaborative and intangible, it was no longer possible to pay workers—let alone those on the margins of the social factory who were rarely compensated at all—for their individual, easily observable contribution to production. To restore justice, the Italian autonomists demanded universal basic income”.

¹³⁴ Morozov, E. (2019). *Capitalism’s new clothes*.

¹³⁵ Lazzarato, M. (1996). *Immaterial Labour*.

“that creates immaterial products, such as knowledge, information, communication, a relationship, or an emotional response”¹³⁶, and Tiziana Terranova “free labor”¹³⁷.

The problem of digital production of value led sociologist Antonio Casilli and other scholars to investigate the relationship between the firm, the workers and platforms, suggesting that digitization should be understood as outsourcing of standardized production tasks. What is at stake is the “reorganization of the relationship between the inside and outside of the company” which leads to a “decrease in the share of value produced internally and to an increase in that produced externally”¹³⁸. For Casilli, the notion of digital labor is particularly useful to go beyond the promise, always neglected, of full labor automation and the liberation from work, which actually plays a disciplinary function and enhances precarization¹³⁹. On the contrary, digital labor is a return to its etymology, as it includes the physical element of movement of the finger, and suitable in comparison to other terms as *travail*, *Werk*, job, *Arbeit*, that are either too broad or too narrow¹⁴⁰. Casilli claims that digital labor – now intended as ‘datafied’ labor that serves to train automatic systems - has been made possible by two historical trends: the outsourcing of work and its taskification. These two trends appeared at different times and developed following misaligned cycles, until information and communication technologies converged them¹⁴¹. For Casilli, the platform organizational form signals the generalization of a technological structure of economic organization that does not have a specific “core business”; its *raison d’être* consists in information intermediation between different economic actors.

However, since the expression digital labor has come to be “used indistinctly to identify almost *all* forms of direct or indirect laboring that takes place through the mediation of a digital medium, irrespective of their adherence to this theoretical construct”¹⁴², other notions such as

¹³⁶ Hardt, M. & Negri, A. (2004). *Multitude*, 108.

¹³⁷ Terranova, T. (2004). *Free Labour*, in which she famously analyzed the business model of America Online (AOL).

¹³⁸ Casilli, A. (2020). *Schiavi del clic. Perché lavoriamo tutti per il nuovo capitalismo?* Every quote from Casilli has been translated by me from the Italian edition.

¹³⁹ For the opposite argument – that demanding full automation – see Srnicek, N. & Williams, A. (2015). *Inventing the Future: Postcapitalism and a World Without Work*; see also Bregman, R. (2017). *Utopia for Realists: and how can we get there*; Monbiot, G. (2017). *Out of the Wreckage: A New Politics for an Age of Crisis*.

¹⁴⁰ According to sociologist Dominique Méda, the field of the signification of labor is structured along three historically determined axes. Work and *Werk* express the first meaning of labor as a relationship with the world which is transformed by the human productive gesture. However, when the individual free himself from material need, his activity ceases to be a simple relationship with nature and appears in its essence as a social relationship - what is expressed by the terms labor or *Arbeit*. Finally, the notion of job or *Stelle* indicates the third field of signification as the professional identity. For Méda the threefold relationship is “between the individual and the natural datum; between the individual and others; between the individual and himself”. Méda, D. (1997). *Società senza lavoro. Per una nuova filosofia dell’occupazione?*, quoted in Casilli, A. (2020). *Schiavi del clic*.

¹⁴¹ Casilli, A. (2020). *Schiavi del clic*, 21.

¹⁴² Gandini (2021). *Digital Labour: An Empty Signifier?*, 4.

“platform labor” have been proposed¹⁴³. Supporters of a broad notion of digital labor, involving even the work of extraction of raw material to produce the hardware necessary for connecting to the internet, claim that it has the merit of making visible the ties that bind digital workers. In this sense, digital labor allows seeing

the thread which connects the riders in our cities to the miners of coltan in Central Africa, to those performing microtasks from remote locations to the “prosumers” volunteering data on social media. These diverse occupations are not only invested by the same accumulation dynamics. They are all framed by labor regimes spanning from self-employment and unpaid work, piecework and unfree labor—virtually all occurring outside the salary institution¹⁴⁴.

The term digital labor, then, can be still useful to map the commonalities among a variety of sectors and platforms¹⁴⁵. Hence, the digital labor literature has focused on what has been called the “precarization narrative” which sees platform work as the next stage in the shift of risk from employers to workers and concentrated on the failure to offer employment and its associated benefits, the requirement that workers provide the tools and capital for provision other service, and the lack of various kinds of insurance¹⁴⁶.

In the attempt to clarify the notion of digital labor, scholars have proposed several different taxonomies. For example, Kylie Jarret distinguishes from the nature of the workers’ relationship to the employer and not by looking on the role or sector in which they are involved, contending that the term is “no longer directly linked to the types of tools, products, activities, or occupational conditions associated with work and all the complexities that involves”¹⁴⁷. Jarret divides digital labor into three categories. The first one is *user labor* “the unpaid, uncontracted work on social media platforms from which economic value is extracted and about which the term “digital labor” was originally developed”¹⁴⁸. The second one is named *platform-mediated workers*, referring to “people employed through intermediating platforms such as Deliveroo, Didi, or Amazon Mechanical Turk that connect workers with employers to undertake discrete tasks. It also refers to careworkers or home helpers employed through sites such as UrbanSitter,

¹⁴³ Van Doorn, N. (2017). *Platform labor: on the gendered and racialized exploitation of low-income service work in the ‘on-demand’ economy*.

¹⁴⁴ Chicchi, F.; Marrone, M.; Casilli, A. (2022). *Introduction: Digital Labor and crisis of the wage system*, 56.

¹⁴⁵ Jarrett, K. (2022). *Digital Labor*. Ebook cp 1, 10%

¹⁴⁶ See Schüßler, E.; Attwood-Charles, W.; Kirchner, S.; Schor, J.B. (2021). *Between Mutuality, Autonomy and Domination: Rethinking Digital Platforms as Contested Relational Structures*, 1224.

¹⁴⁷ Jarrett, K. (2022). *Digital Labor*.

¹⁴⁸ Ibidem.

Care.com, or Helpling”, but two which he adds also “creative and technical workers in the social media economy such as influencers, cammers, beauty bloggers, and live”¹⁴⁹.

For Casilli the problem is instead that it is not clear how value is produced by different online activities and he proposes a three folded typology of value, based on user-generated activities. He calls *qualification value* that produced by users that organize information by leaving comments or giving votes on goods, services and/or other users of the platform. This kind of value allows the platform to work on a regular basis. The second type, *monetization value*, consist in the extraction of fees or in the transfer of data provided by certain actors to other actors, which provides short-term liquidity. Finally, the *value of automation* can be found in the use of user data and content to train artificial intelligences, which is part of a longer-term development. Platforms are not specialized in the production of a single good or service, but rather aggregate distinct activities and economic models: as Choudary once wrote, they are in the business of enabling interaction rather than writing software. Casilli thus proposes a categorization of platform based on the distinctions between how labor is produced:

- 1) *Service platforms*: platforms that work with “on demand” such as Uber or Foodora;
- 2) *Microwork platforms*: platforms such as Amazon Mechanical Turk or Uhrs
- 3) *Social platforms*: Facebook or Snapchat.

The tasks from which digital platforms are able to extract value are variable, since some of these platforms produce services for the person, others offer content and manage information, and others offers social relations themselves. Each of these platform categories uses different types of individuals, which allows them to be classified according to various criteria¹⁵⁰. Even the European Union – given that the number of digital labor platforms active in the EU has increased by about 12% in the past five years, from about 463 in 2016 to 520 in 2020¹⁵¹ - have dedicated attention to the topic. In the report issued by the Commission, they compared three kinds of

¹⁴⁹ Ivi, 11%. That of “welfare platforms” is another separate field that is being researched on its own. See the “WePlat” project led by Ivana Pais. See Manzo, C. & Paraciani, R. (2022). *Le piattaforme digitali di welfare. Una rassegna della letteratura*, 4, they distinguish between three kinds of welfare platforms on the basis of access logic: *corporate welfare platforms*, that can provide indirect access services both for the beneficiaries (the employees of the member companies) and for the selected suppliers; *territorial welfare platforms*, that are promoted by public administrations and Third Sector realities, with indirect access for service providers, who are often accredited by the public body, while for beneficiaries, the services provided are accessible indirectly by the citizens in charge to social services and directly to all the others, and *digital welfare platforms* (care platforms, babysitting, medical services platforms). See also Longo, F. & Maino, F. (2021). *Platform Welfare: nuove logiche per innovare i servizi sociali*. Much hope is being put in the platform model to overcome the crisis of the welfare state in the search of the “second welfare”.

¹⁵⁰ Casilli, A. (2020). *Schiavi del clic*, 21.

¹⁵¹ European Commission (2021). *Digital labour platforms in the EU: Mapping and business models*, 26.

categorization of labor platforms active at European level. First, the Eurofound typology¹⁵² is used to also used to assess the impact of business models on working conditions. Second, the Collaborative Economy and Employment's (COLLEEM) typology, which is primarily concerned with the type of task performed¹⁵³. Third, the typology of ILO (2021), is interested in the location where the task is performed, the type of task intermediate by the platform, the type of digital labor platform and the revenue model¹⁵⁴.

The first takeaway of the digital labor literature is therefore that with platformization users and complementors create value in a privately controller space, which I understand as the infrastructure of the platform. If their behavior produces value, it means that platform interactions are “forms of work inscribed in social relations”, which Casilli sees as a “collective act”¹⁵⁵.

3.4.2 Platform and firms: the factory, the decline of the salary institutions and assetization

¹⁵² European Commission (2021). *Digital labour platforms in the EU: Mapping and business models*, 17. Skill level required to perform task (low, low-medium, medium, medium-high, high, all); Type of service delivered (online, on-location, both); Selection process (decision made primarily by platform, client, worker or combinations of these); Form of matching (offer, contest).

¹⁵³ European Commission (2021). *Digital labour platforms in the EU: Mapping and business models*, where they distinguish between several types of tasks: Online clerical and data-entry tasks (e.g. customer services, data entry and transcription); Online professional services (e.g. accounting, legal and project management); Online creative and multimedia (e.g. animation, graphic design and photo editing); Online sales and marketing support (e.g. lead generation, posting of ads, social media management and search engine optimisation); Online software development and technology (e.g. data science, game development and mobile development); Online writing and translation (e.g. article writing, copywriting, proofreading and translation); Online micro tasks (e.g. object classification, tagging, content review and website feedback); Online interactive services (e.g. language teaching, interactive lessons and interactive consultations); On-location personal transportation services (e.g. taxi-like services); On-location delivery services (e.g. food delivery, moving services and grocery pickup); On-location domestic work; (housekeeping/cleaning, babysitting/childcare and healthcare/caretaking); Other on-location services (e.g. gardening or landscaping, beauty services, on-location photography services and ‘retail intelligence’).

¹⁵⁴ European Commission (2021). *Digital labour platforms in the EU: Mapping and business models*, 18: Online web-based platforms (Freelance, Contest-based, Microtask, Competitive programming, medical consultation); location-based platforms (Taxi, Delivery, Home and care services, Domestic work).

¹⁵⁵ Casilli, A. (2020). *Schiavi del clic*: 78-79. Casilli concludes his taxonomy of digital labor by identifying five core characteristics. First, he considers digital labor as “real” work, since in any of its forms it produces value. Second, he does not consider digital labor an informal activity, as it is framed by contractual clauses that take place via term of services imposing stringent rules regarding the nature of the tasks, how to carry them out and the ownership of the result. Third, the task of click workers take place under a form of surveillance that respond “productivity imperatives” in which “rankings, scores, ratings, stars, reputational indices are collected and analyzed to evaluate the results achieved by users and their adherence to the commercial objectives of the digital service provider”. Fourth, even if it is different from before, the condition of click workers resembles already existing ‘formalized’ forms of subordination without stability as temporary jobs and contracts but with a crucial difference of the absence of remuneration. Fifth and finally, for Casilli a socio-economic understanding of platformization makes it clear that remuneration cannot be used to exclude the legal status of a worker. On the contrary, activities such as the preparation and processing of data are unavoidable forms non-ostensive labor that cannot be automated, as they are necessary to achieve automation.

The literature on digital labor, therefore, comes to the same conclusion of management: the platform represents a new paradigm of value creation. For Casilli, this paradigm has two consequences. First, a platform cannot simply be reduced to a firm: it is primarily a “mechanism of coordination between social actors” in which classic methods of marketing through the price or through centralized allocation of resources do not work. Second, when it comes to relating the supply and demand of workers, platforms multiply the form of economic incentives: wages, fees, rewards in a re-combinatory logic, namely the fact that they deconstruct and re-compose for their own advantage some institutions inherited from the industrial revolution such as employment, subordination and social protection. Second, for Casilli platformization has caused the end of the “historical mission” of the firm as expressed, for instance, in the work Ronald Coase. If the nature of the firm is to reduce transaction costs in the inside, the development of commercial relationships within the same company space is in contradiction with this model. That is true also for working relationships, where each transaction with a freelancer or each new contract with a subcontractor is a mercantile relationship with the outside re-engaged in a collective that was born precisely to limit them. Casilli writes that

this has caused the company to move away from its historical mission, which is to establish a collective innovation project by relating *those* who bring their capital and those who submit to a form of “government of work”. This vision of the organization of value production, which implies organized collective learning and “rules of solidarity that go beyond the annual distribution of profits”, is lost in the face of the imperatives dictated by financialization as well as the risk appetite of contemporary companies¹⁵⁶.

Chicchi, Casilli and Marrone have further conceptualized platformization as a departure from the salary institution. If during industrial capitalism identity was “mostly linked to the position occupied by each individual with respect to work and wages”, now platform extract value “not only from traditional labor activities, but also from the social cooperation” turning social ties such as “kinship, friendship, and sexuality into complex monetization schemes”¹⁵⁷. This

¹⁵⁶ Casilli, A. (2020). *Schiavi del clic*, translation mine. Another triad of Casilli’s taxonomy is related to the way in which the platform coordination mechanism functions. He distinguishes between a “technical coordination” provided by algorithmic matching, an “economic coordination” through the incentive system and an overall “systemic coordination”. As in management studies, in here Casilli deals with the eco-systemic discourse on platforms, and he defines systemic coordination as the tendency of platforms to constitute ecosystems or environments populated by users and companies that “relocate the production of value and the burden of innovation from the internal perimeter of the company to the reticular spaces constituted by the interaction between more or less formalized entities”.

¹⁵⁷ Chicchi, F. et al (2022). *Introduction: Digital Labor and crisis of the wage system*, 51-52. They add that “neoliberal capitalist model has found in this type of socio-economic process a way to reshape its mode of accumulation and appropriation of value moving beyond traditional salary institution. The study of the

“irreversible crisis” of the salary institution has the effect of making human labor “increasingly invisible at the eyes of justice courts, policymakers or traditional unions, as well as of workers themselves” bringing further precarization¹⁵⁸. The topic has been also explored by Niels Van Doorn, who wrote about the specific “social contract” of platform capitalism. According to the Dutch researcher, who is particularly attentive of “actually existing platformization” problems, the platform economy constitutes a different relationship between the sphere of production and that of social reproduction:

we are seeing the emergence of a variety of gendered “platform fixes”, historically connected to “fixes” that have sought to overcome the limits of capital accumulation and attendant crises of social reproduction. As the introduction of a platform fix becomes more accepted and broadly implemented, often first on an urban scale, this transforms existing relations between market, state and civil society actors. In other words, it tentatively revises and rearticulates a nation state’s social contract¹⁵⁹.

Those fixes, such as migrant labor of gig workers, are seen as “strategic and situated responses to such reproductive challenges, which have become endemic to post-welfare societies”¹⁶⁰. In other terms, platforms are able to turn things into assets in a process that has been defined as *assetization* of labor and of the economy. Assetization is a process in which “value is constituted by the management of value and valuation, especially as they relate to organizational entities

emergent forms of labor mediated by digital infrastructures has profoundly remodelled our understanding of labor and industrial relations, as well as the institutional dynamics we were used to”. (53).

¹⁵⁸ Chicchi, F. et al (2022). *Introduction: Digital Labor and crisis of the wage system*, 53. See also Sundararajan, A. (2016) *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*; McDonald, P. et al (2021). *Means of control in the organization of digitally intermediated care work*.

¹⁵⁹ Van Doorn, N. (2022). *Platform capitalism’s social contract*, 4. By “platform fix” Van Doorn means “the overcoming of limits to capital accumulation and the displacement of attendant social crises through investments in platform-based technologies and businesses, which are heralded as new frontiers for (the data-driven reorganisation of) value production and extraction. However, more colloquially, platform companies also promote themselves as offering a technological “fix” for particular societal problems or needs, whether real or imaginary”.

¹⁶⁰ Van Doorn, N. (2022). *Platform capitalism’s social contract*, 5 – 14. He focuses on three dimensions: first; the channeling migrant labour into on-demand domestic work (like domestic cleaning services); second, the coordination of civil society’s “altruistic surplus” to deliver social care (the so-called third sector); third, by promoting “home-sharing” as a way to finance the rising costs of social reproduction (short-term rental). Van Doorn & Vijay (2021). *Gig work as migrant work: The platformization of migration infrastructure*. See also my interview with Van Doorn in Cristofari, G. (2023). *The Politics of Platformization*, 34 – 43. See also Gebrial, D. (2022). *Racial platform capitalism: Empire, migration and the making of Uber in London*; on the precarious conditions of platform workers see the sociological findings of Ticona & Mateescu, A. (2018). *Trusted strangers: Carework platforms’ cultural entrepreneurship in the on-demand economy*; Mateescu, A. & Ticona, J. (2020). *Invisible Work, Visible Workers*. in Acevedo (Eds) 2020) *Beyond the Algorithm: Qualitative Insights for Gig Work Regulation*.

and their capacities”. The difference between commodities and assets can be illustrated with the example of music copyright (asset) a CD or downloadable song (commodity)¹⁶¹.

Other authors have highlighted how platformization does not imply the end of the factory, but only its transformation, multiplication and spatial reconfiguration, giving rise a sort of digital factory that still is “a system of organizing and governing the production process and living labor” and an “apparatus and logic for the ordering of labor, machinery, and infrastructure across space and time”¹⁶². But digital technology is also implicated in the production of space, they reorganize the spatiality of labor, its division via logistical, the organization of the movement of workers according to software, or crowdworking platforms¹⁶³ that brings labor into private homes across the globe, are all examples for how “digital technology changes the spatial architecture of labor”. The epitome of the digital factory is the platform, which, notwithstanding their differences, are united by a strategy of becoming the irreplaceable infrastructure of everyday life. This characteristic unites Amazon with a company like Facebook that works in a very different field. In varying but often similar ways, the strategy of different platforms is directed at becoming infrastructural¹⁶⁴.

3.4.3 Platform capitalism: competition and functional categorization of platforms

Since the platform constitute a new paradigm of value creation and a distinct mode of socio-technical intermediation, debates on the political economy of platforms are increasingly framed by using the notion of platform capitalism. These studies understand the platform model as part of wider processes of capitalization, placing it at the center of the critical analysis of digital economic circulation¹⁶⁵. The first author that has provided a systematic politico-economic analysis of platforms was Nick Srnicek in his *Platform Capitalism*, where he investigates the emersion of digital platforms with the theoretical tools of the Marxist tradition and where he identifies four macro tendencies of global capitalism related to platformization. His work is worth to be investigated in detail because it managed to create a convincing narrative of the

¹⁶¹ Birch, K. (2017). *Rethinking Value in the Bio-economy: Finance, Assetization, and the Management of Value*, 468 - 470, quoted in Chicchi; Marrone; Casilli (2022). *Introduction: Digital Labor and crisis of the wage system* 61; Birch, K. & Muniesa, F. (2020). *Turning Things into Assets in Technoscientific Capitalism*.

¹⁶² Altenried, M. (2022). *The Digital Factory: The Human Labor of Automation*, 6.

¹⁶³ Crowdwork platforms are digital platforms that allocate tasks to a global pool of digital workers, most of whom work from home on their personal computers. These digital home workers are a crucial but hidden component in the production and training of AI. Work on these platforms is characterized by decomposition, standardization, automated management, and surveillance, as well as hyperflexible contractual arrangements. Altenried, M. (2022). *The Digital Factory: The Human Labor of Automation*, 19.

¹⁶⁴ Altenried, M. (2022). *The Digital Factory: The Human Labor Of Automation*, 161.

¹⁶⁵ Langley, P. & Leyshon, A. (2017). *Platform capitalism: the intermediation and capitalization of digital economic circulation*, 1. In the meantime, the production of scholarly work on platform capitalism has skyrocketed. See the work of Boyer, R. (2021). *Platform Capitalism: a Socio-Economic Analysis*; Van Doorn, N. (2022). *Platform capitalism's social contract*; Narayan, D. (2022). *Platform capitalism and cloud infrastructure: Theorizing a hyper-scalable computing regime*. For a historical contextualization of platform capitalism from a non-Marxist perspective, see Peck, J., & Phillips, R. (2020). *The Platform Conjuncture*.

economical-political novelty of digital platforms, that he understands as digital infrastructures that enable two or more group to interact. Furthermore, Srnicek provides what I call a functional categorization of platforms.

Srnicek's starting point is that, from a Marxist standpoint, it does "make a difference whether we see emerging technologies as inaugurating a new regime of accumulation or continuing earlier regimes"¹⁶⁶. Many historical cases are at the record for showing an incredible moment of emphasis on the new revolution that were proven devastating, as the dot-com bubble shows¹⁶⁷. Therefore, Srnicek asks, is this time really different? After contextualizing platformization in the shift from the Fordist to the Toyotist mode of production, Snircek claims that it is now clear that platform capitalism overcomes two managerial problems: the traditional inadequacy of capitalist companies to extract and use data and "the inability of classical markets to allocate resources in a manner effective without causing increasingly frequent and serious crises"¹⁶⁸. According to this view, platforms are essentially firms that managed to create a new disruptive business model based on extracting and controlling data that buildin upon open-source material managed to reduce ownership to software ("the 2 billion lines of code for Google, or the 20 million lines of code for Facebook") and hardware ("servers, data centres, smartphones, etc.")¹⁶⁹.

In this sense platforms have at least four pivotal tactical advantages on traditional firms according to Snircek: first, rather than having to build a marketplace from the ground up, a platform provides the basic infrastructure to mediate between different firms; second, they are reliant on network effects; third, they use cross-subsidisation; fourth, "while often presenting themselves as empty spaces to interact on, they embody politics. The rules of product and service development, as well as marketplace interactions, are set by the platform owner"¹⁷⁰. This last aspect -the fact that platform act as private regulators of their ecosystems - it is the one

¹⁶⁶ Srnicek, N. (2016). *Platform Capitalism*, Introduction. Ebook.

¹⁶⁷ Between 1997 and 200, the entire economic system got convinced that the future was on the internet, investing excessively not so much on profits, but on the future possibility of making profits.

¹⁶⁸ Other authors have instead proposed a three-folded historical division of capitalism in the last one-hundred years. The mid-twenty century model, with firms such as General Motors, was characterized by industrial megafirms coalized with their stakeholders, long-term growth and numerous employees with permanent contracts. This model was followed by the "network of contracts" in which stock price was the core metric of success, with companies as Nike outsourcing labor. Here the coalition was between managers and investors. In the third phase, that of platform capitalism, want to consolidate their monopoly in the long run, with a political alliance between firm owners, investors and consumers against labor. See Culpepper, P.D., & Thelen, K. (2020). *Are We All Amazon Primed? Consumers and the Politics of Platform Power*. See also Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, for a comparison between organizational studies and political economy; see my interview with Niels van Doorn on "regulatory entrepreneurship", *The Political Economy of Democratic Platformization*, in Cristofari, G. (2023). *The Politics of Platformization*.

¹⁶⁹ Snircek, N. (2016). *Platform capitalism*, Ebook, cp. 2.

¹⁷⁰ Snircek, N. (2016). *Platform capitalism*, cp 2.

that recalls the political semantic territory of the etymology of platform, as identified by Gillespie.

Srnicek has also focused on the problem then is how to distinguish a platform from one another in their temporal development by looking at their characteristics. He proposed what I call a *functional* categorization of platforms composed of five categories. The first category includes “advertising platforms” like Google and Facebook. It is the core logic of surveillance capitalism, with the creation of feedback loops between users’ interaction, data collection (the record of online activities), and behavioural prediction based on those data (data analytics). Advertising platforms rely on user-generated content and uses data as a raw material for making predictions on user’s behavior for targeted advertising. According to Srnicek is important to acknowledge that the data extraction model has migrated from tech companies to all companies: it is just a basic requirement to stay competitive in the capitalist environment.

The second category is that of “cloud platforms”. They are deeply rooted with computational power, so they engendered a form of infrastructure ownership. Amazon Web Services (AWS) is used to rent out cloud computing services, which include on-demand services for servers, storage and computing power (*Infrastructure as a service, IaaS*), software development tools and operating systems (*Platform as a service, Paas*), and ready-made applications (*Software as a service, Saas*). The main historical comparison here is drawn by Jeff Bezos himself, Amazon’ CEO. Like in the case of electricity provision, whereas early factories had each its own power generator, “eventually electricity generation became centralised and rented out on an ‘as needed’ basis.”¹⁷¹ As today every area of the economy is increasingly integrated with a digital layer, owning the infrastructure that is necessary to every other industry is an immensely powerful and profitable position to be in. Cloud platforms makes profits while also collecting data about who uses their infrastructure. However, as argued by Narayan, as the Cloud is the most fundamental precondition for building any platform, cloud platforms are not only a type of platform, but also a “computing paradigm that is constitutive of platform-based organizational forms and business models. Therefore, hyper-scalability needs to be studied not only at the level of the business model but also at the level of infrastructure”¹⁷².

The third category includes “industrial platforms”. These platforms may be considered the digital evolution of traditional firms once based on manufacturing and products selling. The evolution consists in embedding sensors and computers chips into the production process until “material goods became inseparable from their informational representation”.¹⁷³ General

¹⁷¹ Srnicek, N. (2016). *Platform capitalism*, cp. 2.

¹⁷² Narayan, D. (2022). *Platform capitalism and cloud infrastructure: Theorizing a hyper-scalable computing regime*, 925.

¹⁷³ Srnicek, N. (2016). *Platform capitalism*, cp. 2.

Electric and Siemens falls in this category. Their goal is to become intermediaries between factories, consumers and app developers, so that they can “monitor much of how global manufacturing operates and draw upon these data to further solidify their monopoly position”.¹⁷⁴

The fourth category, “product platforms”, follow the “Good as-a-service” (Gaas) model. It is the case of Zipcar and Spotify, where the main feature is the ownership of the asset. These platforms aim at extending the subscription model to housing, cars, toothbrushes, razors and private jets. Srnicek reports the interesting example of the market of airplane engines, as it helps to clarify how far the good-as-a-service model already goes. Traditionally, companies such as Rolls Royce, General Electrics and Pratt &Whitney had a problem: they had small margins of profit in selling the engine to airlines. By contrast, the maintenance of these engines involved a seven times higher profit margin, but the “maintenance market” could not avoid fierce competition from third parties. In this regard, the Gaas model provide some key advantages. First, it ensures the airline lock-in, since only the company which produces and owns the software, like Rolls Royce, can provide maintenance and replacement parts; second, it allows to collect data about the wear and tear of engines, about possible problems and about the time for scheduling maintenance, which in turns grant a competitive advantage against outside maintenance and to develop new models. Again, data collection creates positive feedback loops, that foster market dominance. Since this “data power” turns into a great competitive advantage, the EU has dedicated a new regulation to the topic, the so-called “Data Act” meant at clarifying who can create value from data¹⁷⁵.

The last category employed by Srnicek is that of “lean platforms”. They are seen as part of a longer outsourcing trend in the history of capitalism, as they simply extend this trend to new areas. In this sense, they have the riskiest and less innovative business model, because they seek a monopoly rent. Lean platform can be seen as a form of extreme outsourcing. In the case of Uber and Airbnb, ownership is reduced to the two basic assets of software and analytics. To use Snircek’ words,

lean platforms appear as the product of a few tendencies and moments: the tendencies towards outsourcing, surplus populations, and the digitisation of life, along with the post-

¹⁷⁴ Srnicek, N. (2016). Platform capitalism cp. 2.

¹⁷⁵ See the “*Proposal for a Regulation Of The European Parliament And Of The Council on harmonized rules on fair access to and use of data*”. Art. 1 on the subject matter and scope specify that the regulation “lays down harmonized rules on making data generated by the use of a product or related service available to the user of that product or service, on the making data available by data holders to data recipients, and on the making data available by data holders to public sector bodies or Union institutions, agencies or bodies, where there is an exceptional need, for the performance of a task carried out in the public interest”.

2008 surge in unemployment and rise of an accommodative monetary policy, surplus capital, and cloud platforms that enable rapid scaling. While the lean model has garnered a large amount of hype and, in the case of Uber, a large amount of VC [venture capital], there are few signs that it will inaugurate a major shift in advanced capitalist countries. [...] Far from representing the future of work or that of the economy, these models seem likely to fall apart in the coming years¹⁷⁶.

In the last part of his book, Srnicek turns to investigate one of fundamental drivers of capitalism: intra-capitalist competition. In this regard, one must acknowledge another major shift in the meaning of *competition* itself. In platform capitalism there is still a struggle for market power; nevertheless, it is not only competition over prices (which platforms consider a relative factor) but also over data collection and analysis. Data can be seen as a form of capital and collection is “driven by the perpetual cycle of capital accumulation, which in turn drives capital to construct and rely upon a universe in which everything is made of data”¹⁷⁷.

Accordingly, Srnicek identifies four tendencies emerging from platform competitive dynamics. The first one is the expansion of data extraction and analysis, with high investments in the Internet of Things (IoT) and ubiquitous sensors, to the detriment of what is socially and legally acceptable, like privacy suppression. The second tendency can be identified in the need to occupy a key position within the ecosystem as a gatekeeper. In this respect, Srnicek claims that traditional categories such as vertical, horizontal and conglomerate mergers are not sufficient to describe it properly. Here the COVID-19 crisis worked as the litmus test and as an accelerator of processes. With the pandemic, platforms increased their centrality in many fields of society, providing *de facto* public services. The third and fourth tendencies are deeply related and are those more interesting from our discourse on platforms. For Srnicek, the divergence between platforms and non-platforms is going to increase. “As non-platform companies put pressure on platforms to lower their prices, platforms will fight back by making switching platforms increasingly costly and monopolistic. But if the data advantage is not enough, platforms must find other strategies to keep their power.” Srnicek’s idea is then that a platform becomes a self-sufficient enclosed ecosystem where the user never has to leave the platform¹⁷⁸. Therefore, Srnicek’s examination leads to the “convergence thesis” that resembles the studies on the ecology

¹⁷⁶ If we take COVID-19 as a litmus test, Srnicek was right: Uber and Airbnb and similar lean platforms were among the one that have suffered most financial damages, while Amazon, Google and others skyrocketed once again.

¹⁷⁷ Sadowski, J. (2019). *When data is capital: Datafication, accumulation, and extraction*.

¹⁷⁸ This is actually the contemporary tendency of Eastern platformization, where platform-worlds as WeChat tend to satisfy almost every human need inside a single application.

of organizations: the tendency for different platform companies to become increasingly similar as they encroach upon the same market and data areas¹⁷⁹:

Currently there is a plethora of different platform models that have emerged from contingent economic conditions and strategic decisions based upon strengths in different areas. One key question is what the future development of these forms holds: will they converge into an ur-platform model? Or will they diverge and maintain competitiveness through specialisation? Given the need to expand data extraction and to position oneself in strategic locations, it would appear that companies are tendentially drawn into similar areas.

This means that, despite their differences, companies like Facebook, Google, Microsoft, Amazon, Alibaba, Uber, and General Electric (GE) are also direct competitors¹⁸⁰. The fact is that, under a capitalist regime, the final imperative is to generate profit. Srnicek highlights a path-dependency that embodies two alternatives. The first is finding “novel means of extracting a surplus from the general economic pie” while the other for platforms not relying on selling or renting products is to switch to a pay-per-view model, enclosing their ecosystems¹⁸¹.

In this review of the field of political economy I have identified several discontinuities that platformization brought to the capitalist framework. First, the platform is seen also here as a new paradigm of value creation that differs radically from the one adopted in traditional industrial and manufacturing economies. Second, this paradigm has impacted some of the fundamental category of capitalist competition of the industrial era: notions such as firm, the market, the factory and salary work. The platform can work like a ‘fix’ for certain social practices, but it turns groups into assets and enables and controls social interactions in a private environment. A final element deals with the establishment of by now infrastructural platforms. Political economists recognize that the platform is not only a new business model, but “the crucial infrastructure around which society is organizing” so that digital platforms are “certainly the main tools of the subsumption under capital of the value produced within the sphere of social reproduction¹⁸². In this sense, I agree with those authors who pointed out that the real home of platform capitalism is the zone of the braudelien ‘antimarket’, a “murky but dominating layer located above the competition, where it operates as a new machine with an old purpose: that of controlling markets from above and, in the process, generating significant concentrations

¹⁷⁹ See Di Maggio, P. J. & Powell, W.W. (1983). *The Iron Cage Revisited*.

¹⁸⁰ Snircek, N. (2016). *Platform capitalism* cp. 3.

¹⁸¹ Snircek, N. (2016). *Platform capitalism* cp. 3.

¹⁸² Chicchi, F. et al (2022). *Introduction: Digital Labor and crisis of the wage system*, 59.

of political-economic power”¹⁸³. This allows me to focus on what I would call the “infrastructural turn” of platform studies, which is the object of the next paragraph.

¹⁸³ Peck, J., & Phillips, R. (2020). *The Platform Conjunction*, 75.

3.5 Platformization and infrastructure studies

3.5.1 The politics of infrastructures and the language of modern governance

A fourth field of research involved in researching platforms is that of infrastructure studies, with regard to the question of the governance of the internet infrastructure. The word infrastructure is closely related to the word platform, as it shares with it the idea of a ground on which other objects operate¹⁸⁴. From a geopolitical point of view, the relevance of the arrangements of the digital infrastructure – be it software, protocols, undersea cables, data centers, etc. – has grown to the point that infrastructure scholars have suggested to invert our commonsense notion of infrastructure: what has been normally considered as going on “behind the scenes, boring, background processes” are now the most important dimension of politics. In this sense the real work of knowledge production would be to bring the contribution of these processes to the foreground¹⁸⁵. Before exploring the themes and topics relevant to the platform discourse emerging from infrastructure studies, I would like to dedicate a brief introduction to the concept of governance itself, as a keyword applied to all the other keywords of the present literature review.

Over the last decades, there has been a shift from the use of the term government to the use of the term governance. This term signals different political conditions from the Westphalian order, where nation-states are not the exclusive political actors at the global level¹⁸⁶. In the

¹⁸⁴ Larkin, B. (2013). *The politics and poetics of infrastructure*, 329. Infrastructure is composed by the word *infra* – meaning below, beneath – and comes from the Latin *structura*, and especially from *structus*, the past participle of the verb *struere*, which means ‘to pile, place together, heap up; build, assemble, arrange, make by joining together’. If we read this with an eye on platform conceptualization, this etymology resonates with two key topics of the platform discourse: first, the idea of the platform being stacked in a multi-layered processual structure; second, the idea, equally present in the discourse, that this ‘structure that stays below’ allows other things to stay on top of it. See also Plantin, J.C. & Punathambekar (2019). *Digital media infrastructures: Pipes, platforms, and politics*.

¹⁸⁵ Bowker & Star (1996). *How Things (Actor- Net)Work: Classification, Magic and the Ubiquity of Standards*. Quoted in De Nardis, L. (2014). *The Global War on Internet governance*, 7. See O’Hara, K., & Hall, W. (2018). *Four Internets: The Geopolitics of Digital Governance*.

¹⁸⁶ In his contribution on the history of governance, Renate Mayntz used to divide between three meanings of the term governance and three phases of evolution of this paradigm. He pointed out that the modern theory of political governance (*Steuerungstheorie*) emerged after World War II as the activity of government to “explicitly steer their nations’ social and economic development in the direction of defined goals”, and it therefore meant a theory of planning. Already in 1970, nevertheless, governance’s focus shifted on *policy development*, which became the “object of empirical analyses, together with the context factors influencing policy development”. Finally, in the second half of the 1970es, *policy implementation* became a new research focus. Behind this evolution lies the idea of the ‘network’ at national, sub-national and international level, intended as “a new mode of governing that is distinct from the hierarchical control model, a more cooperative mode where state and non-state actors participate in mixed public/ private

European context some talked about a “governance turn”¹⁸⁷, given the multi-level nature of the European Union that could lead to sub-optimal decisions¹⁸⁸. The very democratic character of governance models has been questioned¹⁸⁹. The problem of the governance is the same that we have encountered with the platform, digital labor and the networks: it lacks clear boundaries, and it was criticized for being an “empty signifier”¹⁹⁰.

The concept of governance is particularly relevant in relation to the governance of the internet infrastructure, whose history has been evolving rapidly since its creation. The use of the term Internet governance started circa 1996 in the United States with two volumes published by the *Harvard Information Infrastructure Project* and it focused on the governability of the Internet¹⁹¹. Jannette Hoffman and colleagues have distinguished two historical periods of internet governance in relation to its institutions.

An important moment in this first period is the founding of Internet Corporation for Assigned Names and Numbers (ICANN) in 1998, a new body to assess the relationship between institutional aspects, policy processes and the actors involved in internet governance¹⁹². Other important institutions of internet governance comprise standards-setting organizations such as the World Wide Web Consortium (W3C), the Internet Engineering Task Force (IETF)¹⁹³, the International Telecommunication Union (ITU), the Institute of Electrical and Electronics Engineers (IEEE). A second period of internet governance starts with the founding of the Internet Governance Forum (IGF) and the World Summit in the Information Society (WSIS) which led governments to set up the Working Group on Internet Governance. The Working group definition Internet governance as

networks”. It is a complex and fragmented environment in which the state increasingly depends on other organizations to secure its intentions and deliver its policies. Finally, a third use of the terms has a different genealogy, that of the theory of transaction costs of economics - and refers to “the different modes of coordinating individual actions, or basic forms of social order”. Mayntz (1998). *New Challenges to Governance Theory*, 7-8.

¹⁸⁷ Kohler-Koch, B. & Rittberger, B. (2006). *Review article: the ‘governance turn’ in EU studies*.

¹⁸⁸ Scharpf, F. W. (2010). *Community and Autonomy: Institutions, Policies and Legitimacy in Multilevel Europe*.

¹⁸⁹ Piattoni, S. (2016). *Governance multilivello*. In Bobbio, N., Matteucci, N. & Pasquino, G. (Eds) (2016). *Dizionario di politica*.

¹⁹⁰ See Offe, C. (2009). *Governance: An “Empty Signifier”?*

¹⁹¹ Hoffman, J. et al (2017). *Between coordination and regulation: finding the governance in Internet governance*, 1407.

¹⁹² ICANN is a multistakeholder group and nonprofit organization that oversees some critical Internet resources. As such, it is at the center of the struggle for Internet governance itself. Moreover, ICANN’s administrative framework for administering Internet names and numbers includes the Internet Assigned Numbers Authority (IANA), Internet registrars, and regional Internet registries (RIRs). As pointed out by DeNardis, the great focus on to this institutional framework due to the fact that “domain names are one of the areas of Internet governance that are actually visible to Internet users” and “because of the controversy surrounding the formation of ICANN and the ensuing international concerns about the United States’ historic connection to this institution. DeNardis (2014). *The Global War on Internet governance*, 22.

¹⁹³ For a study of the IETF see the work of ten Oever, N. (2020). *Wired Norms: Inscription, Resistance, and Subversion in the Governance of the Internet Infrastructure*.

the development and application by Governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures and programmes that shape the evolution and use of the Internet¹⁹⁴

According to Hoffman, the problem of internet governance is that, on the one hand, it has been equated with its management, and on the other with the coordination of its actors and institutions, but many authors do not specify which forms of coordination are specific of this as governance¹⁹⁵.

Other authors such as Mueller and Badiei have instead distinguished between four historical phases of internet governance not from the point of view of its institutions but of how it has been researched. A first phase (1993–1997) was characterized by net exceptionalism – the idea that the internet was a different and ungovernable space and a somehow separate jurisdiction – as well as by discussions related to the commercialization of the internet. A key feature of this period is that the Internet governance field is rooted in legal studies, especially in North America¹⁹⁶. A second phase (1996–2003) saw the rise of ICANN as a new institution created to take over global coordination of Internet Domain Names and IP addresses. Even if the research during this period “shifted away from more abstract exceptionalism debates to the question of building a real governance institution”, exceptionalism “remained an unstated assumption, as few actors wanted the Internet to be subsumed under existing intergovernmental regimes”¹⁹⁷. Moreover, in this phase, the relationship between states and non-governmental institutions starts to be discussed. During a third phase (2003–2009) Internet governance “becomes fully recognized as a domain of global governance”, and the boundaries of what is considered Internet governance expand beyond ICANN. Moreover, platform intermediaries start to emerge as new actors of Internet governance. The turning point of this phase is the establishment of WSIS, with topics such as Internet content regulation (for example blocking and filtering) issued by nation-states start to be discussed and requested as “an attempt to maintain sovereign control of information”¹⁹⁸. The fourth and final phase (2010– ongoing) is described by Mueller as characterized by securization and alignment: issues of surveillance, privacy, and cybersecurity

¹⁹⁴This definition however excludes contracts and policies.

¹⁹⁵ Hoffman, J. et al (2017). *Between coordination and regulation: finding the governance in Internet governance*, 1141. Hoffman et al propose a definition of governance as reflexive coordination or “coordinating coordination”, it focuses on those interactions that refer to the conditions of ordinary coordination.

¹⁹⁶ Mueller, M., & Badiei, F. (2020). *Inventing Internet Governance: The Historical Trajectory of the Phenomenon and the Field*.

¹⁹⁷ Ivi, 64.

¹⁹⁸ Ivi, 71.

have become increasingly central to Internet governance politics and research, and states are becoming ever more involved in the attempt to control the internet. It is the phase of what I would call the platformization of the Internet and digital sovereignty, with risks of different standards being used in different places and geo-blocking of websites of the so-called Internet balkanization¹⁹⁹. In terms of research, during this phase the relevance of scandals such as the Snowden case and Cambridge Analytica have caused a massive shift of political science and international relations to research Internet governance²⁰⁰. The consequences are paradoxical: as the Internet is embedded in everything, Internet governance itself becomes so ubiquitous that its boundaries start to blur²⁰¹. In turn, legal scholars have started to recognize the new legal subjectivity of platforms, which to be measured not in the internet, but within international relations²⁰².

Leading Internet governance scholars such as Laura DeNardis has insisted that a great part of what was traditionally considered politics now passes through the dimension of infrastructure, which becomes a constitutive mean of coordination of governance. The result is an increase of complexity global governance, where traditional dominant institutions of power such as nation-states, religious institutions, or multinational corporations have lost some of their historic control over information flows. The necessity is therefore that of looking at internet governance “through a theoretical framework of the politics of technical architecture” to understand both the values embedded in it and how Internet governance as a proxy for content control, whether for enforcing intellectual property rights or other law enforcement functions or for government censorship of citizen²⁰³. As such, Internet governance research is not user-centric: it does not address questions such as content and usage of the information, but it examines “the political and economic implications of the design and administration of the Internet’s virtual and material architecture”²⁰⁴. Things like standards and internet protocols are political in their design and effects, and “the primary task of Internet governance involves the design and administration of

¹⁹⁹ The “Internet Balkanization” or “splinternet” is an expression that now carries a negative connotation as the growing threat to the internet's status as a globe-spanning network of networks. Example of activities that may lead to a balkanization of the internet ranges from the Chinese “Great Firewall” to Russia’s law that allows it to partition itself from the rest of the Internet. See Mueller (2017). *Will the Internet Fragment?: Sovereignty, Globalization and Cyberspace*. See also Alves Jr., S. (2014). *The Internet Balkanization Discourse Backfires*.

²⁰⁰ Mueller, M., & Badiei, F. (2020). *Inventing Internet Governance: The Historical Trajectory of the Phenomenon and the Field*, 71.

²⁰¹ Ivi, 78. In this sense, Mueller and Badiei ask: should the governance of Internet-connected medical devices, for example, be considered Internet governance or part of health policy? Are autonomous vehicles handled as Internet governance or transportation policy?

²⁰² Bassan, F. (2021). *Digital Platforms and Global Law*, 119.

²⁰³ DeNardis, L. (2014). *The Global War on Internet governance*, 10. For a detailed study of how the modern rules are written not only in the language of the law, but on the language of infrastructure that escapes the control of the state in what she calls infrastructure space, see Easterling (2014) *Extrastatecraft*.

²⁰⁴ Ivi, 21.

the technologies necessary to keep the Internet operational and the enactment of substantive policy around these technologies”²⁰⁵.

It is important to highlight then that, first, much of Internet governance is enacted by private corporations and nongovernmental entities; second, that the private industry not only exerts influence via the policies corporations set for usage of their products and services, but it also influences traditional governmental actions²⁰⁶; third – and this is a specific feature of internet governance - governance is often delegated from governments to corporations (instead of public entities) which serve as information intermediaries. As DeNardis explains, governments “wanting to enact Internet surveillance, censor information, block unlawful information, or obtain personal data are usually unable to directly execute these tasks”²⁰⁷. This peculiarity allows DeNardis to single out the “Faustian pact” between governments and corporations that performs a *de facto* global policy making function:

whereas the outsourcing of law enforcement functions or bureaucratic tasks normally involves financial compensation to the private entity delegated these functions, a unique feature in Internet governance is the expectation that some private entities, whether information intermediaries, or financial and transactional intermediaries, should be compelled to carry out law enforcement functions traditionally performed by the state without compensation and often with additional expense and possibly even liability exposure²⁰⁸.

3.5.2 Platformization and infrastructuralization

As we have seen until now, every field involved in studying platform is trying to conceptualize, grasp, govern and adapt the platform organizational model to their respective traditions. All

²⁰⁵ Ivi, 6.

²⁰⁶ Ivi, 12.

²⁰⁷ Ivi, 13. “Governments ask search engines to remove links. They approach social media companies to delete defamatory material. Governments ask Internet service providers to relinquish personal information about their subscribers for law enforcement or political reasons”.

²⁰⁸ Ivi. In a more recent contributions aims at mapping the field of Internet governance, DeNardis shows the existence of an epistemic community of researchers that self-identify as Internet governance researchers, following the creation of the Global Internet Governance Academic Network (GigaNet) in 2006. The questions asked by these scholars includes the object of Internet governance, the evidence base being examined, the academics involved in its study, and the methodologies and conceptual lenses. De Nardis, L. (2020). *Internet Governance as an Object of Research Inquiry*, 2. She also identifies five distinguishing features of how the Internet is governed in practice: (1) Technical design and coordination decisions establish public policy. (2) Technologies of Internet governance, as currently designed, cross borders in a way that complicates nation-state jurisdiction. (3) Governance is distributed across multiple actors in a model usually described as private-sector-led, multistakeholder governance. (4) Internet security is both converging and diverging with national security. (5) Internet infrastructure control is now a proxy for political and economic power.

these fields also share an understanding of the platform as a particular kind of ‘urban infrastructure’ (infra), ‘programmable infrastructure’, ‘social infrastructure’, ‘economic infrastructure’, and so on. Infrastructure scholars have therefore investigated the similarities between digital platforms and other traditional entities considered as infrastructures. In particular, this relationship has been investigated by a group of infrastructure scholars in a notorious paper entitled *Platform studies meets infrastructure studies in the age of Google and Facebook*. The central claim of Plantin and colleagues is that digital technologies have made possible a double movement: a platformization of infrastructure and an infrastructuralization of platforms. The problematic aspect of these processes regards the mainly private and corporate nature of platforms: in comparison to other historical cases, “media environments increasingly essential to our daily lives” largely escaped state control or regulation²⁰⁹.

Starting from the heterogeneity of digital media, Plantin and his colleagues pointed out that there are two theoretical approaches that tried to contain and characterize the new digital objects of study in the media landscape: *infrastructure studies*, emerging from science and technology studies and information science, and *platform studies*, centered in media studies²¹⁰. The platform studies tradition, as we have seen in the previous paragraph, highlighted the reprogrammability and modularity of platforms, where some core components and interchangeable ones are mediated by the presence of modular interfaces. The boundaries of those fields, however, have become increasingly blurred, and Google stands as a good example of both of an organization that has been researched by both traditions:

Google exemplifies features found in both literatures. Apps such as Google Maps can be considered programmable platforms on which users and developers can build new digital objects. At the same time, Google’s web search has become so ubiquitous and deeply embedded that it could be seen as an infrastructure: robust, widely shared, widely accessible, and essential. Any breakdown in Google’s services would substantially disrupt daily life and

²⁰⁹ Ivi, 295. It has been also noted that from an economic point of view, digital platforms work according to an asset logic rather than a logic of mere market profit, as investors and venture capitalists bankroll the development of “non-repayable” platforms- they do not worry about immediate profits. This approach mirrors the funding of traditional infrastructures like bridges, roads, and ports²⁰⁹. Chicchi, f. et al (2022). *Introduction: Digital Labor and crisis of the wage system*, 61 – 62. Furthermore, another critical dimension is asset externalization in relation to the cloud. “Metaphorically speaking, cloud computing arrangements can be thought of as the plumbing and electrical networks upon which platforms are built. In arguing for the fundamentally infrastructural character of cloud-based IT systems”. Narayan, d. (2022). *Platform capitalism and cloud infrastructure: Theorizing a hyper-scalable computing regime*, 924.

²¹⁰ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 294.

work. What is Google, then: a platform? An infrastructure? Is it sequentially or simultaneously both?²¹¹

Inside the field of infrastructure studies, the authors highlight the existence of two traditions of research: the first is the historical perspective on large technical system (LTS), interested in objects such as electric power grids, telephone networks, and air traffic control; a second tradition, instead, developed a phenomenology and sociology of infrastructure. The LTS perspective is characterized by a focus on infrastructure as sociotechnical systems that are centrally designed and controlled. Historically, LTS presented a similar evolutionary pattern that developed in four phases of infrastructuralization. In a first initial phase, someone started to build a LTS such as a telephone network. As soon as it grows, however, the LTS begin to “travel in physical and social space” and, therefore, to change. For objects such as devices, railroads, electric power, or digital computer, the existence of competitions and the introduction of new technologies and new enterprises in the service meant a rise of incompatible devices and standards. As having too many incompatible standards in the creation of societal infrastructures is overall inefficient, there was a request for a “standardization of social apparatuses” and the creation of the so called “gateways” such as the AC/DC power converters or software/hardware combinations as the Ethernet, and legal arrangements such as international trade law. As a consequence, during a third phase of infrastructuralization, some utilities like electricity or postal services evolve in two possible directions: they either become public monopolies or they are heavily regulated. For the authors this signal “not only the involvement of many more actors but also growing social commitments manifested in, for example, explicit standards, user habituation, and organizational routines”. The fourth and final historical phase is characterized by the penetration of infrastructure in even larger *webs* or *internetworks* (networks of heterogeneous networks) like trucking, rail, and shipping networks and the Internet. Even if these networks developed independently and beyond national level, they historically were later integrated into a global internetwork by means of the International Organization for Standardization (ISO). The characteristic of these “fully developed infrastructures” is that they escape control and standardization from above, being “complex ecologies whose components must continually adapt to each other’s ongoing change”²¹².

The problem is then that of identifying the differences and similarities of platforms and infrastructures to explain the rise of infrastructural platforms, that the authors see caused by three historical phenomena: the creation of ecosystems; the decline of the “modern

²¹¹ Ivi, 294.

²¹² Ivi, 296.

infrastructural ideal” because of neoliberal and deregulatory policies; and the rise of personal computing.

In particular, platforms resemble what Hughes’ has called “system builders” but they can actually be considered “eco-system builders”. They in fact differ from traditional infrastructures in the fundamental aspect that they constitute ecosystems in which more groups interact. These ecosystems do rely on infrastructure, but as the final goal is the lock-in of both sides, as the construction of gateways which might permit interoperability with competitors is actively discouraged. As we have seen in the management view, one of their core research questions is precisely how to develop techniques and strategies to avoid interoperability. For Plantain, this strategy forces independent developers either to commit to just one platform or to build and maintain multiple versions of the same product:

unlike system builders, platform builders do *not* seek to internalize their environments through vertical integration. Instead, their platforms are *designed* to be extended and elaborated from outside, by other actors, provided that those actors follow certain rules. Platforms such as Apple’s iOS (iPhone operating system) or Google’s Android achieve their success precisely by attracting many independent actors to contribute to their software ecologies, instead of attempting to build and market stand-alone products²¹³.

A second phenomenon that explains the rise of infrastructural platforms coincided with the disappearance of what Graham and Marvin have called the “modern infrastructural ideal”²¹⁴ that originated around the middle of the 19th century and that thought of “cities as coherent units responsible for providing certain services to all citizens, for example, roads, sewers, emergency services, and public transportation”. The legal path of such infrastructures followed a precise logic: even if they originated as private enterprises, they later acquired the status of publicly regulated monopolies. Moreover, the modern infrastructural ideal implied that government would either provide or regulate infrastructures such as railroads, highways, post, telegraph, telephone, and the early Internet. However, Plantain contend that starting in the late 1970s, the modern infrastructural ideal began to “collapse as neoliberal leaders sought to lower costs through market competition”, with many infrastructures that underwent deregulation and/or privatization during the Thatcher–Reagan era. As a result, they were usually divided into several enterprises. In this new context, the government’s role

²¹³ Plantin et al (2018) *Platform studies meet infrastructure studies in the age of Google and Facebook*, 298.

²¹⁴ Graham, S. & Marvin, S. (2001). *Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition*.

was no longer to run or oversee monopoly providers of public goods, but rather the reverse: to break those monopolies apart so as to increase competition while renouncing many of the responsibilities implied by the modern infrastructural ideal. This strategy often produced efficiencies, but it also resulted in tiered structures of vestigial, poorly functioning services for low-income citizens alongside premium services for the wealthy²¹⁵.

The third phenomenon that cause the infrastructuralization of private platforms and of the decline of the modern infrastructural is the rise of personal computing: as we have seen in the software studies review, the rise of platforms is dependent on the rise of computation and on the distribution of interfaces that the mass adoption of smartphones constituted. In the early history of computing of the late 1960, computers were understood to become a significant resource for many people, in what was thought of as “computer utility” model championed by the French Minitel system²¹⁶. Computer were seen as the public goods, and also the Internet infrastructure heavily relied on government investment in the public interest. Plantain and colleagues arrives therefore at the same conclusion of Bratton when they contend that platforms remain centrally designed and controlled, but the “platform ecology looks more like a network or web, linking independently developed and maintained systems (e.g. apps)”²¹⁷.

Finally, Plantain and colleagues linger on the transformation and platformization of the Web, which from an open “global common that creates interoperability, based on evolving open standards” where “technical and institutional arrangements of the system permit anyone to create visible, findable, and linkable content that is encoded using public standards”²¹⁸ is more and more being platformed thanks to proprietary APIs. APIs, “entails moving away from published URIs and open HTTP transactions in favor of closed apps that undertake hidden transactions with Facebook”; as seen in the management view and the software studies view, APIs are the formidable components of platform governance, that create “notable restrictions and consequences for both app developers and users”. Plantain concludes by suggesting that platforms like Facebook should be consider as a social infrastructure, while Google “knowledge

²¹⁵ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 300.

²¹⁶ On the Minitel system, that il 1990s reached 6.5 million French, see Mailland, J. & Driscoll, K. (2017). *Minitel: Welcome to the Internet*. On the Socrate and Iperbole project in Italy see Bory, P. (2020). *The Internet Myth: From the Internet Imaginary to Network Ideologies*.

²¹⁷ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 301.

²¹⁸Ivi, 302.

infrastructure”; they should be seen at the same time as infrastructure and platforms, in a process of platformization of infrastructure and infrastructuralization of platforms²¹⁹.

This brief analysis of the infrastructure studies tradition has shown two things that I will further discuss in cp. 4 in relation to the legal status of platform infrastructures. First, the decision regarding the creation and regulation of platforms is a matter of *politics of design* and of technical architecture that involves both states and non-state entities. Those institutions are the place of negotiation of standards that are at least equally important than the law in determining the affordances of platform infrastructures. Second, this becoming-infrastructural of platforms creates concerns regarding the possibility of an ex-post intervention for the ‘regulation’ or even a publicly planned institutionalization of this form for the organization of more and more societal systems at EU level. That depends also on the very nature of what Paul Edwards has called “infrastructures on fire”, which is to say software infrastructures with a much faster temporality that “represent a new way of assembling and managing infrastructures, with a shorter cycle time than older, more capital-intensive counterparts”. Platforms are essentially made from code, they can be built, implemented, and modified fast²²⁰.

²¹⁹ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*, 307 For another discussion of the relationship platformization-infrastructuralization see Constantinides, H. et al (2018). *Platforms and Infrastructures in the Digital Age*.

²²⁰ Edwards, P. (2021). *Platforms are Infrastructures on Fire*, 314 - 322. Edwards distinguishes between three temporalities of infrastructures. The first is that of development and reach that normally lasts “thirty and one hundred years” and “is readily explained by the combination of high capital intensity; uncertainty of returns on investment in the innovation phase; legal and political issues, especially regarding rights-of-way; and government regulatory involvement”. A second temporality is that of endurance, where “major infrastructures such as railroads, telephone networks, Linnaean taxonomy, interstate highways, and the internet last for decades, even centuries” and where the qualities of “ubiquity, reliability, and especially durability create a nearly unbreakable social dependency.

At stake in this is the fundamental question of who has the right to shape the platforms that govern urban life.

Mike Hodson

3.6 Platformization and urbanism

3.6.1 Platform Urbanism beyond the ‘smart city’: Cities, geography, and the problem of scale

A fourth field of research that has been involved in studying platformization from its very beginning is that of urban studies. For digital platforms the city level is particularly relevant because it is the main locus of data collection; it is therefore one of the necessary layers of the ‘stack’²²¹. Without cities and users/dwellers there is nothing to deliver, nobody to accommodate, and no person to pick up and drive around the city²²². The impact of the platform model on the development of the city is so relevant that a branch of this field of research now actually calls itself ‘platform urbanism’ in the attempt to go beyond the initial discourse around the sharing economy and the ‘smart city’²²³. As reported by Hodson and colleagues in their introduction to *Urban Platform and the Future City*, which looks at the transformation of infrastructure, governance, and knowledge in urban studies, platforms are

increasingly prevalent as an urban phenomenon, in part because cities provide the largest and richest markets for their services. [...] Digital platforms fundamentally, and unevenly, reconfigure urban space and life itself. Developers of digital platforms are increasingly, and rapidly, seeking to intervene in nearly all aspects of urban life, from built environments and infrastructure systems to environmental monitoring and civic engagement²²⁴.

Such discourse around the sharing economy, the smart city and other forms of data-informed urban governance typical of the initial phase of platformization have received great scholarly attention in the last decade, but has served the performative discourse of platform corporations, propelling the “industry of smart technology producer” in the framework of unsupervised data

²²¹ Bratton, B. (2015). *The Stack*, in which he dedicates one chapter to City Layer of the Stack.

²²² Chiappini, L. (2020). *The Urban Digital Platform*, 280.

²²³ See in particular the work of Barns, S. (2020). *Platform Urbanism*, who coined the term. Urban studies research the urban development of cities, including the history of city development from an architectural point of view and the impact of urban design on community development efforts. For a brief history of the smart city label, see Morozov, E. & Bria, F. (2018). *Rethinking the Smart City: Democratizing Urban Technology*. Bria and Morozov have been involved in Barcelona’s attempt to create a different model of data management with the DECODE project.

²²⁴ Hodson, M. et al (2020). *Urban Platforms and the Future City*, Introduction, 2.

harvesting and extraction²²⁵. As we have seen with Gillespie, those efforts were and are part of the corporate attempts to deceive the public regarding the operations of digital platforms. Going beyond the smart city, then, represents a “key shift towards data-centered digital systems that are purposefully designed as templates to be applicable across multiple towns and cities”²²⁶.

Platform urbanism can be instead considered a more critical as well as analytical way of understanding the relationship between digital platforms and cities that investigate the transformation of urban infrastructure, governance, knowledge production, and everyday life. It has emerged in response to three challenges: first, the need to urbanize data-based, algorithmic business models; second, the linked imperative to move beyond the smart city’s focus on the urban governance-technology corporation dyad and towards the nexus between capital, technology, cities and consumers through the platform; finally; in the attempt to explore alternatives to the traditionally hierarchical and size-fits-all approaches in smart city governance²²⁷. In particular, Caprotti and colleagues pinpoint three reasons for which platform urbanism differs from the smart city discourse, which makes it a more analytic and systematic project. The first is that platform urbanism is based on integrating flows of diverse data into specific platforms that offer both commercial and governance services. They provide potential models that aims at solving some ‘problems’ at the city level. The second is that platform urbanism is applicable in a variety of different contexts: they can be city-specific, at inter-city scale and often in different political jurisdictions. Third, platform urbanism wants to use data for generative purposes of creating better living conditions for cities: it treats data as a resource for urban management and economies, giving also birth to the ‘open data’ paradigm²²⁸. Therefore, platform urbanism has been defined in terms of a co-evolution of cities and digital platforms as “a novel set of digitally enabled socio-technological assemblages rooted in the urban, which enables the emergence of new social and material relationships including intermediations and transactions”²²⁹. Moreover, Sarah Barns sees platform urbanism as a “new epistemological strategy” for understanding urban life in ways that remain alert to different registers of socio-spatial experience, encompassing but also extending beyond the “ontologies of control and

²²⁵ Hakanata, N. C. & Bignani, F. (2021). *Platform Urbanization and the Impact on Urban Transformation and Citizenship*, 765. For a review of the literature and discourse on the smart city and its evolution into platform urbanism, see Lee, A. et al (2020). *Mapping Platform Urbanism: Charting the Nuance of the Platform Pivot*; Rose, G. et al (2020). *Platform urbanism, smartphone applications and valuing data in a smart city*.

²²⁶ Caprotti, F. et al (2022). *Beyond the smart city: a typology of platform urbanism*, 2.

²²⁷ Ivi, 6.

²²⁸ Ivi, 6-7. In their detailed table, the authors also discuss the differences between the conception of smart cities and that of platform urbanism in terms of areas of focus, spatiality, temporality, governance and technology.

²²⁹ Caprotti, F. et al (2022). *Beyond the smart city: a typology of platform urbanism*, 1.

appropriation”²³⁰. Apart from the traditional global platforms of the GAFAM, platform urbanism also looks at those platforms that produce a more sensible transformation of city spaces. Among them, we can find Western platforms such as Airbnb (for home sharing), CityMapper (for journey planning), FreeNow (car sharing), Uber (ride-hailing) and Gorillaz (food delivery). In the East, China presents its own versions of such apps with Didi Chuxing, or Indonesia’s Go-Jek app ecosystems.

In short, platform urbanists investigate the relationship between digital platforms and cities to understand, first, how platforms reconfigure the city level, and, in turn, what can cities and municipalities do to govern digital platforms and use that model for managing the city. Finally, Mike Hodson and colleagues also noted a shift from only studying platforms as entities to studying platformization as a process in the attempt to go beyond the static analysis of platforms²³¹. For them, the “issue is not simply whether the bulk of platform activity occurs in cities, but the extent to which the activities they enable are constitutive of and/or parasitical on urban space”. They suggest not to look at platforms only as a business model and as technical possibilities, but to put “our attention on their *governance*, and how the capacity to govern is and should be organized and is being reconfigured in relation to platforms at an urban scale”²³². For platform urbanists at stake there is the relationship between platformization and urbanization, where platform technological infrastructures become crucial pillars for society ultimately changing the very notion of ‘urban citizenship’ based on membership in a given nation-state with derivative rights and duties²³³.

In the following section, I am going to review the questions posed and the topics discussed by leading platform urbanism researcher. I shall start from Sarah Barns’ historical contextualization of the platform/city relationship. Barns identified four of what she calls the “modern cities’ greatest inventions”, something that has fundamentally changed city life over time. The first one is the railway network, which, at metropolitan scales, “adopted a radial network pattern, and were rolled out quite rapidly over the short space of a few decades, by urban entrepreneurs who entered into partnership with city governments”. The second transformation was brought by the radio-telegraphy system, that, for the first time, allowed “dislocated people from their surroundings, and recalibrated notions of the public sphere”. Finally, it was the Internet that “saw the idea of *virtual life* take hold, both set apart from ‘real life’ but also changing the

²³⁰ Barns, S. (2020). *Platform Urbanism* 20. I agree with Barns, but, at an even more general level, with the need to understand platformization as an epistemology. See infra, The platform organization.

²³¹ Ivi, 2.

²³² Ivi, 4-6.

²³³ Hakanata, N. C. & Bignani, F. (2021). *Platform Urbanization and the Impact on Urban Transformation and Citizenship*, 769.

productive relationships between cities”²³⁴. However, it is only with the advent of smartphones that another shift occurred at the urban level. Smartphones’ interfaces created the material conditions for platform access and, thus, for the governance by platforms, with their “greater potential of multisensory recombination”²³⁵. As such, the city has become filled with data collection points: sensors, cameras, grids, dashboards, and other smart devices. For Barns, thanks to the platform’s apparatus of registration, “just as the railway networks of the nineteenth century served as a platform for the expansion of housing along railway corridors” nowadays data infrastructures are playing a “significant role in the functional organization and management of today’s cities”²³⁶. Barns points out that the relationship between cities and platforms is particularly conflictual because cities have always been platforms too, dense informational ecologies, and ‘multi-sided markets’²³⁷ – here we can recall also Belleflamme and Peitz historical description of the count of Champagne as a platform (section 3.2).

Urbanism is fundamentally concerned with notions and keywords such as space, geography, and architecture. In particular, urban spatiality plays a central role in shaping the conditions of social and collective life²³⁸. Spaces of urban computing and sensing have come to be platformed²³⁹, and urban platform governance works “by reconstituting not only what transactions or interactions happen *in space*, but by reconstituting the perceptual fabric *of space*, a fabric that knits socio-spatial practices into something we have come to think of as ‘the urban’”²⁴⁰. For Barns, one of the central points of platform urbanism is that cities are not the only governors of space, but platforms perform the same function, like when they ‘hack’ existing regulatory conditions governing the spatial contexts in which populations live and work or when companies like

²³⁴ Barns, S. (2020). *Platform Urbanism* 7.

²³⁵ Ivi, 9.

²³⁶ Ivi, 10.

²³⁷ Barns, S. (2020). *Platform Urbanism*, 198. where Barns is here using the broadest meaning of platform as a technologically agnostic schema for meaning-making.

²³⁸ See in particular the work of Harvey, D. (2019). *Spaces of Global Capitalism: A Theory of Uneven Geographical Development*, 117-148. Harvey creates a general matrix of spatialities using the two categorizations of space that he finds most useful, one proposed by him (that sees space as *absolute*, *relative* or relational) and one by Henry Lefevre’s *The Production of Space* (material-experienced space, representation of space or conceptualized space, and spaces of representations or lived space). Walls and doors are examples of absolute and material space; cadastral maps are representations of absolute space; the sense of power from ownership are spaces of representation of absolute space; circulation of money is an example of relative material space; topological maps are a representation of relative space; and so on.

²³⁹ In this platformization a central element is, once again, the rise of API as an essential platform infrastructure. For Barns, API “facilitates the extension of a platform’s reach in ways perceived as a form of ‘open innovation’ it also ensured standardized principles of programmability could be maintained across a distributed network” (p. 45). She highlights the ‘openness’ of the platform model, explaining that, contrary to traditional websites, where design about how a user can interact with content is fixed and pre-determined, platforms deliberately open up these decisions for their users to answer. There is not a single interface, but innumerable ways of interacting with the data.

²⁴⁰ Barns, S. (2020). *Platform Urbanism*, 56.

Airbnb does not ask for permission before reshaping a city's housing landscape²⁴¹. Barns understand platformization, following the work of the Dutch school of platform studies, as a specific form of intermediation that creates the conditions of engineered *socio-spatiality*. In Barn's analysis, under the conditions of platform intermediation the urban space turns into an ecosystem subjected to deepening recombinatory conditions of platform governance. Its proprietary opacities and with the consequence of intensifying informational asymmetries and producing "unevenly platformed geographies of information"²⁴².

Besides the notion of space and complementary to it, a second fundamental keyword in the platformization discourse coming from the field of urban studies is that of architecture. This keyword also appears in the rest of the platform literature and it is widely used in definitions and metaphors of platforms, for instance, in the term *software architecture*²⁴³. If physical architecture organizes social space in the city, software architectures is also a way of enabling and constraining interactions, with the relevant difference of their reprogrammability. Architecture, therefore, create 'affordances'²⁴⁴ that are at once technical but also inherently political. Finally, a third element of platform urbanism is the geographic aspect. It pairs with what has been called the "digital turn of geography" that sees scholars investigating how "geographies are produced *through*, produced *by*, and *of* the digital"²⁴⁵. Digital geography research often tackles problems concerning urban knowledge and information about space "which are digitally mediated by any kind of technology, such as mapping, geo-localization, and social media activities"²⁴⁶. As Letizia Chiappini argues, such questions are is not solely associated with accessibility to the territory in planning terms, but more about the 'findability' and the precision of algorithms to offer an on-demand match, geo-localized systems. Platform urbanism as a field is therefore developed in between geography, political economy and architecture.

3.6.2 Topics, questions, and categorization of platform urbanism

Among the many definitions of the platforms recalled by platform urbanists – many of which build on debate on the political economy of platforms analyzed at 3.3 - we may recall the general one given by Hodson and colleagues. In line with those definitions previously encountered in other fields but with an explicit architectural focus, platform urbanists understand the platform as

²⁴¹ Ibidem.

²⁴² Barns, S. (2020). *Platform Urbanism*, 151.

²⁴³ On the metaphorical use of architecture, see Karatani, K. (1997). *Architecture as Metaphor: Language, Number, Money*, as well as the more speculative work of Parisi, L. (2013). *Contagious Architecture: Computation, Aesthetics, and Space*.

²⁴⁴ See chapter three for a discussion of affordances and their role in regulating behavior.

²⁴⁵ Ash; Kitchin; Leszczynski (2018) *Digital turn, digital geographies?*, 25, emphasis in original. Quoted in Chiappini, L. (2020). *The Urban Digital Platform*, 279.

²⁴⁶ Chiappini, L. (2020). *The Urban Digital Platform*, 281.

architectures that organize and control networks, providing a context and infrastructure for people and firms to create and exchange value in new ways, through matching them with each other and with content, goods and/or services created on the platform²⁴⁷.

A first topic debated among platform urbanists is the platform as a new urban institution. Niels van Doorn, following Bratton, has in fact compared platforms as Airbnb to a new kind of urban institutions that transform the relationship between state, the market and civil society. Not only does Airbnb play an agenda-setting role as an urban “regulatory entrepreneur,” but it effectively co-shapes the terms of policy debates about the “very fabric of city life”²⁴⁸. Contrary to companies of the past, platforms as Airbnb also manage to mobilize their user base in its favor, “which it frames as a community of entrepreneurial middleclass citizens looking to supplement their income in a climate of economic insecurity and tech-enabled opportunity”²⁴⁹. This topic relates to the concerns on the platform as a new model of urban governance as the results of new configurations of public, private, and non-profit actors. As pointed out by Anttiroiko, in relation to urban public governance a platform is “not only a tool for managing information but also in a wider sense a framework within which to involve key stakeholders in governance processes and to seek solutions to complex social problems”²⁵⁰. That is to say that the platform logic is not only providing new ways of organizing services, but it indirectly becomes a way to organize societal life at the city scale. At this scale, the key struggle does not regard individual platform technological arrangements, but it rather deals with organization of technological architectures, so far used “to cultivate the normalization and institutionalization of the corporate control of infrastructure and to *extract* and monetize data” as shown by projects such as Sidewalk Labs²⁵¹. As such, platform urbanists acknowledge that platformization has changed and impacted pre-existing modes of urban governance and service provision.

A second topic deals with the new processes of spatial production enabled by platform urbanization. For Hanakata and Bignami, platform urbanism is concerned with the changing relation of (urban) producers and users, between city and citizens, so that “we are confronted with a new form of abstract space that is powerful and pervasive and distinctively marked by nonpersonal, complex, and at the same time abbreviated mode of exchange” which constitute a

²⁴⁷ Hodson, M. et al (2020). *Urban Platforms and the Future City*, 3.

²⁴⁸ Van Doorn, N. (2019) *A new institution on the block: On platform urbanism and Airbnb citizenship*, 1.

²⁴⁹ Ibidem.

²⁵⁰ Anttiroiko, A. (2016). *City-as-a-platform: the rise of participatory innovation platforms in Finnish cities*, at 329, quoted in Hodson, M. et al (2020). *Urban Platforms and the Future City* 10.

²⁵¹ Hodson, M. et al (2020). *Urban Platforms and the Future City*, 11. Sidewalk Labs is an urban planning infrastructure that is invested in new data-driven approaches to public realm design, transportation, sustainability, outdoor media and community development.

“new form of institutional practice”²⁵². In their case studies of urban megaprojects as Singapore and Grasbrook in Hamburg, they investigate how platforms and cities come together under a single governing authority to create a comprehensive plan, implementation, and management of those projects. Those platforms can be used for achieving different purposes: carrying out the planning of the energy infrastructures and CO2 consumption; visualize and easily compare results of different performance indicators and their impact on design schemes; simulate the performance of new buildings projects and assess the impact on and the relation to surrounding projects²⁵³.

A third topic deals with the production of knowledge about the city, as well as what “urban futures are generated, legitimized, and valued through platforms”. Platform urbanists highlight the relationship between data and the stacked organization of urban platforms²⁵⁴ - they even proposed to read the ‘urban’ itself as a stack - their governance “shapes the data that are produced and, ultimately, the forms of urban knowledge”. At stake, for Aaron Shapiro, there is how urban data can be made a valuable commodity and how “value production for urban data infrastructures hinges on their producers’ ability to enroll heterogeneous elements into their stacked configuration, and then use this configuration to control the flow of data and information”²⁵⁵. Thinking about how the platform is configured (we might say designed) is critical to the data that is produced. A fourth topic focuses on the changes in everyday urban experiences brought by digital platforms. These changes can be more subtle – ordering through a delivery platform instead of calling by phone – or more visible, as the replacement of taxis with services of car sharing. For platform urbanists, on the one hand, digital platforms work as disruptors “of existing forms of production and collective urban consumption and contribute to the production of new forms of consumption, with variable geographies”²⁵⁶. On the other hand, this disruption has relevant consequences for participation and democratic engagement in urban public and civic life. These questions, therefore, talk to debates such as the relationship between the “urban public sphere” and the reconfiguration of communication media.

Accordingly, urban scholars have started to propose a typology of platforms to navigate between the complexity of the platforms active at the urban level. Federico Caprotti and colleagues distinguish between four distinct categories: the first two are primarily private sector-focused,

²⁵² Hakanata, N. C. & Bignani, F. (2021). *Platform Urbanization and the Impact on Urban Transformation and Citizenship*, 765.

²⁵³ Ivi, 767-768. Singapore is an extremely interesting case of platformed technocracy, since it is part of a long-term planning that has lasted since 1982 with the creation of the National Computer Board. Similarly to China, Singapore has created a large ecosystem of service platforms for citizens.

²⁵⁴ Shapiro, A. (2017) *The urban stack. A topology for urban data infrastructures*.

²⁵⁵ Shapiro, A. (2017) *The urban stack. A topology for urban data infrastructures*, 76. Quoted in Hodson et al (2020). *Urban Platforms and the Future City*, 13.

²⁵⁶ Hodson, M. et al (2020) *Urban Platforms and the Future City*, 15.

while the third and fourth are centered on the public and non-profit sectors²⁵⁷. The first category of urban platform, named *online-to-offline producer–consumer intermediation* (as Deliveroo or Meituan) comprises platforms functioning as intermediaries between producers of goods and consumers/customers, via distributors. The platform matches the costumer and the commercial activity, while independent contractors deliver the good. In such platforms, there is minimal involvement of public authorities, limited to existing regulations and policies. The authors also note that in this category, the “city is key because of the spatial economy of urban aggregation and density that makes online-to-offline producer–consumer intermediation function from a commercial and user perspective”. It is therefore the city that provides the density (of consumers, demand, and digital and market data) that gives these platforms their urban logic.

The second category of urban platforms is called *service provider-customer intermediation, with examples such as* ride-hailing forms (Uber) or the navigation app Waze (owned by Google). Caprotti et al claim that these kinds of platforms are “focused on intermediating between the providers of specific services, and customers who use digital, commercial platform interfaces to search for, and pay, for those services”. As such, municipal and state authorities intervene as regulators, as providers have to navigate municipal and state regulations in order to be able to operate.

The third category is that of *public service intermediation*. An example is Virtual Singapore²⁵⁸, a digital double of the city that is aimed at being used by public and private sector users and customers. In this category, platforms “fulfill the function of intermediating between public agencies (who provide a service), and the customer”. Customer is chosen as a broader group, involving not only citizens, but also public sector departments or agencies, or private sector firms. As such, municipal authorities are “central actors in both providing services and determining platform functionalities and the parameters within which service offerings operate”.

The fourth and final category is represented by *non-profit service intermediation*. In this category the platform becomes an intermediary between “usually non-governmental, not-for-profit providers of services, and members of the public”, as NGOs and civic service providers. Caprotti et al quote as an example “the provision of real-time public transport and routing information through platforms such as those used by many cities’ public transport authorities; or the

²⁵⁷ Caprotti, F. et al (2022). *Beyond the smart city: a typology of platform urbanism*, 9-10

²⁵⁸ Which is described as a “3D digital replica of Singapore built on topographical as well as real-time, dynamic data. It will be the country’s authoritative platform that can be used in simulations and virtual tests of new solutions to urban planning problems”. See <https://www.sla.gov.sg/geospatial/gw/virtual-singapore>.

provision of free environmental and weather data by national meteorological organizations or citizen sensing projects”.

3.6.3 The commons and the attempts to build different urban platform models

A relevant political theme emerging from the platform urbanism debate is the opportunity to build a different relationship between the local municipality and the platform model. This can be declined in two complementary ways: on the one hand, by creating platforms directly owned by the municipality; on the other, by creating private-public partnerships and authorizations to conduct business in a certain geographical area. It is therefore important to highlight that not all digital platforms are for-profit corporate platforms, and Chiappini has noted that “there is no critical eye on the differentiation between digital platforms that commodify urban resources and another subset of platforms, which digitally-mediate urban experiences, such as citizen-based solidarity initiatives, in which the local state might have a role not only as a regulator but as an active promoter”²⁵⁹. An example of non-corporate platform comes from the municipality of Amsterdam, which launched its own digital platform named ‘We Amsterdam’ storing both offline and online civic initiatives to support citizens during the Covid-19 crisis. Similarly, the municipality of Milan opened a round of civic crowdfunding, offering financial support to help vulnerable citizens during the corona outbreak which severely hit Lombardy and Milan²⁶⁰. As such, Chiappini have proposed to distinguish for-profit digital platforms from what she calls “Urban digital platforms” (UDPs), which would be potential ways to reorganize the social economy, civic initiatives and complementary welfare provision. A relevant EU-founded project in this regard has been the DECODE (Decentralised Citizens Owned Data Ecosystem) project, supervised by Francesca Bria and launched with pilot projects in Barcelona and Amsterdam²⁶¹. Decode aimed to “developed decentralized technology that puts people in control of their personal data, giving them the ability to decide how it is shared”²⁶². It is based on the idea of the “digital common” - form of commons involving the distribution and communal ownership of informational resources and technology - in the attempt to reach a technological and “data

²⁵⁹ Chiappini, L. (2020). *The Urban Digital Platform*, 277. For Muldoon, this also depends on the obstacle of cross-platform compatibility: “tech giants [are] consciously designing barriers for interoperability into their products. If every city had their own municipal ride hail platform, for example, the software could be cloned so that signing into the app in different cities would automatically update to the specific rules and features of that city’s service.” Muldoon, J. (2022). *Platform Socialism*, 109.

²⁶⁰ Chiappini, L. (2020). *The Urban Digital Platform*, 278.

²⁶¹ The example of Barcelona as an Urban Platform with projects such as ubiquitous public Wi-Fi, upgraded traffic lights, telecare services and shared electric cars. For the concept of common, how it is related to its supposed “tragedy” and how to govern commons, see: Garrett, H. (1968). *The Tragedy of the Commons*; Ostrom, E. (1990). *Governing the commons: the evolution of institutions for collective action*.

²⁶² Final version of DECODE architecture, documentation and sustainability. Available at: <https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5ca5e7f67&appId=PPGMS>

sovereignty”²⁶³. Sarah Barns also concludes her analysis of platform urbanism by focusing on the need to focus on the question of public value in relation to platformization, noting that the organization of value production constitute an important form of public value and that initiatives to advance models of data sovereignty and data commons represent ways in which urban activists and innovators are seeking to reintegrate an ethics of public value within platforms ecosystems²⁶⁴. For Muldoon, the data commons paradigm, together with the creation of “communal rights to the data” emphasizes that is “the public who should be the main beneficiary of the value derived from their data. While private companies keep their data collection and use as a trade secret, a data commons would encourage participation and debate over the public use of technology”²⁶⁵. Such proposals are ways to imagine how to use the platform to create public benefits for citizens.

In reviewing the tradition of research that calls itself platform urbanism, we have encountered many important points. First, platforms have changed the everyday life of cities, the production of knowledge about the city. Second, the platform model has enabled new modalities for the production of space at urban level. Third and consequently, the platform is seen as new form and institutional model for creating value and governing the city that has changed the very meaning of urban citizenship. The geographical focus of urbanism at the scale of the city have also shown that platformization as a phenomenon is not only observable in every social system, but also at every scale: starting from the neighborhood to the city level and up to the regional, national and international levels. Finally, it seems to me that the political implications of platform urbanism may be relevant and radical: under the right legal-political condition it is the local municipality, and not the national government, that could be best equipped with regulating and planning the activity of corporate digital platforms. The ‘city’ could therefore be a privileged locus for the governance of certain platforms.

²⁶³ There is an important strand of literature that tried to envision of platform-based management of the commons, from managing a water resource to shared housing and condominium regulation via smart contract. I discuss some practical attempts to build such models with designer Martijn De Waal, “*The Production of Public Values through digital platforms*”, in Cristofari, G. (2023). *The Politics of Platformization*, 96 – 107. Those models are attractive, but they end up by transforming every social relationship into a visible transaction, leaving little space for spontaneity.

²⁶⁴ Barns, S. (2020). *Platform Urbanism*, 196.

²⁶⁵ Muldoon, J. (2022). *Platform Socialism*, 110.

A revolution in management is in the making. It will take a new, network-oriented view of the economy and an understanding of the consequences of interconnectedness to smooth the way.

Albert-László Barabási (2002)

3.7 Platformization and organizational studies

3.7.1 From networks to platforms

The sixth and last tradition involved in platform research is that of organizational studies. In this section, I will compare the platform with other sociological forms of organization and coordination through prices (markets) and through commands (hierarchies). However, I wish to start from contextualizing the relationship between the platform keyword and another fundamental keyword: the internet-enabled ‘network’ and its sociological understanding. We have to note that the frequency in the use and the importance of the network discourse preceded the platform discourse. This is, in my opinion, a necessary passage in the genealogical account of platformization, as the advent of the commercial internet had caused several aspirations in terms of new businesses models, new organizational forms, and their revolutionary potential in the organization of society. These aspirations were very similar to the one nowadays put on the platform keyword, but they turned out to be operationalized by platform corporations. In the present paragraph, I suggest that the use of the word platform as a keyword, as a metaphor, and as a normative project has incorporated – rather than substituted – the term network.

As a term, the word network derives from the language of metallurgy and textiles used in the sixteenth century to describe objects made out of fabric or metal fibers interlaced as in a net or web, and the roots of the term imply interwoven strands moving in multiple directions rather than directed toward a single end²⁶⁶. As a concept, the network expanded to include animal and plant tissues (biology), natural crystalline structures (chemistry), and, since the nineteenth century, social relationships (social networks). It also recalls the idea of a structure of interconnections, from transportation and communication systems (telegraph, electricity) to property, professional associations, and even literature²⁶⁷ and history²⁶⁸. Furthermore, the mathematics of network effects is at the base of the algorithms of Google’s graph²⁶⁹.

²⁶⁶ See Levine, C. (2017). *Forms: Whole, Rhythm, Hierarchy, Network*.

²⁶⁷ In literature, narrative networks are software used to map actors and their relational network on large scale. See Levine, C. (2015). *Forms: Whole, Rhythm, Hierarchy, Network*, 113. where narrative networks are software used to map actors and their relational network on large scale. For an in-depth application of the network metaphor to economics, biology, science, spirituality, cognition, health, and more see Capra, F. & Luisi, L. (2010). *The System View of Life: A Unifying Vision*. Prigogine, I. & Stengers, I. (2017). *Order Out of Chaos: Man’s New Dialogue with Nature*.

²⁶⁸ Bell, D. (2013). *This Is What Happens When Historians Overuse the Idea of the Network*, has criticized the overuse of the network idea by historians of global history. If, on the one hand, this approach

Moreover, in a particular account of sociological theory, the network was used – and it is still used – as a sort of epistemological tool to look at everything; it is the foundational metaphor of the field of Science and Technology Studies (STS), and especially in the flat ontology of Latour and Callon's *Actor-Network Theory*²⁷⁰. Similarly to cybernetics, the network epistemology seeks the connection and the consolidated patterns in the many domains it covered²⁷¹. Empirical research inside the sociological tradition has found that the “network frameworks” has actually increased in use over time. Together with the neo-institutionalist framework, the network has grown steadily since 1975, dominating the subfield since 2005 at the expense of the previous diversity²⁷². “With little exaggeration” – wrote sociologist Van Dijk in *The Network Society* – “we may call the 21st century the age of networks. Networks are becoming the nervous system of our society”²⁷³. On the early phase of the commercial Internet – which is itself a network of networks”²⁷⁴ - the network discourse was an umbrella concept that managed to effectively

acknowledges the ‘real complexity’ of the global processes, on the other it leaves little space for war and conflict as drivers of history (a critique that can be applied also to system theory’s abstraction).

²⁶⁹ Google’s main algorithm, PageRank, is based on the statistical mathematic of Andrej Andreevic Markov used to calculate “the relative respective weight of nodes within a network”. This kind of algorithm can be considered a shift from a *mechanical* to a *dynamical* view of indexing: in giving back indexed search according to the user queries, Page Rank did not show a fixed result, but a flowing result based on popularity of the website, that is, the number and quality of its links. See Ippolita (2013). *The Dark Side of Google*.

²⁷⁰ See Latour, B. (2005). *Reassembling the social: an introduction to actor-network theory*: See De Vries, G. (2016). *Bruno Latour*, for a reconstruction of the intellectual journey of Bruno Latour. See Bucchi, M. (2010). *Scienza e Società. Introduzione alla sociologia della scienza* for an explanation of his work on the sociology of the laboratory. See Farias, I. (2013). *Virtual attractors, actual assemblages: How Luhmann’s theory of communication complements actor network theory* for comparison of ANT with system theory. Now, if we had to imagine the platform in the flat ontology of the network, it would have to be a node, and it would start as a node like other nodes. But with the right timing, that node would start to grow. As it attracts users to come on board, it also makes them pass through that node. As a consequence, the importance and power of this “catalyst” node would also grow. Considering the node as a circle and the size of its radius as proportional to the number of users, that node would become enormously larger than the others. From a topological point of view, it would still be possible to connect to other nodes without the need to pass through that node - and the network could be still considered open.

²⁷¹ Barabasi, L. (2002). *Linked*, explores the network epistemology in several different fields: social relations, wealth, the creation of the Internet, DNA and molecules, the economy, viruses, among others. In a famous article, Granovetter, M.S. (1983). *The Strength of Weak Ties* applies the network to social relations.

²⁷² Grothe-Hammer, M. & Khol, M. (2020). *The decline of organizational sociology? An empirical analysis of research trends in leading journals across half a century*, 434. The other fields analyzed are contingency theory; transaction cost economics (TCE); resource dependency theory; population ecology.

²⁷³ Van Dijk, J. (2006). *The Network Society: Social Aspects of New Media*, 2.

²⁷⁴ For the history of the internet, see Castells, M. (2001). *The Internet Galaxy: Reflections on the Internet, Business, and Society*. On some accounts, the commercial Internet network was also understood as a political force. One famous idea was proposed in 1992 by engineer David Clarke. Clarke advocated leaving behind traditional deliberative methods thanks to the new technical possibilities granted by computers, stating: “We reject: kings, presidents, and voting. We believe in: rough consensus and running code”. [Russel (2006). *Rough Consensus and Running Code’ and the Internet-OSI Standards War*, 48]. Together with Perry Barlow’s *A Declaration of Independence of Cyberspace*, tech utopianism from right to left dreamed of the disappearance of the state. I analyze the misperception in the relationship between the rhizome – as popularized by the work of Deleuze and Guattari’s *Mille Plateaux*– and the internet in

organize knowledge and yield a multitude of media practices that are today part of anybody's life²⁷⁵. Sociologist Felix Stalder wrote that "both on the micro and macro level, decentralized and flexible communication technologies were meant to become the foundation of new organizational models"²⁷⁶. However, for network theorists such as Geert Lovink, this aspirational ideal turned out to be misplaced. "The distribution of power over networks turned out to be nothing but a dream. The valorization of flat hierarchies, a notion especially endorsed by "the network is the message" advocates, has been replaced by a platform system"²⁷⁷. In other terms, as Morozov put it, "1990s tech utopianism posited that networks weaken or replace hierarchies. In reality, networks amplify hierarchies and make them less visible"²⁷⁸.

On a famous account, organizational theorist Walter Powell contended that that the business network was emerging as a third form of organization besides hierarchical firms and decentralized markets²⁷⁹. This form was at the time perceived as new, and precisely like the platform, it seemed to change the relationship between centralized and decentralized coordination. Powell wrote that

Cristofari (2022). *Bratton and the Double Movement of State Platformization and Platform Institutionalization*. See also Bietti (2022). *A genealogy of digital platforms regulation*, 22 ss.

²⁷⁵ Apprich, C. (2017). *Technotopia*, 58: "today, the network is an umbrella term encompassing all possible subfields: hardware and software, infrastructure and meaning, technical invention and social innovation. In other words, it can no longer be reduced to a single origin, nor can it be described as a more or less stable medium, but rather has to be understood as a bundle of various media technologies and practices, which all take place in and on the Internet".

²⁷⁶ Stalder, F. (2018). *The Digital Condition*, 51. With Milton Mueller, we can draw a distinction between the use of the network concept as it appears in the social sciences. First, it can refer to a formal, mathematical tool for representing and analyzing social relations. Second, and more problematically, it is used as a theory (or sometimes only as a metaphor) of social organization, what he calls the network *organizational form*. See Mueller, M. (2010). *Networks and States: Information Revolution and Global Politics*, 35, where he identifies political networks, production networks and peer production networks. Mueller points out that "once confined to organizational forms, we must also distinguish between the clustering of political actors in unbounded networks of influence around governance institutions, and networks as a bounded, consciously constructed type of organization. Networked relations may become institutionalized, or clash with preexisting institutions, to produce institutional change. (p. 51) It is also the case with network theorists as Geert Lovink. See my interview with Lovink, "The Platformization of the Network Ideal", in Cristofari, G. (2023). *The Politics of Platformization*, 121 -132

²⁷⁷ Lovink, G. (2022) *Stuck on the Platform: Reclaiming the Internet*.

²⁷⁸ Morozov, E. (2017). Tweet, 11/07/2017. For a similar argument see Faul, M.V. (2015). *Networks and Power: Why Networks are Hierarchical Not Flat and What Can Be Done About It*. The label "information society" worked well because it was related to a sense of "what is going on" and also presented as a solution to capitalists' crisis and downturns, while evoking the most positive qualities. Ampuja et al (2014). *Strong and Weak Forms of Mediatization Theory. A Critical Review*.

²⁷⁹ Some definitions given at the time were the one of John Urry's, who saw the network as characterized by a "relational constancy between components", or Pierre Musso's as "an unstable structure of connections, composed of interacting elements, whose variability follows certain functional rules". Musso, P. (2003). *Critique des réseaux*. Urry, J. (2003). *Global Complexity*, 41, both quoted in Stalder, F. (2006). *Manuel Castells: the sociology of the network society*, 177. For a systematic reconstruction of the debates, see Byrne, D. & Callaghan, G. (2017). *Complexity Theories and the Social Sciences: the State of the Art*.

every form of organization is a network, and a markets and hierarchies are simply two manifestations of the broader type. However, when considered as a form of governance, the network form can be distinctly characterized. We define a network form of organization as any collection of actors that pursue repeated, enduring exchange relationships with one another and, at the same time, lack a legitimate organizational authority to arbitrate and resolve disputes that may arise during the exchange. In a pure market, relations may endure for longer than a brief episode, but a clearly recognized, legitimate authority exists to resolve disputes that arise among actors²⁸⁰.

We see in this case that the term network carries the same contradiction of the word platform: on the one hand, everything has always been a network – trading systems, telegraphs, even hierarchies – on the other there is something specific about these “new” forms of networks. As platforms, networks were considered “enduring forms of organization”, spaces of communication emerging from the repetition of interactions. The key difference is that the platform as a space that is open but operationally close does not only constitute the legitimate organizational authority that resolves disputes and conflicts, but it is the very entity that set the stage for those exchanges. The network epistemology ended up being applied to society itself, giving rise to the theories of the network society²⁸¹ such as that of Jan Van Dijk ²⁸² and of Manuel Castells. The latter devoted his ideas and writings to the network metaphor and can be considered an *ante litteram* platform theorist. In his influential trilogy *The Information Society*, Castells investigated the change brought by the network organizational structure at all societal levels. Even if he and other sociologists played a legitimizing role in the spreading of these terms²⁸³, his analysis is still very relevant today: as we have examined the previous chapter, the

²⁸⁰ Powell, W: (1990). *Neither Markets nor Hierarchies*, 22. See also Favereau & Lazega (Eds) (2002). *Conventions and Structures in Economic Organization: Markets, Networks and Hierarchies*.

²⁸¹ Which was used interchangeably with theories such as the “information society”, which, in the sense of Luhmann, are autological: they create a distinction that implies itself. See Luhmann, L. (2012a). *Theory of society*, 118.

²⁸² Van Dijk, AGM (2006). *The Network Society: Social Aspects of New Media*. directly links network theory to system theory, who complement each other; he sees a network “as a collection of links between elements of a unit”, where the elements are called nodes, and units are often called systems (p. 24). For Van Dijk – who reads network in multi-layered terms – networks are present at all levels, and namely (1) *individual relations*, (2) *group and organizational relations*, (3) *societal relation* and (4) the level of *global relations* in the world system of societies and international organizations. points out that System theory actually offers the most general definition of the network as “as a relatively open system linking at least three relatively closed systems. The relatively closed system is the unit”. This stems from the double origin of network theory: on the one hand biological from authors such as Maturana and Varela, and on the other hand, a mathematical origin. Van Dijk also applies a notion of the network that is different from Castells: not as are “the basic units of contemporary society”, but as those things *linking* the basic units of “individuals, households, groups and organizations” (p. 29-30).

²⁸³ See Ampuja, M. & Koivisto, J. (2014). *From ‘Post-Industrial’ to ‘Network Society’ and Beyond: The Political Conjunctures and Current Crisis of Information Society Theory*, where the authors contends that the work of information society theorists such as Bell and Castells “have served hegemonic functions for

history of the corporate platforms largely overlaps with Castell's analysis of the "network enterprise" and the "network state", and the logic of inclusion and exclusion are still relevant in today's platform discourse.

3.7.2 From the network society to the platform society

A first continuity between the network and the platform discourse lies in the sociology of the "network enterprise" and its business model. Castells' discourse on the network enterprise also starts with the practices of post-Fordism, and especially how the crisis of 1970s affected a particular type of business: "the large corporation, structured on the principles of vertical integration, and institutional, technical and social division of labor"²⁸⁴ represented by the Fordism. For Castells it was the shift from vertical bureaucracies to horizontal corporations, based on the need to create a flexible network capable of coordinating constitutive elements in real-time, across distances, according to changing tasks and opportunities. The example that Castells had in mind were companies like Cisco, which focused only on the beginning of the production cycle (research and development) and on its end (sales and services), while outsourcing the actual manufacturing processes to the cheapest bidder. Those companies, as we have seen in 3.3, are the same examined in the studies of "platform leadership" by early platform theorists as Annabelle Gawer²⁸⁵. In this case, multinational corporations remain a strategic command center of global economies, but the actual production is carried out "through a diverse network of operational units, some belonging to the same corporate structure, some to competitors, and others nominally independent. This is why the productive unit is no longer the firm but the network, which is composed of parts of multiple firms"²⁸⁶. His ideal type of network enterprise is perfectly applicable to the platform ecosystem as an

organizational form built around business projects resulting from cooperation of different components of firms, networking amongst themselves for the duration of a given project, and reconfiguring their networks for the implementation of each project²⁸⁷.

political elites across the capitalist world, providing them with ideals and conceptions for forming politics and political compromises in recent decades" (p. 448).

²⁸⁴ Castells, M. (2000). *The Rise of the Network Society*, 166, quoted in Stalder, F. (2006). *Manuel Castells*, 55.

²⁸⁵ Gawer, A. & Cusumano, M. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*.

²⁸⁶ Stalder, F. (2006). *Manuel castells*, 58.

²⁸⁷ Castells, M. (2001). *The Internet Galaxy*, 67, quoted in Stalder, F. (2006). *Manuel Castells*, 59. This ideal type gives substance to the emergence of a social morphology that is simultaneously global and culturally specific: enterprises have different characters in Silicon Valley, China and Korea, but they all take a networked form. Furthermore, the restructuring made possible by the network enterprise comes together with the flexibilization and individualization of work, in terms of working time, job stability, working location, and the decline of the social contract between the employer and the employee.

For Castells, however, these organizational changes were not caused only by the introduction of information technologies. Rather:

organizational change happened, independently of technological change, as a response to the need to cope with a constantly changing operational environment. Yet, once it started to take place, the feasibility of organizational change was extraordinarily enhanced by new information technologies²⁸⁸.

A second point is that the crisis of the industrial model of production and of the modern state, for Castells, was not limited to capitalist firms, but it constituted a crisis of the state that occurred also in communist countries. However, if capitalism managed to create a more flexible model and thus overcame the structural crisis of industrialism, communism did not²⁸⁹. Therefore, Castells applied network theory to the state apparatus by investigating the structural changes of the state at the end of the 20th century. The result was the rise of the “network state”, as consequence of two empirical factors: the loss of sovereignty of the modern state – which meant that many of the key economic, social, political and cultural processes were no longer contained in the nation-state - and the loss of legitimacy of the institutions of liberal democracy. Globalization had undercut the ability of the state to act autonomously; as a consequence, central aspects of national policy are shaped by processes that go on outside national borders, such as the global financial markets²⁹⁰. Castells identified many trends which makes clear the loss of sovereignty of the state. One is “contradiction between internationalization of investment, production, and consumption, on the one hand, and the national basis of taxation systems on the other”, that produces a negative competition between states to provide the most favorable environment for capital investment. Furthermore, global challenges as environmental degradation, migrations, global criminal economy and pandemics cannot be addressed effectively on a national basis; and NGO have also challenged the historical monopoly on policy making as the locus of humanitarianism. The last trend is the loss of control of the media that

²⁸⁸ Castells (2000). *The Rise of the Network Society*, 185, quoted in Stalder, F. (2006). *Manuel Castells*, 56.

²⁸⁹ In this sense, this perspective focuses more on how a business is organized (mode of development) rather than on the social character of this organization (mode of production).

²⁹⁰ The other examples are supranational institutions as the European Union. In its analysis - that ranges from the 1980s to the 1990s - Castells identifies five reasons for this loss of sovereignty, in favor of the global financial markets: the deregulation of financial markets; the new technological infrastructure capable of processing the rapidly increasing volume and complexity of market transactions; the invention of new financial products that increase the interdependence of various sectors of financial markets; the standardization brought by market valuation firms; finally, the growth of speculative capital. See Stalder, F. (2006). *Manuel Castells*, 52.

stems from a particular kind of diversification of the media landscape and, crucially, the fact that computer-mediated communication flows are largely outside the control of the state. In here we see the paradoxical normativity of the network epistemology at work: when states “disconnect their population from the internet (or fail to connect them)”- writes Stalder on Castells – “they interfere with their ability to foster economic development”, but “when they promote the use of new technology, they abdicate control over what their citizenry reads or writes”²⁹¹. However, for Castells the state was not deemed to disappear, but to restructure itself to continue to exercise its influence in a globalized network. As territorial expansion is no longer an option, and the preferred way to foster economic growth is to strengthen the position of a country as a node in global economic networks. In Castell’s analysis, the state is therefore caught in the global network of governance institutions operating on different layers: local, regional, national, and global. And the network state is defined as the “institutional system that mediates and manages the dual relationships between domination and legitimation, and between development and redistribution, under the influence of conflicts and negotiations between different social actors”²⁹². The “nation-state” as a sovereign power has been replaced by the “network state”, a system of governance created by flexible collaboration and competition between various state and non-state actors, who (re)gain influence by continuously negotiating competing claim of authority.

A third continuity between the platform and the network discourse in the work of Castells is the focus on how notions of space time and communication have changed since the industrial era. With notions such as the “space of flows”, Castells stressed the binary spatial logic of the network that is not bounded to physical space, claiming that networked the differentiation of nodes in networks is functional instead of geographical²⁹³. Castells pointed out that what makes today’s network so different from traditional social networks is that, for the first time, they scale

²⁹¹ Stalder, F. (2006). *Manuel Castells*, 114. But as Stalder notes, Castells’ notion of the network state and of the power in the network is actually problematic. On the one hand, he understands it as the practice of power-sharing in which nation-states are continuously engaged in an attempt to manage global problems. However, at times, he also equates it with “the international system of governance built in the aftermath of World War II, centered around the United Nations”. He also considers global governance as an emergent property of the network society, an automaton that nobody can control, notwithstanding the fact that these societal networks are also programmed.

²⁹² Castells, M. (2004). *The Power of Identity*, 305, quoted in Stalder, F. (2006). *Manuel Castells*, 108. For a critique of Castell’s conception – who change his mind on Marxism, excluded the role of class conflict and stands against the “hierarchical state” see Ampuja & Koivisto (2014). *From ‘Post-Industrial’ to ‘Network Society’ and Beyond: The Political Conjunctures and Current Crisis of Information Society Theory*, 452 – 456. Castells also shared a different understanding of the role of the state in information societies than Daniel Bell, for whom the state is the leading element of the information society, still meant at keeping it in order.

²⁹³ In doing this he follows the intuitions of authors as Marshall McLuhan and Harold Innis. For a discussion of their notions, see Carey, J. W. (1967). *Marshall McLuhan and Harold Innis*. See also the concept of “functional sovereignty” of Frank Pasquale.

well²⁹⁴. This is clearly related to the rise of multinational corporations combining economies of scope and scale that we have seen in 3.3. Hence, for Castells the real message of networking is not its superior efficiency but the fact that it induces a decisive break with fundamental practices and categories of modernity, problematizing the uniform and stable hierarchical horizons of space and time at the base of the project of modernity²⁹⁵. Castell's analysis pointed at a pre-eminence of social morphology over action in which the network performed a transformation of the social morphology. With the network form of organization not just the economy, but in all domains of social life a new type of society has been created. For castells, this does not imply the disappearance of others forms of organization, but simply that all other forms are highly affected by it, because "it transforms the frame of reference in which people and organizations operate"²⁹⁶.

These similarities between the network concept and the platform concept have led some authors that refer to Castell's work to relabel the network society as the "platform society". In their comprehensive reconstruction of the permeation of the platform logic in several sectors of social life including the news system, urban transport, the healthcare and the education system, and after describing the principles at the basis of platform's functioning²⁹⁷, the Dutch authors Van Dijck, Poell and de Waal were the first to claim that the platform model is affecting

²⁹⁴ Stalder, F. (2006). *Manuel Castells*, 181.

²⁹⁵ Stalder, F. (2006). *Manuel Castells*, 195.

²⁹⁶ In the last formulation of his theory of power, Castells distinguishes between four forms of network power. First, *networking power*, the power of the actors and organizations included in the networks that constitute the core of the global network society over human collectives and individuals who are not included in these global networks. Second, *network power* as the power resulting from the standards required to coordinate social interaction in the networks. In this case, power is exercised not by exclusion from the networks but by the imposition of the rules of inclusion. Third, *networked power*, the power of social actors over other social actors in the network. Fourth, *network-making power*, the power to program specific networks according to the interests and values of the programmers, and the power to switch different networks following the strategic alliances between the dominant actors of various networks. Castells, M. (2011). *A Network Theory of Power*, 773.

²⁹⁷ In their analysis of platforms mechanisms, they highlight the role of datafication, commodification (the fact that online and offline objects, activities, emotions and ideas into tradable commodities), the multi-sided nature of the markets, and also on the *selection* or curation of the most relevant topics (the ability of platforms to trigger and filter user activity through interfaces and algorithms, while users, through their interaction with these coded environments, influence the online visibility and availability of particular content, services, and people), the *personalization* of services (algorithmically determine the interests, desires, and needs of each user on the basis of a wide variety of datafied user signals) and the *commensuration* (the transformation of different qualities into a common metric through rankings, ratios, or elusive prices). See Miconi, A. (2022). *On Value and Labour in the Age of Platforms*, for a critique of the notion of commodification that, according to him, does not match with Marx's theory of value: for Marx, "value production takes place 'in the background' before the circulation and before the conversion of value into money and that of money into a specific prize" (p.115). See also Miconi, A. (2021). *Digital Surplus: Three Challenges for Digital Labor Theory*; on a similar line but from a non-Marxist perspective see Peck, J., & Phillips, R. (2020). *The Platform Conjuncture*, for whom platformization goes on in the "anti-market". In any case, there is an ontological difference between a market and a multi-sided market, and the differences (centralization-decentralization, 'tamed emergence', recursivity of platform markets) must be considered regardless of the perspective adopted. Even *payment* has become a market for capitalist competition, with payments platforms, blockchain, etc.

institutions, economic transactions and social and cultural practices to the extent that governments and states have to adjust their legal and democratic structures. In their view, platforms are “gradually infiltrating in, and converging with, the (offline, legacy) institutions and practices through which democratic societies are organized”²⁹⁸. Hence, the term platform society was used to emphasize “the inextricable relation between online platforms and societal structures”, because platforms “do not reflect the social: they *produce* the social structures we live in”²⁹⁹.

In their binary categorization, they distinguish between the most influential *infrastructural* platforms - many of them owned and operated by the Big Five and their consolidated ecosystems - and *sectoral platforms*, which serve a particular sector or niche, such as news, transportation, food, education, health, finance, or hospitality³⁰⁰. This categorization is original, as it is based not on certain shared set of characteristics, but on the societal sectors in which they are active. They also note how, by 2018, the core of the Western online infrastructure is completely privatized, and building infrastructural platforms seems to be impossible without the intervention of the state and civil society and highlight what I call the problem of categorization brought by platforms: many governance systems in western European nations depend on a division between infrastructure and sectors, but platforms deliberately blur these categories³⁰¹.

3.7.3 Which form for the platform's form?

So far, I have examined the ‘networked’ genealogy of the platform model and I identified several continuities between the two keywords. In chapter two we have seen how the first author to recognize the platform as a new organizational/institutional form was Benjamin Bratton. His understanding was however different than the forms we have witnessed before: Bratton talked about the need for “a recognition of platforms as a third institutional form, along with states and markets, [which] situates the convergence of its architectonic and computational forms in a more specific and fundamental way”³⁰². Other organizational theorists are instead asking whether, from a sociological point of view, is the platform is a new form of organization in

²⁹⁸ Van Dijck, J., Poell, T. & De Waal, M. (2018). *The Platform Society: Public Values in a connective world*.

²⁹⁹ Van Dijck, J. et al (2018). *The Platform Society: Public Values in a connective world*, 2. Note that these authors, even if they never explored socialist platformization, arrive at exactly the same point from which Stafford Beer started: the platform as a cybernetic machine meant at producing the values for which it was designed.

³⁰⁰ Van Dijck et al (2018). *The Platform Society*, 13. For an analysis of the relationship between platforms and infrastructure see the paragraph on Internet governance.

³⁰¹ Van Dijck et al (2018). *The Platform Society*, 20. On the relationship between the state and platforms see also Taylor, O. (2015). *Disruptive Power: The Crisis of the State in the Digital Age*. Taylor claims that digital platforms are transforming the relationship between state, society, and the economy, and that this transformation poses significant challenges to the ability of the state to maintain democratic legitimacy and political authority while also eroding the ability of the state to regulate and govern effectively. See also Robles-Carrillo, M. (2022). *Digital Platforms: A Challenge for States?*, In M. I. Inozemtsev et al. (Eds). *The Platform Economy*, 49 -62.

³⁰² Bratton, B. (2015). *The Stack*, 44.

comparison to other ideal types of social morphology such as hierarchies (mechanisms of coordination via commands³⁰³), markets (mechanisms of coordination via prices), and communes or communities³⁰⁴. This moves from previous organizational forms to the platform as a form is getting increasing consensus among organizational sociologists. Sociologists are recognizing that “platforms are neither like other social collectives such as markets, hierarchies or communities, nor completely distinct from them”³⁰⁵, but they debate on, we could say, which forms the platform’s form takes³⁰⁶. Schüßler and his colleagues, for instance, starting from the premise that defining the platform is not the problem³⁰⁷, understand it as a contested triadic structure consistent with Bratton’s understanding of the platform as an inside/outside:

the social relationships mediated by specific technological, organizational and legal platform architectures each comprise a social force that pulls the platform in a different direction. These forces are complementary to each other in constituting platforms, but they also remain conflictive and contested. The forces also draw from, and affect the larger environment (markets, states, civil society) in which platforms are embedded, which itself dynamically responds to platforms by either nurturing or impeding their growth. Describing these social forces that constitute platforms provides us with a new conceptual language to

³⁰³ The word hierarchy comes from Greek, as it is made up of *hieros* “sacred” and *arkhia* “rule”. The first clear meaning arises from this etymology, since hierarchy at that time is “the governance of things sacred”. It first referred to levels of angelic choruses and then to ordered levels of authority and subordination. As a theological term, it is used to refer to the “subordination that exists between the different choruses of angels”. In the *Encyclopédie* hierarchies (plural) appear as a human construct; hierarchies are also discussed by sociologist such as Comte (who sees them as a system) and Durkheim (where they are a relational social model). See Verdier (2006). *Hierarchy: A Short History of a Word in Western Thought*, in Pumain, D. (2006). *Hierarchy in Natural and Social Sciences*, 13.

³⁰⁴ Max Weber, the first organizational theorist, created the ideal types of rational, traditional and charismatic power. See Izzo, A. (2005). *Storia del pensiero sociologico*, II, 48. Those ideal types can be then recombined to describe a certain organization. See also Rossi, P. (2007). *Max Weber. Una idea di occidente*.

³⁰⁵ See Schüßler, E.; Attwood-Charles, W.; Kirchner, S.; Schor, J.B. (2021). *Between Mutuality, Autonomy and Domination: Rethinking Digital Platforms as Contested Relational Structures*.

³⁰⁶ Schüßler, E. et al. (2021). *Between Mutuality, Autonomy and Domination*, define the platform’ form as diverse, hybrid and malleable (p. 1219). The authors also criticize the recombinatory view of the platform mode – according to which platforms recombine the features of the other organizational forms. They instead describe it as a “multi-faceted relational structure in which three social forces operate simultaneously—those of mutuality, autonomy and domination”. On the recombination of these features see Vallas, S., & Schor., J. (2020). *What Do Platforms Do? Understanding the Gig Economy*.

³⁰⁷ Schüßler, et al. (2021). *Between Mutuality, Autonomy and Domination* contend that “much of the debate to date has centered around the question of what platforms are and what, precisely, they do. We believe platforms have elided definition because this debate has attempted to define platforms in terms of fixed representations rather than as a mode of balancing internal social relationships (dominance, mutuality and autonomy) in relation to the broader institutional environment (state, economy and civil societies). Thus, our argument is that platforms should be understood in terms of the ways in which they relate to workers, consumers and the institutional environment. Toward this end, we suggest that platforms should be understood as multi-faceted relational structures”. (p. 1234).

capture a diverse, hybrid and malleable, yet increasingly pervasive organizational form and its contestation in the twenty-first century³⁰⁸

Furthermore, Stark and Pais, while discussing the problem of algorithmic management in the platform acknowledges that it presents some novelty when they write that “whereas actors in markets *contract*, hierarchies *command*, and networks *collaborate*, platforms *co-opt* assets, resources, and activities that are not part of the firm”³⁰⁹. For them, the platform model is a new form of social organization that “turns inside out Powell’s distinction between markets, hierarchies and networks” and that creates “a triangular geometry in which platform owners co-opt the behavior of providers and users, enrolling them in the practices of algorithmic management without managerial authority having been delegated to them”³¹⁰. They therefore conclude that:

i) platforms are of the market but not reducible to it, indeed they may be its anti-market; ii) like hierarchies, they produce power asymmetries, but these are new and outside bureaucratic supervision; and iii) they make property out of network properties, but they substitute timing for trust³¹¹.

In an extended literature review of the sociological studies on platform organization, Kurtz Rachlitz distinguished between “platform organizations” as formal that are dependent on the technological infrastructure of the digital platform, and whereas “platform organizing” as a new kind of social ordering combining organizing outside and organizing inside of formal organizations³¹². The social ordering of platform organizing comes, according to Rachlitz, in the four processes of *providing* (organizing technology), *regulating* (organizing markets), *integrating* (organizing networks), and *orchestrating*³¹³. I personally believe that the platform form is new in the many senses that we have encountered until now: a new system to produce value; a new system of governance of social groups that turn them into assets; a new system of social organization.

³⁰⁸ Schüßler, et al. (2021). *Between Mutuality, Autoviny and Domination*, 1219 – 1220. Citation omitted.

³⁰⁹ Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, 47. This paper analyses the differences between markets, hierarchies and networks precisely by starting from Powell’s perspective (pp. 49 – 53)

³¹⁰ Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, 49.

³¹¹ Ivi, 53.

³¹² Rachlitz, K. (2023). *Platform Organizing and Platform Organizations*, 4.

³¹³ Ivi, 22.

As a conclusion of the present literature review, in the next paragraph I am going to review the definitions, metaphors and categories of the platform that we have encountered and discuss the notion of platform governance and of platformization.

3.8 Platformization: a final review

3.8.1 Platform governance

A last notion that we have often encountered during the literature review is that of platform governance, which has been recently described as the third institutional dimension of platformization besides data infrastructures and multi-sided markets³¹⁴. It was again Tarleton Gillespie that first proposed the distinction between the governance *of* platforms (how platforms are governed) and the governance *by* platforms (how they directly govern)³¹⁵.

The *governance of platforms* refers to the ways in which public powers can govern the behavior of platform corporations at national and international level, and generally “how public institutions set the legal boundaries of what can be exchanged on platforms”³¹⁶. At EU level, platforms can be scrutinized by regulators and EU institutions or by the EU Commission, as well as by independent authorities such as data protection or antitrust authorities. For example, laws can impose notice-and-take down request based on unlawful or copyrighted contents. Moreover, according to the paradigm of ‘self-governance’, platforms can be able to govern themselves, and internal changes can be the result of external pressure pressures via investigatory journalism, academic engagement, and public advocacy³¹⁷. In some cases, it is however hard to assess the internal structure of the platform and therefore its compliance with regulations. This paradigm may become necessary as platforms become institutionalized, but as we have seen until now platform discourse has been used to deceive the public and it makes little sense to rely on platform’s goodwill and rhetoric. Furthermore, insofar as the platform model is applied to the corporate model, platform governance can look at the tools for the governance of traditional multinational companies³¹⁸. However, as I will try to better show in the next chapter, the novelty of the platform model brings some new challenges for the regulatory paradigm, which may in some cases be inadequate to deal with existing infrastructural power of platforms. In other terms, if it is true that that platforms must be situated in the long trend of financialization, globalization, and corporate governance, my point is precisely that a platform changes what a company is and therefore the way it can be governed by the other institutions, especially when it has gained an infrastructural role.

³¹⁴ Poell, T. et al (2022). *Platforms and Cultural production*, 81.

³¹⁵ The distinction was originally proposed by Gillespie, T. (2017). *Governance of and by platforms*, but there are other works that directly refer to this distinction. See Belli L., & Zingales, (Eds, 2017). *Platform regulations: how platforms are regulated and how they regulate us*. The same distinction has been made for the governance of infrastructure and by infrastructure. See also Bloch-Wehba, H. (2017). *Global Platform Governance: Private Power in the Shadow of the State*.

³¹⁶ Poell, T. et al (2022). *Platforms and Cultural production*, 93.

³¹⁷ See Gorwa, R. (2019). *What is platform governance?*

³¹⁸ Ibidem.

On the other hand, the *governance by platforms* is achieved, as we have seen, in their endless attempt to manage and structure the relationship between the groups that constitute the human components of the platform ecosystem on the platform inside. The platform “structures how content can be created, distributed, marketed, and monetized online, affecting the regulation of public space”³¹⁹. This is also achieved also by constantly changing the design of the platform – by reprogramming the architecture – and gradually finding out the new set of strategies investigated by the management literature. A great aspect of this governance passes through what has been called the work of curation or moderation carried out by the platform: deciding what to show and what not to show and in which order, giving relevance to things and dividing things into categories: what I have called, with the language of system theory, their ability to perform selections of selections. Gillespie had initially highlighted that *moderation* is the main tool of platform governance:

platforms constitute a fundamentally new information configuration, materially, institutionally, financially, and socially. While they echo and extend traditional forms of communication and exchange, they do so by being, like computers themselves ‘universal machines’ for many different kinds of information exchange...moderation, far from being occasional or ancillary, is in fact an essential, constant, and definitional part of what platforms do. I mean this literally: moderation is the essence of platforms; it is the commodity they offer³²⁰.

More recently, in the attempt to systematize the various dimension of platform governance, Thomas Poell and his colleagues argued that to understand how platform markets and infrastructure operates and develops, one needs to look at the system of governance of the platform, which plays a central role in cultural production and other economic activities precisely because platforms have become lucrative markets and ubiquitous infrastructures on which the cultural industries have come to rely³²¹. They called “boundary resources” the key governing instruments used by platforms, such as “platform’s infrastructural gateways and associated informational resources that enable and control the computational and institutional interactions with complementors³²²”. It is what we have seen in the management literature: the possibility of the platform to open or close its APIs to third parties and revoking the certificates at their will. Poell and colleagues went beyond Gillespie’s focus on moderation and proposed to

³¹⁹ Poell, T; Nieborg, D. B.; Duffy, B. E. (2022). *Platforms and Cultural production*, 93.

³²⁰ Gillespie, T. (2018). *Custodians of the Internet*, 207.

³²¹ Poell, T. et al (2022). *Platforms and Cultural production*, 81.

³²² Poell, T. et al (2022). *Platforms and Cultural production*, 78.

distinguish between three dimensions of the governance by platforms: regulation (the setting of standards, guidelines and policies); curation (the categorization and ordering of content and services); moderation (the enforcement of governance by platforms). Taking Apple as an example, they have shown how

Apple actively *regulates* the type of apps that can be distributed through the app store by offering an evolving set of boundary resources, including SDKs, APIs, associated documentation and instructions, and increasingly elaborate “App Store Review Guidelines.” In turn, Apple engages in *curation* by giving individual apps it deems compelling a “boost” – for instance, by featuring them in one of the “Our Favorites” sections. Finally, as an example of *moderation*, Apple’s internal review teams assess each individual app submitted to the store, ensuring an app’s technological compatibility, regulatory compliance, and “appropriateness.”³²³

The first dimension of platform governance mobilized by Poell and colleagues is *moderation*, that they understood, following Gillespie, as the “pre-screening, rejecting, removing, sequestering, banning, downgrading, or demonetizing of content and accounts by platforms”³²⁴. Apple, for instance, moderates by removing apps that it considers obscene. Here we are confronted with a paradox that we already encountered while discussing the ‘Faustian pact’ between governments and corporations in the delegation of censure of contents. On the one hand, moderation is discretionary; on the other, it is required, with the consequence that scholars have both pointed out that platforms do not adequately respond to the disinformation crisis, and while they are also intervening too much, and they are therefore causing it. The point for Poell and his colleagues is then about finding the balance between these two instances³²⁵.

The second dimension of the governance by platforms is *regulation*, which is the activity of organization of the platform’s ecosystem of complementors and users. Regulation is the set of the standards, guidelines, and policies that the platform sets, and it is therefore composed by the formal and informal controlling mechanisms described in the management view. In particular, the authors highlight the possibility of cutting off access to official boundary resources, quoting cases as the change of Facebook’s API to “Basic permission” which now allows the platform to access developers’ accounts and creations, and Youtube’s decision to prioritize news partners that had undergone its self-certification process. For the authors, the relevant consequence of it is that this regulatory standardization is that it “gives these companies far-reaching control over

³²³ Ivi, 84.

³²⁴ Ivi, 96.

³²⁵ Ivi, 97.

how platform-dependent cultural creation, distribution, marketing, and monetization take shape. In other words, it transfers infrastructural power to platforms". In other terms, it implies the fundamental power imbalance that the political economy literature has highlighted.

The third dimension of platform governance is platform *curation*, which they define it as the categorization and ordering of content and services on platforms. Every platform must rely on some forms of curation, but how this curation is taking place may differ. Based on the work of Gillespie and on the investigation of Bonini and Gandini in the music sector, Poell and colleagues distinguish between a selection of cultural content that can be *editorial* (performed by humans) and *algorithmic* (where automated systems to rank content and complementors)³²⁶. An example of the first is Apple's IOs app store, which has moved from an algorithmic curation to an editorial one to control what apps become prominently visible to favor those apps that provide most revenues as gaming apps. One example of the music sector is Spotify, whose playlist can be both made by algorithms ('your selections') and by humans. The consequence for 'cultural producers' is relevant, as being inserted in "Today's top hits" means a significant increase of revenues and notoriety. In the music industry, platformization through playlists has led to a "recentralization of curational power in the hands of the big players of the music industry"³²⁷. Social media content creation is largely structured by algorithmically curated platforms as YouTube and TikTok. The first has over time changed his strategy and pushed for search and personalized recommendations, while the second has built a well-functioning customized algorithm for recommendations. The consequence of this is a situation of structural uncertainty for creators, whose expectations remain open to constant delusions because the situation may change from one moment to the other so that "the more cultural producers distribute and monetize content through platforms, the more platform curation steers what content and which complementors become visible"³²⁸.

3.8.2 Reviewing platform metaphors

Throughout the literature review of the present chapter, we have encountered several metaphors, definitions and categories deployed to describe the platform. I now want to collect them here and compare them to each other starting from metaphors. In doing so, I follow those authors that attribute *cognitive* value to the metaphor as a foundational element of language, and, hence as circular instruments of knowledge³²⁹. As metaphors are necessary passages to

³²⁶ Bonini, T., & Gandini, A. (2019). "First week is editorial second week is algorithmic": Platform gatekeepers and the platformization of music curation.

³²⁷ Poell, T. et al (2022). *Platforms and Cultural production*, 94.

³²⁸ Ibidem.

³²⁹ It is already the etymology of the word metaphor that points at a process of transport, translation and transportation at the same time. *Meta* means 'after, over, across', but also 'changed' and *pherein* 'to bear, to carry' [Van Boomen, M. (2014). *Transcoding the Digital*]. For authors such as Umberto Eco, it is

account for changes in society through language, I believe they should have an important place in platform theory, which, as we have seen, deals with the evolutions in the forms of platform mediations.

The oldest metaphor that we encountered is PLATFORM AS AN ELEVATED STAGE, from which one can speak and be heard, something that allowed for some type of activity to take place. Analogously, digital platforms are socio-technical arrangements that allow for certain relations to take place, usually by putting into communication entities (human and non-human) and creating new forms of complementarity among these entities, sustained by processes of data collection, processing, and display. This metaphor is also related to that of PLATFORM AS A POLITICAL PROGRAM, and if this metaphor seems detached and far from the platform as an organization, it signals that the domain in which platforms operate is politics. Such a meaning can still be found in expressions such as “deplatforming”³³⁰. A very central metaphor that is still largely used in recent contribution - used or implied by virtually all the management literature - is PLATFORM AS A MARKETPLACE (or as *forum*, or *agora*)³³¹. While this metaphor highlights that platforms are essentially matchmakers and multi-sides markets, it hides that the platform is a system of specific governance that relies on algorithmic normativity and a continuous labor of curation and moderation³³².

The political economy literature employs multiple different metaphors to refer to platforms: the PLATFORM AS A COORDINATION MECHANISM³³³ shows that the platform’s core activity is to keep a homeostatic balance between two groups - for instance, app developers and app users - but here the activity of control and the effort that the platform needs to make to keep this coordination

impossible to talk of metaphor unless metaphorically, and so the interpreter is put ‘at work’. In other terms, he interpreter of a metaphor, in discovering that the metaphoric expression does not tell the truth, is obliged to interpret it metaphorically, and obliged to assume that the expression should express something else. The problem then becomes that of discovering on what “encyclopedic rules” the solution of the metaphorical implicature must base itself: with the language of Eco, in order to understand it he needs to look into a system of content organized as an encyclopedia (which is a semantic and semiotic model that explains the functioning of semiosis and signification). See in particular Eco, U. (1984). *Semiotics and philosophy of language*, 54. Eco, U. (2007). *Dall'albero al labirinto. Studi storici sul segno e l'interpretazione*.

³³⁰ See also Van Dijck, J. et al (2021). *Deplatformization and the governance of the platform ecosystem*, for which deplatforming is actually different from deplatformization. See Belleflamme, P. & Peitz, M. (2021). *The Economics of Platforms*.

³³² This is one of Gillespie’s main points: for him, “platforms constitute a fundamentally new information configuration, materially, institutionally, financially, and socially. While they echo and extend traditional forms of communication and exchange, they do so by being, like computers themselves ‘universal machines’ for many different kinds of information exchange...moderation, far from being occasional or ancillary, is in fact an essential, constant, and definitional part of what platforms do. I mean this literally: moderation is the essence of platforms; it is the commodity they offer”. Gillespie, T. (2018). *Custodians of the Internet*, 207.

³³³ A coordination that, for Casilli, it is at the same time economic, algorithmic, and systemic. Similarly, Langlois and Elmer (2019). *Impersonal subjectivation from platforms to infrastructures*, talk about the ‘orchestration of existence’ performed by platforms.

are both made explicit. The platform does play an active role in the political mediation of the groups. The PLATFORM AS A SHOPPING MALL shows that multi-sided corporate platforms, following the standard capitalist model, are fundamentally rent-seeker. However, this (static) metaphor downplays the evolutionary nature of platforms, and it neglects to account for the fact that established corporate platforms are always actively working to maintain their oligopoly³³⁴. Similarly, Muldoon rehabilitates a Marxian metaphor by describing the PLATFORM AS A VAMPIRE. If, according to Marx, the capitalist is extracting value from the worker, the platform extends this extraction logic to all groups in its market - including complementors. In this metaphor, it is important to highlight that the managers and the Marxists are in complete agreement in their understanding of the platform business model, since the managers define the platform as an infrastructure that extracts value from groups³³⁵. It is only in their normative evaluation that these understandings diverge: the first see this as a new and viable business model, and the second as an intensification of the capitalist's unacceptable practices. What the metaphor is not showing, however, is that value is also created for users.

In software studies, Benjamin Bratton has theorized the stacked model of the platform which encapsulates the mutable form of its organization. Platforms are composed of multiple layers, and they present recursive features: the metaphor he put forward is the PLATFORM AS A STACK³³⁶. Similarly, accounting for platform evolution, Bratton also mobilized the metaphor of the PLATFORM AS THESEUS' SHIP, referring to the popular Greek myth of the paradox of identity and change. This last metaphor is also consistent with the PLATFORM AS LEGO suggested by Anne Helmond³³⁷. According to the authors, the reprogrammability and the modularity of the digital platform are the central elements which permit the platform to stay the same not in spite of its change, but because of it. As similar recombination of different attributes and properties can be found in the metaphor of the PLATFORM AS A CHIMERA³³⁸. Helmond have also suggested the metaphor of PLATFORM AS A SQUID³³⁹. This metaphor was first developed with regard to social media platforms, but it can easily be extended to refer to any complementor that builds services on them. According to this metaphor, the evolving API permits service producers to be captured but remain divided, each one for each tentacle, all in a process of taskification.

³³⁴ For a study on the attempts of platforms 'overthrow' see Thomas et al (2019). *The future of digital platforms: Conditions of platform overthrow*.

³³⁵ Muldoon, J. (2022). *Platform socialism: How to reclaim our digital future from big tech*. McIntyre et al. (2020). *Multi-sided platforms as new organizational forms*. It is also interesting to note that in western mythology, the vampire is a species of the genus of the shapeshifter.

³³⁶ Bratton, B. (2015) *The Stack*; Choudary, P. (2015). *Platform Scale: How an Emerging Business Model Helps Startups Build Large Empires with Minimum Investment*

³³⁷ See my interview with Anne Helmond, "The Infrastructures and Flows of Social Media Platforms", in Cristofari, G. (2023). *The Politics of Platformization*.

³³⁸ Vallas, S. P. and Schor, J. B. (2020). *What Do Platforms Do? Understanding the Gig Economy*.

³³⁹ Helmond et al (2019). *Facebook's evolution: development of a platform-as-infrastructure*.

An older software metaphor is the PLATFORM AS A WALLED GARDEN, which points at it being an enclosed space of human sociality, an artificial creation of an inside and outside in order to maximize profit from resources that would otherwise be easily accessible in a non-rivalrous form³⁴⁰. Similarly, the PLATFORM AS A GATEKEEPER often appears paired with the PLATFORM AS A GATE-MAKER³⁴¹. In these metaphors, the focus point is the *ex-nihil* creation of a market, which is then guarded by the entity that created it. The metaphor of the PLATFORM AS A SYNTHETIC WORLD³⁴² is the one I find most representative, because it ecologically recombines most of the previous metaphors. It includes the PLATFORM AS AN ECOSYSTEM metaphor – largely deployed by both academics and managers³⁴³– but in contrast to the self-organized nature of an ecosystem, this synthetic world is designed by a centralized entity that coordinates the affordances and can change them according to serendipitous discoveries. Like in video games, users will try to hack the platform(s); precisely from this process, the platform will understand how to patch itself – to reprogram its affordances in order to tame emergence. Finally, PLATFORM AS A CATALYST³⁴⁴ has been used by Evans to describe the platform business model. He referred to while referring to the “catalytic value creation” of platforms³⁴⁵.

3.8.3 Reviewing platform definitions

In the attempt to codify a precise meaning of the word platform in the contemporary academic discourse, we have also been encountering several definitions of the platform that have been given in various fields and that complement each other. Since Gillespie’s article on the politics of platforms the debate has very much evolved, and there is less ambiguity on what a platform is,

³⁴⁰ But walls are made to block sight, passage and communication with the outside, while, with Luhmann, we could say that a platform is only operationally closed, and exchanges information through the interface acting as a membrane that governs the conditions of exchange with users. The interface is what gives meaning to the algorithmic dimension of code.

³⁴¹ Interestingly, Victor Papanek used to think about designers as gatekeepers. See Monteiro, M. (2019) *Ruined by design*, 30.

³⁴² A non-gamified version of this metaphor (the platform as a world) is used by Casilli, A. (2020.) *Schiavi del click*, Pieranni, S. (2021). *Red Mirror*, Balestrieri, L. (2021). *Le piattaforme mondo: l’egemonia dei nuovi signori dei media*.

³⁴³ On the topic see the work of Tiwana, A. (2013). *Platform Ecosystems: Aligning Architecture, Governance, and Strategy*; Barns, S. (2020). *Platform Urbanism*, 23, has pointed out that “platform ecosystems describe the relationships established by platforms when they ‘intermediate’ a marketplace or set of existing relationships. The term captures the way platforms tactically reconvene diverse relationships and, by so doing, create dependencies on platform infrastructure”.

³⁴⁴ For Luhmann, power is the communication medium of the political system that coordinates selections and produces corresponding expectations. It works as ‘generator of motivations’. The German sociologist pointed out that, in contemporary societies, power cannot be adequately described by traditional theory as a cause or as potential cause. It “can be compared rather with the complex function of a catalyst. Catalysts accelerate (or decelerate) the triggering of events; without themselves changing in the process, they cause changes in the ratio of effective connections (or probability) expected from chance connections between system and environment. Thus, in the end they produce a gain in time – always a critical factor for the construction of complex systems.”. Luhmann, N. (2017). *Trust and Power*, 114.

³⁴⁵ Evans, D.S. (2016). *Platform Economics: Essays on Multi-sided Markets*, 50. The same metaphor is also used by Luhmann to describe how power works in modern society as what “makes the improbable probable”. See Luhmann, N. (2017). *Trust and power*.

but it remains a contested structure. A recent review of the papers from 2018 to 2021, which is also missing many of the definitions that we considered here, identified 26 different definitions of the platform³⁴⁶. I am going to list here three definitions that we have encountered: first, the platform business model; second, the platform system of governance; third, the platform way of functioning. I will then review some of the legal definition and propose my definition of the digital platform.

The first definition deals with economics and with the specificities of the platform business model. In their systematic literature *Multi-sided platform as a new organizational form*, the platform business model has been defined as

a set of activities for building resources and using them to generate, deliver, and monetize the benefits that users perceive in the platform—that is, the set of activities for creating and capturing value on the platform³⁴⁷.

We can already note how this definition implies a *circular* business model. The activities are used to build resources for the internal groups to interact so that, in turn, value can be captured from them. The temporalization of feedback, therefore, plays a central role in this definition. The second definition, provided by Bratton, focuses on the platform as a system of governance and highlights the material conditions of access to platforms. For him, a platform is a

standards-based technical-economic system that may simultaneously distribute interfaces into that system through their remote coordination and centralizes their integrated control through that same coordination³⁴⁸

Bratton's definition points to the inherent political activity carried out by the platform. It also relates to the fact that the systemic distinction between inside and outside is provided by the *distribution* of screens and interfaces, something that, for Bratton, complicates the

³⁴⁶ Ha, S.; Park, Y.; Kim, J.; Kim, S. (2023). *Research trends of digital platforms: a survey of the literature from 2018 to 2021*.

³⁴⁷ McIntyre et al (2020) *Multisided platforms as a New Organizational Forms*. Similarly, Hodson et al (2021) *Urban Platform and the Future City*, 3, have given the following circular definition: "platforms are architectures that organize and control networks, providing a context and infrastructure for people and firms to create and exchange value in new ways, through matching them with each other and with content, goods and/or services created on the platform". Schmidt, E., & Rosenberg, J. (2017). *Google: How Google Works*: "A platform is, fundamentally, a set of products and services that bring together groups of users and providers to form multisided markets".

³⁴⁸ Bratton, B. (2015). *The Stack*, 374.

centralization/decentralization distinction. The platform decentralizes because every person holds a smartphone and can decide if, when, and how to access it. But the access depends on standards that allow the platform to see all the connections and coordinate them remotely from a centralized standpoint. The platform is therefore defined as a *circular* system of governance³⁴⁹. The third definition, provided by Poell, Nieborg and Van Dijk in their attempt to combine traditions management, software studies and political economy, sees platforms as

re-programmable digital infrastructures that facilitate and shape personalized interactions among end-users and complementors, organized through the systematic collection, algorithmic processing, monetization, and circulation of data³⁵⁰.

This definition tries to describe the way in which the platform functions, which is via feedback between data collection of two groups and infrastructure reprogrammability. As such, even if this definition is linear, it implies all the series of circular feedback and it points to the infrastructural layer of platforms. Finally, we can look at the most recent legal and institutional definition. In 2019, the OECD published a report entitled *An Introduction to Online Platforms and Their Role in the Digital Transformation* in which it defined a platform as

a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet³⁵¹.

In Europe, important definitions were given by the recent regulations of the DMA and DSA. In particular, the DSA distinguished between online platforms and very large online platforms. The first is defined at art. 3 as

a hosting service that, at the request of a recipient of the service, stores and disseminates information to the public, unless that activity is a minor and purely ancillary feature of another service or a minor functionality of the principal service and, for objective and

³⁴⁹ It is again Luhmann that first revived the interest of organizational sociology in circular definitions. He defined an organization as “a system that generates itself as organization”. He then adds: “We then only have to define how this happens” in temporal terms. Luhmann (2018) *Organization and decision*, 29.

³⁵⁰ Poell, T., Nieborg, D. & Van Dijk, J. (2019). *Platformisation*.

³⁵¹ OECD (2019). *An Introduction to Online Platforms and Their Role in the Digital Transformation*, OECD. For a review of the institutional definitions see Sidorenko, E. (2022). *Definition of “Digital Platforms”*, in Inozemtsev, M. I. et al (2022). *The Platform Economy: designing a supranational legal framework*, 77 – 92.

technical reasons, cannot be used without that other service, and the integration of the feature or functionality into the other service is not a means to circumvent the applicability of this Regulation.

Very large online platforms, pursuant art. 33, are instead those identified by the Commission with a decision “after having consulted the Member State of establishment or after taking into account the information provided by the Digital Services Coordinator of establishment pursuant to Article 24” (par. 4) among platforms that present “a number of average monthly active recipients of the service in the Union equal to or higher than 45 million” (par. 1). In parallel, the DMA also is centered on the notion of “gatekeeper”, that at article 2 is understood as “undertaking providing core platform services, designated pursuant to Article 3”. A “core platform service” is identified by listing a series of activities as

(a) online intermediation services; (b) online search engines; (c) online social networking services; (d) video-sharing platform services; (e) number-independent interpersonal communications services; (f) operating systems; (g) web browsers; (h) virtual assistants; (i) cloud computing services; (j) online advertising services, including any advertising networks, advertising exchanges and any other advertising intermediation services, provided by an undertaking that provides any of the core platform services listed in points (a) to (i).

To conclude my review on the definitions of the platform, even some quantitative analyses have found that, on a general level, most researchers on platforms agree on what we could call a “minimal definition” of the platform: “an intermediary organizational form between two or more sides, providing the necessary infrastructure to enable interactions between different user groups”³⁵².

To conclude, trying to build on the previous works, I propose the following definition of the platform as a social system based on the elements that are presents in all types of platforms. A digital platform is a reprogrammable data infrastructure that allows two or more groups to interact via computational devices and

- (i) functions through a feedback between the centralized collection of group’s data and the reprogrammability of the infrastructure;
- (ii) results in value creation and the possibility of value extraction for those groups;

³⁵² Schöler, F., & Petrik, D. (2021). *Objectives of Platform Research: A Co-citation and Systematic Literature Review Analysis*, p. 3 of the pre-print version.

- (iii) regulates, plans, and governs the groups' behavior as long as it is able to produce trust between them.

3.8.4 Reviewing platform categories

We have seen that the academic community is also trying to create categories for understanding how to distinguish platforms from one another. The first attempt is carried out by Marc Steinberg, who proposed a *historical* categorization based on that of management scholars Negoro Tatsuyuki and Ajiro Satoshi. He distinguishes between *product-technology platforms* as computer hardware (programmable platforms), console (games platforms) and automobiles (product platforms). The main characteristic of this category is that of all being stacked. The second category, *content platforms* as social media networks and video streaming are based on the dialectics between contents and platform, but the platform is in a position of superiority regarding content as it does not only distribute them, but also controls them, and it functions as a mediator between users and advertisers. Finally, *transactional or mediation platforms* as shopping malls, bars, credit cards and even the present book can be defined by being technologically agnostic and composed of architecture and rules. This category would be therefore closer to the concept of the non-digital, 'analogical' platform: a very broad concept that represents an immaterial apparatus of mediation, as well as a schema for meaning making³⁵³.

The most traditional exercise is to categorize platforms based on a *shared set of properties*. That is the operation of Srnicek, who made the following distinctions in his *Platform Capitalism*. He distinguished between *advertising* platforms like Google, which rely on user-generated content and uses data as a raw material for making predictions on user's behaviour for targeted advertising; *cloud* platforms like Amazon Web Services (AWS), deeply rooted in computational power, that engender a form of infrastructure ownership; *product* platforms like General Electric and Siemens, considered as the digital evolution of traditional firms once based on manufacturing and products selling, that now embed sensors and computers chips into the production process until "material goods became inseparable from their informational representation"; *industrial* platforms such as Zipcar and Spotify that follow the 'Good as-a-service' model, whose main feature is the ownership of the asset; finally, *lean* platforms like Uber and Airbnb are based on extreme outsourcing and part of a longer outsourcing trend in the history of capitalism, have the riskiest and less innovative business model, because they seek a monopoly rent³⁵⁴.

³⁵³ Steinberg, M. (2019). *The Platform Economy*. Steinberg dedicates many pages to reconstructing the emersion of the platform as a container that presupposes the emergence of contents. See in particular the chapter *Platform Typology*.

³⁵⁴ Snircek, N. (2016). *Platform Capitalism*, cp. 2.

Management scholars such as Gawer, Cusumano and Yoffie have categorized platforms according to *how they produce value*. They call *transaction platforms* those that facilitate transactions between many individuals and organizations that otherwise would have difficulty finding or transacting with each other and that capture and transmit data, including personal data, over the internet (e.g., Tmall, Google Search, Amazon Marketplace, MercadoLibre). These platforms serve as an intermediary for direct exchange or transaction, subject to network effects³⁵⁵. *Innovation platforms*, instead, “serve as a technological building block on top of which innovators can develop complementary products or services (e.g., iOS, Google Android, Linux)”. These platforms thus work as the technological foundation for other firms to develop complementary innovation. Finally, third and intermediary category of *hybrid* platforms “combine characteristics of innovation platforms and transaction platforms”. Google, Amazon, Microsoft, Apple, Facebook would all fall in this category³⁵⁶.

The opposite perspective is provided by Antonio Casilli, which suggests a categorization of platforms based *how (digital) labor is produced*³⁵⁷. He defines platforms that work with “on demand” such as Uber or Foodora as *service* platforms; platforms such as Amazon Mechanical Turk or Uhrs as of *microwork* platform; Facebook or Snapchat are considered *social* platforms.

In the field of platform urbanism, Caprotti et al proposed a typology of platforms active at the urban level. They distinguish between four distinct categories: the first two are primarily private sector-focused: *online-to-offline producer-consumer intermediation* (as Deliveroo or Meituan) and *service provider-customer intermediation*, with examples such as ride-hailing forms (Uber) or the navigation app Waze. The third and fourth are centered on the public and non-profit sectors: *public service intermediation* (as Virtual Singapore) and finally *non-profit service intermediation*³⁵⁸.

Finally, Van Dijk, Poell, De Waal have adopted a more systemic categorization based on the societal sectors in which platform operate. They distinguish between *infrastructural* platforms – those that simply cannot be avoided and that own a consolidated ecosystem, such as Google,

³⁵⁵ See however the lucid analysis of Knee, J. (2021). *The platform delusion*. Knee identifies what he calls the four ‘pillars of the platform delusion’, commonly believed sentences that may not be true as we think. According to his economic analysis, digital platforms are not necessarily structurally superior to analog platforms; not all platforms exhibit powerful network effects; network effects do not lead inexorably to winner-take-all models. Instead, he suggests investors to focus on the very nature of their competitive advantage. If all these criticisms are on point and well documented, I believe that they do not undermine the sociological understanding of digital platforms as new infrastructures of society.

³⁵⁶ Gawer, A., Cusumano, M. & Yoffie, D. (2019). *The business of platforms*, 19-20.

³⁵⁷ Casilli, A. (2020). *Schiavi del click*. For Casilli, digital labor is essentially located in a gray area between bargaining and employee work. Like the first, it is an activity released from a fixed place, based as much on sociability and cooperation as on cascade subcontracting. As the second is inscribed in a relationship, that between workers and owners of digital services, characterized by subordination, surveillance and inequality in terms of rights.

³⁵⁸ Caprotti, F. et al (2022). *Beyond the smart city: a typology of platform urbanism*, 9-10.

Facebook, Apple – and *sectorial* platforms that serve a particular sector or niche, such as news, transportation, food, education, health, finance, or hospitality³⁵⁹. Their categorization has been expanded by other scholars that now differentiates four types of platforms: (1) basic platforms, (2) essential platforms, (3) infrastructuralized platforms, and (4) essential, infrastructuralized platforms. In order to find out under which category a platform can be included, they look at how the platform is perceived by the users of its ecosystem³⁶⁰.

3.8.5 Platformization and the paradox of platform institutionalization

As a conclusion of the present chapter, I would like to discuss whether all the fields of literature that we have analysed – management, software studies, infrastructure studies, digital labor, urban studies, organizational studies – have something in common besides their research on the “platform question”. We have seen, for instance, the spreading of umbrella words and their critique as ‘empty signifiers’. That is the case with the ‘platform’, the ‘network’, governance, digital labor, infrastructure, and others as privacy and digital constitutionalism. At the same time, we have witnessed that this phenomenon can be grasped only by recurring to a series of processes: platformization, infrastructuralization, assetization, urbanization, financialization, globalization, juridification, and constitutionalization (*infra*, cp. 5). Besides the concept of the platform, I therefore believe that the most valuable notion we are left with is platformization, which was defined by Poell and colleagues as

the penetration of the infrastructures, economic processes, and governmental frameworks of platforms in different economic sectors and spheres of life [...] and the reorganization of cultural practices and imaginations around platforms³⁶¹.

This notion can, in my opinion, be used as a political category for understanding the organizational changes brought by computation in the age of smartphones. As a phenomenon, platformization has the advantage of grasping the constancy in the organizational model of platform evolution: that continuous need to reinvent itself. In fact, given the infrastructural function of platforms, even if quasi-monopolists platforms will decline, human users will, most likely, be organized in space and time via computational devices connected to each other. We can imagine a world without Google, but now without platforms. We have therefore seen how the platform model is not only perceived as a threat by the various research field. It also seen also as

³⁵⁹ Van Dijk, J., Poell, T. & de Waal, M. (2018). *The Platform Society*.

³⁶⁰ Hermes, S., Schreieck, M., & Thatcher, J. (2022). *Essential Platform Infrastructure and the Need for Regulation*.

³⁶¹ Poell, T. et al (2019). *Platformization*, 1

an opportunity. For instance, platformization has been described as an opportunity to rethink urban spaces³⁶², for managing common resources³⁶³, to restructure the ownership model of the firm³⁶⁴, for innovating welfare models³⁶⁵, and for changing bureaucratic structures³⁶⁶.

This brings us to what I call the paradox of platforms institutionalization. I say paradoxical because platform infrastructure seems to counter the etymological meaning of an institution—something that remains beyond who manages it. As we have seen in the genealogy, the cybernetic dream, later somehow operationalized by platform corporations, was to break free from the Weberian iron cage³⁶⁷. Once the system had been automatized enough, instead of a number of non-elected officials, it would be the citizen itself, equipped with computational tools, to carry out the tasks he needed, in the way he wanted. This is also the reason why platform companies have so few employees in comparison to industrial firms: as shown by the digital labor literature, the user is put at work in many ways, and its behavioral surplus is monetized. In the EU, however, platforms must face the ‘costs of regulation’, which, I believe, have two main consequences. The first consequence is that as platforms need to comply with an always higher number of detailed rules that are not only imposed from the outside, but which asks them to be involved as actors in the assessment of various kind of risks, their administrative structure – both humans and infrastructure - has to grow larger accordingly. Platforms will now have to carry out their curation and moderation according to more specific criteria, and they may be held accountable either for not having removed content or for having removed the wrong content. This process of platform institutionalization is not by chance but is the result of

³⁶² de Waal, M. (2014). *The City as Interface*, Strüver, A., & Bauriedl, S. (2022). *Platformization of urban life: towards a technocapitalist transformation of European cities*.

³⁶³ de Waal, M., Suurenbroek, F., & Nio, I. (2021). *Responsive public spaces: Five mechanisms for the design of public space in the era of networked urbanism*.

³⁶⁴ Scholz, T., & Schneider, N. (Eds.). (2017). *Ours to Hack and to Own: The Rise of Platform Cooperativism*.

³⁶⁵ Longo, F., & Maino, F. (2021). *Platform Welfare: Nuove logiche per innovare i servizi sociali*.

³⁶⁶ Stark and Pais contend that “algorithmic management *does not automate bureaucratic structures and practices*” and that those “are not bureaucratic problems to start with and the answers are not some new form of algorithmic bureaucracy”. The inputs for the ratings and rankings and numerous other non-bureaucratic accounting devices of algorithmic management are produced by interactions in the triangular relationship, and the outputs — performance metrics — are accessible to the second and third parties themselves (at least partly and often with considerable opacity). Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, 60.

³⁶⁷ For the discussion of Weber’s idea of the iron cage, see Di Maggio, P. J. & Powell, W.W. (1983). *The Iron Cage Revisited*. DiMaggio and Powell asked: what makes organizations so similar? They argued that only at the beginning of their lives were organizations subject to the ecological pressures for differentiation that Hannan and Freeman had seen; in a second phase of the process, they were pushed toward each other by a force called isomorphism. According to Di Maggio and Powell, the causes of and rationalization had changed since the time of Weber. Bureaucracy remains the common organizational form, but “structural change in organizations seems less and less driven by competition or by the need for efficiency”. They contended that “bureaucratization and other forms of organizational change occur as the result of processes that make organizations more similar without necessarily making them more efficient, in a process of “structuration of organizational fields” which, in turn, “is effected largely by the state and the professions, which have become the great rationalizers of the second half of the twentieth century”.

normative attempt by the European Union - which presents itself as the regulatory third way between the USA and China – to steer the path of platformization by regulating it. An example of platform institutionalization besides the DSA is the recent case of the Payment Service Directive II, which obliges banks to open their databases to third parties technology companies³⁶⁸. Platform institutionalization is therefore the result of the European policy agenda: a regulatory capture that seems by now impossible to escape³⁶⁹. What is relevant is precisely the existence of an entity that via its legal and technological infrastructure holds a “civic power”³⁷⁰ and that I would call *infrastructural authority*: the political problem of platform governance is that of legitimacy of the platform authority, which goes without any kind of formal managerial delegation³⁷¹. In terms of political intervention for the governance of platform at European level, the also seems situation paradoxical: infrastructural platforms, precisely because they acquired infrastructural properties, cannot be avoided by both firms and citizens, that structure their expectation on them. However, the legitimacy of their governance, which explicitly aims at coopting the behavior of citizens and complementors, has never been part of a democratic discussion: what Zuboff has called a ‘dispossession by declaration’. In this sense, the normative suggestions of the Ducth scholars includes moving away from the neoliberal path of platformization, to a “developmentalist”³⁷² approach to foster economic growth that can be leveraged to generate social benefits: the state could become a platform developer together with civil society and the private sector, injecting public values in their design. Besides an exceptional political intervention similar to China’s banning of American platform that entails the exclusion of these firms from the European markets, there are two other paths that, in my opinion, can be taken. The first one, more realist but arguably less effective, is the one chosen by the EU: to work with existing platform and negotiate their role in the European space. The second is two invent both new rules for platform legitimacy and an institutional system to make them effective,

³⁶⁸ See Ferrari, V. (2022). *The Platformization of Digital Payment*, for an analysis of the discourse and sociotechnical imaginaries guiding European policy-making in the fintech domain. In particular, the policy agenda is informed by a notion of ‘consumer interest’ which mirrors an idea of user technological empowerment as promoted by technology companies: “European institutions have precise visions of what the future of digital money infrastructures should be, and this vision poses the platform model as an obvious organizing principle. The regulatory agenda pushes for models of fast, seamless, and ubiquitous authentication through mobile devices; payment interfaces need to be interoperable across services. To achieve these goals, they must be embedded in platforms’ ecosystems”. Ferrari (2023). *Money After Money: Disassembling Value/Information Infrastructures*, 189

³⁶⁹ Laffont, J. J., & Tirole, J. (1991). *The Politics of Government Decision-Making: A Theory of Regulatory Capture*; Levine, M., & Forrence, J. L. E. (1990). *Regulatory Capture, Public Interest, and the Public Agenda: Toward a Synthesis*.

³⁷⁰ Moore, M. (2016). *Tech Giants and Civic Power*, as discussed by Van Dijk, J., Poell, T. & de Waal, M. (2018). *The Platform Society*.

³⁷¹ Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*, 54.

³⁷² Reilly, K. (2020). *Platform developmentalism: leveraging platform innovation for national development in Latin America*, where developmentalism is here defined as studies on the role of the state in fostering economic growth that can be leveraged to generate social benefits.

interviewing is sectors that have not yet been platformed. These two questions will be the object of the next chapters, where I am going to rely on the notion of platformization as a framework for my analysis of the relationship with the legal system³⁷³.

³⁷³ See Scott, J. (2023). *Sociological Theory. Contemporary debates. "The purpose of sociological theory"*, 22-30.

If the law is meant to regulate a world generated by computational systems, it must learn to speak the language of computation.

Mireille Hildebrandt

4. Platformization and the European legal system

Having dedicated the first two chapters to outlining the history and definition of the platform as well as the political implication of platformization, I now wish to analyse the relationship between the platform and the law. In doing so, I will rely on the distinction between the governance by and of platforms¹. The present chapter is divided in three parts. The first two parts correspond to two problems, situated at different levels of abstraction, that I have identified about the relationship between the law and platformization.

The first problem is mainly theoretical, and it asks whether the European legal system should be equipped with the tools for dealing with “technological management” in trying to achieve what has been called a “legal protection by design”². Given the different affordances of the digital and computational world, scholars have been asking whether the legal system ought to be directly involved – or, at least, should have something to say about – in those ‘architectural’ way of enabling behaviors. Hence, this discourse is related to the various reformulations of Lessig’s *Code as Law* and of the Reidenberg’s *lex informatica*, but in the context of the platform infrastructure³. As we shall see, with system theory we could ask the question whether platformization can be turned into a legal problem, in the sense of the recognition of platformization as *legal communication*. In the first part of this chapter, I therefore start by taking a turn into some of the challenges that platformization and digitalization have been posing to legal theory and legal practice. Ultimately, this imply creating a certain institutional mechanism for assessing whether a platform infrastructure can be considered legitimate⁴. The problem can also be formulated by saying that this regulation through technology constitute a functionally equivalent mean to the law insofar as it manages to generalize the expectations of behavior⁵. This modality of regulation is at the base of platform infrastructures, but it is not easy

¹ Gillespie, T. (2017). *Governance of and by platforms*.

² The expression comes from legal philosopher, Hildebrandt, M. (2017). *Saved by design? The case of Legal Protection by design*. Technological management has been theorized differently by various scholars. Baldwin & Clark (1997). *Managing in the age of modularity*. Kitchin, R. & Dodge, M. (2011). *Code/Space: Software and Everyday Life*, use the expression “automated management”. Lucy, W. (2023). *The death of law* discusses it in terms of technological management.

³ See Lessig, L. (2006). *Code 2.0*; Reidenberg, J. R. (1998). *Lex Informatica: The Formulation of Information Policy Rules Through Technology*. Cohen, J. (2022). *From Lex Informatica to Control Revolution*.

⁴ See the part on the constitutionalization of platform infrastructures in chapter 4. In any case, this shift would ultimately imply a constitutional and institutional re-design of the organs of the legal system (i.e. courts) in order to allow the possibility of contesting infrastructure design.

⁵ This is the function of law according to the functional structuralism of Niklas Luhmann: the law is the best instrument for coordinating expectations at a highly generalized and abstract level very – hence,

to think of the law not as an abstract and general statement with normative force, but as a self-enforcing technology, without completely changing the very meaning of the word 'law'⁶. Hence, the problem relates to the spatial dimension of law⁷, but also to the space that laws have when confronted with the automation of platform' procedures: as Benjamin Bratton noted, "as infrastructure, a platform's regularity is often guaranteed less by laws than by technical protocols, and this is one of several ways that the sovereign decision is built into the platform's interfacial partitions and surfaces"⁸. It is as if the law had a different life inside the platform (where it creates pressure for the organization according to his normative command, but it can be translated by the platform itself) and the external one⁹.

To the second problem I dedicate the second part of the chapter. It deals with the law – now intended as 'traditional', paper-based law – and platformization. Similarly to what happened with globalization, where the globalization of markets wasn't followed by the globalization of the law¹⁰, platform organizations have been historically unaccountable and largely managed to avoid laws and regulations by a variety of means¹¹. I call this phenomenon, borrowing the language of the free-software movement, the 'cracking of the European legal system'. However, this argument must coexist with another, apparently contradictory argument, namely that platforms do not operate in a vacuum, but they are also driven and constrained by a web of laws¹². The cracking of the European legal system depended on many factors, many of which are not platform specific. A first reason was explored in the previous chapters: platformization changed the categories that are constitutive of legal definitions; it changed the categories of a

creating expectations of expectations. For Luhmann, society and law are related mainly in three ways: passive, positive and reflexive. See Luhmann, N. (2014). *A Sociological Theory of Law*. Treves, R. (1996). *Sociologia del diritto*, 289 -320; Cordero, R. (2020). *The Negative Dialectics of Law: Luhmann and the Sociology of Juridical Concepts*.

⁶ Legal philosopher Uberto Scarpelli used to say that legal positivism is a "facet of the political technique, typical of the modern state, which wants to achieve social control through a regulated production of general and abstract rules". See Scarpelli, U. (1965). *Che cos'è il positivismo giuridico*, 131, quoted in Faralli, C. (2007). *La filosofia del diritto contemporanea*, 9. Translation by me.

⁷ See Capone, N. (2021). *Lo spazio e la norma. Per un'ecologia politica del diritto*.

⁸ Bratton, B. (2015). *The Stack*, 42.

⁹ Of the same opinion Bassan, for whom "the degree of coercion that can be imposed on digital platforms when they operate on the market (external level) and when they operate in their own system (internal level) is different". Bassan, F. (2021). *Digital Platforms and Global Law*, 41.

¹⁰ The terms globalization was coined in 1983 by American journalist Theodore Levitt and popularized in 1988 by the economist Kinichi Ohmae in his works on the global strategies of multinational companies. It defines a worldwide process of intensification of the movement of goods, information and production requirements, especially capital and finance instruments. See Screpanti, E. & Zamagni, S. (2005). *An Outline of the history of economic thought*, 475. Of the vast literature on globalization, Steger, M. (2021) *Globalization: A Very Short Introduction*; James, P. & Steger, M. (2014). *A Genealogy of 'Globalization': The Career of a Concept*.

¹¹ This is also the position of Suzor, N. (2019). *Lawless: The Secret Rules That Govern Our Digital Lives*. My focus is on the technological gap and conceptual gap brought by platformization. However, this does not affect the historical circumstance that platforms managed to result unaccountable in many regards.

¹² See for instance Robé, P. (2020). *Property, Power and Politics: why we need to rethink the world power system*.

legal system made for an industrial (sometimes, even rural¹³) society. As it has been recently noted by legal platform scholar Elettra Bietti, the “intellectual and institutional toolbox available to Western lawyers, policymakers, and thinkers has been grossly inadequate to diagnosing and addressing harm and power formation in the information capitalist era”¹⁴. A second reason lies in the disciplinary divisions and functional differentiation of the sub-systems of the law, unable to recognize platformization as legal communication vis-à-vis the model of digital innovation. As emphatically put by EU law professor Fabio Bassan, the system of production and coexistence of the different fields of laws from different actors- what he calls the “the European regulatory matrix”- is blowing up¹⁵. For this reason, in the second part of this chapter look at the studies that have analysed how platformization has impacted some sub-systems of the law: administrative law, data protection and privacy, antitrust, taxation and intellectual property. These sub-systems are taken as case studies of such ‘cracking’.

In the third and final part of the chapter, I describe the legal dimension of the governance by the platform, known as “platform law”, characterized by technical standards, contractual obligations, enforcement, and quasi-judicial activities. A perspective grounded in international law may suggest that infrastructural platforms should be considered as autonomous legal orders and international actors, opening up the space for a sort of legal pluralism within the European jurisdiction¹⁶. I conclude by adopting a position that I define as politically realist but legally ‘exceptionalist’: the legal system does not need only to engage in a regulatory activity, but it needs to change its own internal structures – a very constitutional question.

¹³ It is the case that the major European codifications come from pre-computational times. For example, the Italian civil code is from 1942. If we interpret the computational as a real revolution that follows the industrial one, we are confronted with a new version of an old problem. For instance, Don Price, in his book *The Scientific Estate* (1965), pointed out a profound dilemma for the American constitutional system: the rise of science and scientific technology in the nineteenth and twentieth had altered the basic rules and procedures of U.S. government established at the time of the founding. He identified three developments that made “automatic political reflexes” unreliable in dealing with our present problems. The scientific revolution had moved the public and private sectors closer together; brought a new order of complexity to the administration of public affairs; and upset the system of checks and balances in government. See Winner, L. (1978). *Autonomous Technology*, 152.

¹⁴ Bietti, E. (2022). *A Genealogy of Digital Platform Regulation*.

¹⁵ Bassan, F. (2021). *Digital Platforms and Global Law*, 13.

¹⁶ See Berman, P.S. (2017). The Evolution of Global Legal Pluralism; Giudice M. (2014). *Global legal pluralism: what's law got to do with it?*, according to which theories of global pluralism as the one of Paul Schiff Berman try to “avoid the pitfalls of both sovereigntist territorialism, which attempts to solve all legal disputes by exclusive application of the norms of some single territorially-based jurisdiction, as well as universalism, which always looks for norms which transcend the differences of particular communities”. Davies G. T. & Avbelj M. (Eds) (2018). *Research handbook on legal pluralism and EU law*.

4.1 The governance of platforms: technological management and legal protection by design

4.1.1 Conceptions of law and technology

Before discussing the problem of legal protection by design, given the ongoing transition from paper-based law to computational law, it is worth starting with a comparison of the most common philosophical conceptions of the law and of technology. Here I am going to follow the reconstruction offered by the Belgian lawyer and legal philosopher Mireille Hildebrandt in her book *Smart technologies and the End(s) of Law*, where she tried to map the changes that the digital revolution brought to the way in which the law ‘exists’. Hildebrandt poses a fundamental question regarding whether modern law afford to remain unaffected by the changing Information and Communication Infrastructure (ICI¹⁷), and if not, how should it be transformed to sustain its identity¹⁸. To answer such a question, Hildebrand starts from Bruno Latour’s notion of “mode of existence” and from an evolutionary reading of the relationship between law and technology¹⁹. In the legal system, a mode of existence would refer to “how current law fabricates our artificial, institutional and artefactual environment”²⁰. It is the internal perspective of the legal system that mirrors a systemic analysis where each social system produces his own “epistemological” code to identify societal communication. In the same way that Latour turned down the notion of science as something distinguished and separated from technology - advancing the notion of *technoscience* - Hildebrandt makes an inquiry into the relationship between law and technology to address what lawyers and philosophers of law think of their role in society. For Hildebrandt there is not something like a “law” existing

¹⁷ Note the use of ‘ICI’ instead of ICT (Information Communication Technology) to underline the importance of the material dimension of the infrastructure.

¹⁸ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 160. I have chosen to follow Hildebrandt’s reading not only because I find particularly precise and original – a sapient mixture of philosophical, historical and technical features – but also because I generally agree with her pledge for a ‘legal protection by design’, especially in the context of digital platforms where the concept of law actually refers to different modes of existence.

¹⁹ Bruno Latour was a sociologist, anthropologist and philosopher who has been conducting research in many disciplinary areas throughout his career. He became famous in the scientific communities with his early investigation in the field of sociology of science and Science and Technology Studies (STS) but continued to switch topics while preserving his peculiar ethnographic and empirical methodology of inquiry. Apart from being considered to be one of the founding fathers of actor-network theory (ANT), Latour is well-known for providing a radical critique - as well as an alternative description - of modernity in his *We have never been modern*. While this is not the place where to investigate his “relationist ontology” (Gerard De Vries, *Bruno Latour*, Polity Press, p. 66) and while mode of existence should be read as part of his philosophy, at the very base there is an attempt to surpass the opposition between epistemological and ontological issues. For Latour, science, religion, politics, law and economy each produce their own facts, based on their own truth conditions. The concept of mode of existence is also used, in a different sense, by Simondon, G. (2016). *On the mode of existence of technical objects*; the concept itself originally comes from the French philosopher Étienne Souriau. See Souriau, E. (2009). *Les différents modes d'existence*.

²⁰ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, prefatory remarks, xiv.

independently from its technological embodiment, and what we are facing nowadays is a shift in the mode of existence of modern law caused by computational technologies. In other terms, as modern, Western law was made possible by relying on the affordances of the printing press, “not only in the sense that law is *about* text, but also that law has *existed* as a text”²¹, the underlying shift of computational technologies has been challenging some of the assumptions of the legal system.

Hildebrandt distinguishes three specific (and specular) philosophical positions regarding law and technology. The first discourse about technology tends to depict it either as something neutral or as a mere instrument in the hand of anyone who uses it. Hildebrandt’s reading of this view is rather drastic, as she treats it like a “void concept”. First, to claim that technology is something neutral one must draw a clear distinction between the tool that can be separated from the purposes on one side and a subject that operates objects on the other. A recurrent image is that of a carpenter who uses a hammer to build a table: the subject (carpenter) uses the technological instrument (object) for a precise goal (building a table). The instrumentalist view “takes technologies to be neutral tools, which can be used for good or for bad, but have no normative implications of their own accord”²². On the political side, this view matches with utilitarianism, for which the moral evaluation of the goal has nothing to do with the technology.

The second position, which sees technology as an autonomous force that shapes the world according to its own logic, can be found either in its utopian version (Silicon Valley’s techno-optimism and solutionism) and dystopian one (*à la* Heidegger)²³. In any case, technology has a

²¹ Ivi, 160-161.

²² Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 169. For Hildebrandt, the problem of this view is that it hides its normative affordances. Melvin Kranzberg has summarized the main objections against the instrumentalist view of technology in the following maxim: “Technology is neither good or bad, but never neutral”, quoted in Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 162. Moreover, according to hacker group Ippolita, the idea of technological neutrality is at the very base of ‘technocracy’ in the sense of a system of government that is presented to be a-political. The always implicit argument of technocracy is that neutrality implies objectivity, and that leads to the third dualism about ‘good’ or ‘bad’ uses of technologies. But it is enough to quote one of the most intuitive examples against technological neutrality: the atomic bomb. Regardless of who controls it, it is a military technology created for destruction. For Ippolita the same goes for digital mega-machines. Ippolita (2017). *Tecnologie del dominio*. The fact is that the instrumentalist view is a rather static view of technology that stops half the way: it considers how humans use technology but not how the usage implies a counter-feedback on humans.

²³ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 166. In the utopian version we can find the Silicon Valley *zeitgeist*, usually paired with Morozov’s solutionism: each problem can be solved if the right technology is applied to it. One of the consequences of this approach is that of legibility: problems are defined in a way that enables us to translate in the frame of a particular technology. If more computational power leads to better solutions, the flux of life has to be machine-readable; the world should be structured so that artificial intelligence can help us to solve problems. In the dystopian version Hildebrandt situates philosophers like Martin Heidegger and Jacques Ellul, who “have clothed their concern over the calculative mode of being that comes with automation in a dystopian determinism” so technology is something that “transforms our relationship to ourselves”. See Heidegger, M. (2017). *La questione della tecnica*; Ellul, J. (1967). *The Technological Society*. For an overview of Ellul’s thought see Winner (1982).

dynamic that is independent of its human inventors, or at least determines its own impact on human society. The advocates of this position speak of technology as a “general force, without investigating the actual empirical affordances of a specific technology: “Technology with a capital T runs the show, whatever its various incarnations instantiate”²⁴.

The third position towards technology, to which Hildebrandt adheres, is what she calls the pluralist or “multistable” position, and we might say that position is an emanation of the theory of affordances. ‘Affordance’ is a vocabulary widely used in the field of design, psychology, programming, game theory and human-computer interaction. Psychologist James Gibson, who invented the term, defines it as follows in his book *The Ecological Approach to Visual Perception* (1979):

The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. [...] I mean by it something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment²⁵.

Hildebrandt notes that the point is not so much whether a particular technology has certain effects, but “how a specific design and a specific uptake of a technology determines its affordances”²⁶. For Hildebrandt, there is a ‘normative’ impact on its users, their environment²⁷, those affected by its use, and the kinds of objectives enabled by the technology “that makes the

Autonomous Technology; for a more recent version of Ellul’s argument applied to digital technologies, see Sadin, E. (2018). *L’intelligence artificielle, ou, L’enjeu du siècle: anatomie d’un antihumanisme radical*.

²⁴ Ibidem. On the topics see also the collections of essays in Smith, G. & Marx, L. (eds) (1994). *Does Technology Drive History? The Dilemma of Technological Determinism*.

²⁵ Gibson, J. (1979). *The Ecological Approach to Visual Perception*. The term was borrowed and transformed by psychologist Donald Norman in his book *The Design of Everyday Things* (1988), who focused on the relationship between the designed object and the perceived usage of that object. Norman described affordances as the ‘actionable properties’ that are readily perceivable by an actor, so the term refers to “the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used. See Norman, D. (2002). *The psychology of everyday things*, 9. For sociologist Ian Hutchby, the notion of affordance helps to cut off the debate between constructivist’s emphasis on the shaping power of human agency and realists’ emphasis on the constraining power of technical capacities. He describes affordances as “functional and relational aspects which frame, while not determining, the possibilities for agentic action in relation to an object.” Hutchby, I. (2001). *Technologies, Texts and Affordances*, 5. If, according to Donald Norman, objects ‘suggest’ how they should be used, Umberto Eco links it with the way we use categories in the process of semiosis: “the various tokens of the type “chair” are recognized because we are dealing with objects that make it possible for one to sit down, while tokens of the type “bottle” are recognized because they are objects that allow us to hold and pour liquid substances”. Eco, U. (2000). *Kant and the Platypus*, 161.

²⁶ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 170. The instrumentalist view presupposes a series of dualistic separations. Latour himself, using the language of semiotics, speaks of *actants*, both human and non-human entities, to get rid of the object/subject division.

²⁷ The history of the word environment is particularly interesting and it has been traced by Georges Canguilhem in his essay “*The living and its milieu*” in Canguilhem, G. (2008). *Knowledge of Life*, 98 – 120.

question about good or bad technology without meaning”²⁸. According to this view, the ‘normative’ impact of technology is taken for granted: a change in of design implies a change in the affordances of the environment and of the human who lives it. Hildebrandt sees technology as something relative and relational as instruments that reinvent humans while humans reinvent technologies²⁹. New technologies disrupt the existing social fabric and develop and transform until a new balance is reached. The consequences of this theoretical position are that the utilitarian approach of avoiding the inquiry on values and norms translates into an acritical acceptance of the values and norms embodied in technology³⁰.

Hildebrandt also identifies three modes of existence of the law that mirror the theoretical positions towards technology. Also here, the instrumentalist view of the regulatory paradigm sees law as a mere instrument to influence behavior in view of policy goals. From a philosophical perspective, a classic distinction in the field of law and legal theory is that between what Hildebrandt calls the ‘Rule by law’ - in the sense that some people are under the arbitrary will of whoever rules via the law - and ‘Rule of Law’³¹ aimed at bringing the legislator and the administration under the reign of the law so that they are themselves bound by the law³². If this conception has developed historically as an attempt to get rid of the “command and control of authoritarian law” it now goes together with the instrumentation view of technology insofar as they both serve to alter people’ behaviour according to the desired outcome. Hildebrandt notes that language has shifted from regulating the *actions* of legal subjects, to regulating the *behavior*

²⁸ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 162. But the term normative is not used here as equivalent to moral. Normative refers to “action patterns that are induced or enforced, and inhibited or ruled out by the use of a specific technology. A car enables one to drive. It does not force one to drive, but once in the car there are things one can do and other things one cannot do. The car is not merely an instrument for driving, because the act of driving is *constituted by* the car”. This is a central point, as technological and legal normativity are different. See *infra*.

²⁹ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 159. It should be noted that it is a form of *constructivist realism*, and endless process of co-production that is opposed to other forms of social constructivism. See the polemic between Bruno Latour and David Bloor on the social construction of science in Bucci, M. (2010). *Scienza e società. Introduzione alla sociologia della scienza*. Note also the inherently cybernetic character of this position.

³⁰ Hildebrandt, M. (2015) *Smart technologies and the end(s) of law*, 172. Hildebrandt proposes to focus also on *potential usage and required functionalities*, as “they need to incorporate the norms and values we wish to sustain, and to enquire how their potential usage will transform or disrupt these norms and values [...] because we need to pay attention and ask ourselves the – ultimately political – question of what kind of society we wish to remain or become”.

³¹ The rule of law is a broad concept that should be situated historically has an achievement of modernity and constitutional theory. It is defined as follows by the *Encyclopedia of political theory*, (Mark Bevir, 1226): “The *rule of law* refers to a mechanism, process, institution, practice, or norm that secures a particular type of governance. The relevant type of governance is usually defined in opposition to arbitrariness”. The rule of law involves the system of ‘checks and balances’, an image of checks and balances that applies the concept of feedback in the legal context. As in the multistable view, it is a metaphor in constant movement and evolution. Richardson, G.P. (1992). *Feedback thought in social sciences and system theory*. See chapter four on digital constitutionalism.

³² Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 166.

of groups or individuals³³, and so the instrumental approach is evident anytime the law is used to reach policy goals which can be measured by efficacy and efficiency³⁴.

A second position is that of the internal and autonomous perspective of the law. If the instrumentalist vision of the law comes from an outside, the autonomous conception can be considered a more practical view of the law, dealing with what lawyers think of themselves: a self-observation of the legal system. The problem of the autonomous conception of the law is that of the distinction of its own domain from others: what is law, and what is not law?³⁵ For instance, legal positivism has to distinguish between social norms, moral norms and legal norms: it has to make a distinction between law and morality on one side, and law and politics on the other³⁶. Some differences with the other kind of norms immediately comes to mind: law has a performative character - when the right conditions are met, a marriage produces a change in the legal status of two persons - and law is enforceable³⁷. For the autonomous conceptions, all the problems thus shift to the *validity* of positive law; as Hildebrandt puts it, “modern law can best be understood as the articulation of the conditions for legal effect”³⁸. However, if the thesis of the separation is necessary for the law’s independence, law and politics are also structurally coupled in institutions such as the parliament³⁹. Hildebrandt’s formulation of the paradoxical relationship between politics and law goes as follows:

³³ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 164.

³⁴ As for the instrumentalist view of technology, then, the entire legislative process must be set to be legible in a way that allows to measure the result regulation as “a process involving the sustained and focused attempt to alter the behavior of others with the intention of producing a broadly identified outcome or outcomes”. Black, ‘*Critical Reflections on Regulation*’, 20, quoted in Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 164.

³⁵ Hildebrandt reading’s is in line with the constructivist view of social system theory, especially as developed by Niklas Luhmann. For him, the legal system is a functional sub-system derived from the historical differentiation of society that recognizes communication only with its own binary code legal/illegal. See Luhmann, N. (2004). *Law as a social system*. Thornhill, C. & King, M. (2003). *Niklas Luhmann’s Theory of Politics and Law*.

³⁶ For the most detailed historical examination see Fassò, G. (2017). *Storia della filosofia del diritto* Vol. 3: *Ottocento e Novecento*, 153-187. In the XIX century, legal positivism contended that the law coincided with the command of the state. Legal philosopher Herbert Hart uses it in the sense of the separation of the law from considerations about value. Hart offered a famous distinction between primary rules - those that impose obligations (*rules of obligations*) - and secondary rules that attribute powers (*rules of recognition*). The positivist paradigm, however, have undergone a profound crisis after Hart, with authors such as Dworkin, Habermas and Luhmann. See Faralli, C. (2007). *La filosofia del diritto contemporanea*.

³⁷ One could hardly find any lawyer that disagree with the with the idea that “law actually *does* things, it is not a social science that describes things, nor a set of policy recommendations that hopes to get things done, nor a computer program that operates effects based on digital calculations. Hildebrandt (2015) *Smart technologies and the end(s) of law*, 155.

³⁸ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 168. As such, a “measure of analytical rigour is therefore an act of benevolence” as it “safeguards the foreseeability of legal effect”³⁸ Hildebrandt (2015) *Smart technologies and the end(s) of law*, 169. For example, a broad definition of a criminal offence will imply that more conduct falls within its scope and entails that more people will suffer the consequence of punishment.

³⁹ Luhmann, N. (2004). *Law as a social system*, 381- 422.

though law is separated from politics, its enforceability depends on the powers of the state. These powers are, paradoxically, legitimated by the law. The law basically denies the state any powers that have not been attributed by (constitutional) law, and subsequently turns powers into competences when attributing them. For instance, the power to punish is transformed into a competence to punish, once the state's power to punish is formally attributed by a law that also conditions the exercise of this power. A legal competence thus both constitutes and restricts the powers of the state. This shows that, though politics is what produces law, politics is also bound by law, at least in so far as we are speaking of a state that adheres to the Rule of Law. Some speak of a historic bargain between law and politics: as long as the legal profession leaves the enactment of law to politics, the latter will leave the interpretation of its law to the courts. In the context of the autonomous conception of the law, however, the Rule of Law must be understood in a formal and procedural manner⁴⁰.

For Hildebrandt, the problem of the autonomous conception of the law somehow resolves in 'legal solutionism', with an overfocus on the importance and immutability of the legal architecture: each problem will be solved if the right legal solutions will be applied to it, without any need to challenge the existing legal framework. In addition, this conception acknowledges that systemic issues are beyond the scope and the possibility of intervention of the law. If there are external factors that force a change in the law, then it is up to the legislator, who should act by making new laws, and "this is not a matter of law, but of politics"⁴¹.

Moreover – and it is a relevant point for the following analysis of platformization and the legal system – this view of the law "entails that technology cannot change the mode of existence of the law". This conception has problems in dealing with a change in the technological embodiment that as computation, which has caused some of the established structures and categories of the legal system to become obsolete. This is clear in a first sense that of social change that brings new shared values that collide with old laws. Here a positivist conception of the law can find itself trapped between politics' inability to provide the necessary reforms and the law lacking legal tools and institutions to provide fair rulings of cases. However, confronted with technological revolutions, the question becomes how to rethink the internal structures of the legal system; in this sense, it is about the shift from an Information and Communication Infrastructure (ICI) to a new one⁴².

⁴⁰ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 168.

⁴¹ Ibidem. Giving rise to what Luhmann calls the irritation of the system.

⁴² Garapon, A. & Lassègue, J. (2018). *Justice digitale*.

The third conception of the law, which Hildebrandt frames as pluralist or multistable, sees it neither as a mere instrument - “its instrumentality depends on the legal subject that enacts, administers or adjudicates the law, and on the ends it aims to achieve” - nor as independent from its societal, scientific and professional environment, “because its existence depends on the performative nature of the social fabric it constitutes and by which it is constituted”. Rather, this conception starts from the co-constitutive role played by the ICI in the way the law exists⁴³.

4.1.2 The rule of law between the printing press and computation

According to an affordance-centric theory, the contemporary mode of existence of the law is a historical artifact that depended on the recombination of the affordances of the previous mediums: orality, writing, and as for the modern existence of the law, especially the printing press⁴⁴. In oral societies, the law is communicated only through language⁴⁵. There are evident restrictions to the dissemination of information: communications are face-to-face interactions; the amount of information that can be carried is limited; dispute resolution is based on persuasive authority and the norms that consolidate mutual expectation are not written down. The world is “concentrated” and it is hard to distinguish between representation in time and representation in space; the past is bound only to collective memory⁴⁶.

The invention of the script, however, changes the mode of existence of the law. Media scholars such as Harold Innis’ have focused on how a medium such as stone - durable and difficult to transport - is time-biased in terms of control of time and space, while media that are light and less durable are space-binding or spatially biased. That is the case of paper, a space-binding medium, for it is “light, easily transportable, can be moved across space with reasonable speed and great accuracy, and they thus favor administration over vast distance”⁴⁷. Furthermore, the script doesn’t come from a human organ, and allows for completely new operations: it is not

⁴³ Hildebrandt, M. (2015) *Smart technologies and the end(s) of law*, 172. LP is also a multi-stable conception of the law that sees the norm as a “pattern of mutual double expectation that enable people to act, having a fair idea how their fellow respond”. For the notion of double contingency, originally expressed by Talcott Parson and modified by Luhmann, see Baraldi, C. et al (2021). *Unlocking Luhmann*.

⁴⁴ This point is expressed especially by the “media ecology framework”. See in particular Strate, L. (2017). *Media Ecology: An approach to understanding the human condition*.

⁴⁵ Language is not really a technology unless we consider it as the technological embodiment of the human body. Luhmann, talking about the form of language, distinguishes between the “binary code of language” - composed of sound and meaning - that allows for a positive and a negative version of all that can be said. Luhmann criticizes the theory of language as representation, since language does not refer to something else: “Through language the self-reference of meaning is generalized, and that is done through symbols which are themselves this generalization and which therefore do not consist of something else”. Luhmann, De Giorgi (1993), 69. For Luhmann, language is the fundamental communication medium that guarantees the autopoiesis of society.

⁴⁶ Luhmann, N. & De Giorgi, R. (1993). *Teoria della società*, 83. For Luhmann’s conception of technology see *Theory of Society* (2012), Vol 1, 312-324.

⁴⁷ Carey, W. (1967). *Harold Adams Innis and Marshall McLuhan*.

anymore a matter of sound and meaning but of combinations of syllables, meaning, and signs⁴⁸. The script separates the act of communication and comprehension in time and space, transforming the meaning of memory and creating the issue of contextuality to achieve full comprehension⁴⁹. As with the other technological shifts, this constitutes a change in the quality of communication: communication can become the object of communication in a second-order observation⁵⁰. For Hildebrandt, it is the possibility to create paper manuscripts that “favored the emergence of a class of legal scribe that held the monopoly of knowledge that was consolidated in relevant documents”. With writing and paper, the texts of religion and legal tradition (Bible, Torah, Koran, Talmud, and the *Corpus Iuris Civilis*, the twelve tables and the *actiones*) became of central importance, together with their interpretation and commentaries.

Another fundamental technological change was the printing press – the “Gutenberg Galaxy”⁵¹. It is only with the invention of the printing press that it made sense to talk about the power of the modern “state”. Hildebrandt identifies seven affordances of the printing press in relation to the emergence of the modern legal system and its institutional arrangements⁵². The first affordance of the script allows the legal norm to gain an “independent existence capable of surviving their author (legislator) and even interpreter (court)” thus generating continuity and durability. In other terms, there is a separation between the author, the interpreter and the addressee that shifts the focus to interpretation, which became the “hallmark of modern law” and serves to tune the unified norm in a changing context. But the externalization of law enables the formation of proto states run by means of law as an instrument for unification and centralization, which Hildebrandt sees as a “shift from local to and of a class of scribes that that maintains a coherent

⁴⁸ Luhmann, N. & De Giorgi, R. (1993). *Teoria della società*, 86. What changes with the script is the possibility to “combine more presents” and that realizes the “illusion of the contemporaneity of the non-contemporary”. Luhmann’s extensive analysis of writing can be found also in *Theory of Society*, Vol. 1, 150-173. For him, writing: intensifies the differentiation of the societal system, hence changing the possibilities for establishing social memory (“the constant selection of what is written down now produces remembering and forgetting in the form of decisions that are subject to criteria and monitoring”); increases the risk of communication being rejected; leads to greater differentiation and elaboration of the various dimensions of meaning with the aid of specific distinctions; provides the basis for second-order observation and criticism “to an extent that exposes social structure and the semantics of society to far reaching transformation” (p. 173).

⁴⁹ Ibidem.

⁵⁰ Ivi, 91.

⁵¹ McLuhan, M. (2011). *The Gutenberg Galaxy: the Making of Typographic Man*.

⁵² For Luhmann, N. (2012). *Theory of Society* 174-180, the printing press gave an immense boost to the dissemination of written language, and in the West, printing “made it possible to reproduce in volumes that enabled market mechanisms to be used for distribution; in other words, the production of texts was guided by demand and thus detached from the personal interests of the writer or his client”. Other consequences of printing, according to Luhmann, were making it worthwhile learning to read, the standardization of language on the basis of printed texts for school instructions, it affected temporal orientation because communication could now address many people at the same time, it furthered the trend towards individualization and societal communication. Finally, two hundred years after the invention of printing, it became apparent that its function had become the technical infrastructure for the maintenance and update of social memory.

interpretation of the authoritative texts. The printing press brings another radical change allowing the proliferation and a 'democratization' of written texts and the emergence of public opinion⁵³; it is here that occur an institutionalization of lawyers as civil servants "into the administration headed by the king, thus enabling the formation of a bureaucratic state" and the monopolistic claim of the creation of law. With the proliferation of printed text comes the "need for reiterant interpretation", which "greatly enhances the role of the lawyers as stewards of a coherent web of legal texts (legislation, administrative and judicial decisions)". It is a process of professionalization according to which lawyers "managed to install the enormity of textual legal knowledge in between the king and his subjects, thus initiating the Rule of Law". Finally, it is the rule of law emerged

in the wake of modern law and the modern state, feeding on two of the most important interrelated affordances of the printing press. On the one hand, referring to the second affordance, *the need to interpret* a written norm in the light of the web of applicable legal norms and in the light of the case at hand, requires *suspending judgement*. [...] On the other hand, the flood of potentially contradictory texts *threatens* the reader with a *loss of meaning*, with an impossibility of coming to any conclusion⁵⁴.

In light of this reconstruction, the state claimed the monopoly of dispute resolution (with tribunals and judges being "*la bouche de la loi*"⁵⁵), the monopoly of legislation (the production of law) and the monopoly of violence as the exclusive right to punish. Finally, with the end of the second world war, after the Nuremberg trials⁵⁶ came a development in constitutional thought, the international protection of human rights, constitutional courts, and a more procedural conception of the rule of law.

⁵³ See the classical work of Habermas, J. (2020) [1962]. *Storia e critica dell'opinione pubblica*. According to Habermas, the public sphere emerged in Europe during the 18th century as a result of the development of print media and the rise of a bourgeois class that had the resources and education to engage in public debates. The subject here is the literate bourgeoisie discussing in the coffee-houses, simultaneously carrying fictitious identity of private individuals gathered in public in both their roles as landowners and human beings. With the bourgeois public sphere comes a political consciousness that, in opposition to absolute power, claims and articulates the concept of general and abstract laws. With time, it asserts itself, as public opinion, as the only legitimate source of these laws. (p. 63- 65)

⁵⁴ Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 180.

⁵⁵ See famous art. 4 of the French *Code Civil* from 1804.

⁵⁶ The Nuremberg trials are an evident short circuit of the legal positivism and formalism. It was in fact impossible to prosecute the Nazi officials, who only stucked to German law and orders. How can we legally punish someone not for breaking the law but for obeying it, without contradicting the very basis of legal positivism? To do it, one solution is to recall those principles of 'natural law' that legal positivism had superseded in exchange of the promise of legal certainty. In other terms, one must refer to natural laws of morals that prohibit to set up the industrial management of genocide.

This brief account of the relationship between law and its technological medium that I have outlined by following Hildebrandt's reconstruction served to engage with her attempt to frame how digital technologies affect the mode of existence of the law in a historical moment of great economical and institutional emphasis on the digital transition⁵⁷. Hildebrandt's thesis, which I fully embrace, is that the legal system is shifting from relative stability reached on the affordances of the printing press to the instability brought by the digital revolution. This stability had been already challenged by phenomena such as the industrial revolution and the welfare state⁵⁸, but computation seems to be even broader in its consequences. First, if we consider the first affordance of the printing press - script externalizes legal norms by inscribing them into matter - the comparison with the digital infrastructure is that of visibility against invisibility, or of observability⁵⁹. A printed legal text can be seen and touched, it is *public* in its meaning of "opposite of secret", "manifest," "plain," or "visible", while the functioning of infrastructure, is removed from the gaze of citizens and "built on hidden complexity"⁶⁰. Second, the importance of interpretation leads to conflicts on the right interpretation, so the text becomes a field of contestation. For Hildebrandt, the problem then becomes one of *contestation*, as "it becomes more difficult to engage in argumentation and contestation if the ICI does not operate on the basis of reasons and arguments but on the basis of algorithms or neural nets". Third, the more the support shifts to the digital infrastructure, the more a new class of "scribes" holding the monopoly of expertise - computer engineers and programmers - gain centrality⁶¹. Seeing this process through the lenses of the rule of law, it becomes a problem of independence: the entire legal system (lawyers, judges) that constitute the practice of law are somehow independent and self-aware of their role, while programmers and designers are mainly hired by private corporations (with the notable exception of the hacker community)⁶². Fourth, Hildebrandt suggests that the digital infrastructure will enhance the regulatory paradigm. The law is

⁵⁷ An earlier interdisciplinary framing of the challenge of new technologies can be found in the collection of writings by several authors in Floridi, L. (Eds) (2015). *The Onlife Manifesto*. The EU has many dedicated pages in his websites about "Shaping Europe's digital future" in order to achieve an "European approach to digital transformation" that "means empowering and including every citizen, strengthening the potential of every business and meeting global challenges with our core values". See <https://ec.europa.eu/digital-single-market/en>, accessed on 23.03.2021.

⁵⁸ See for instance Teubner, G. (1988). *Dilemmas of the Law in the Welfare State*, for which the fundamental question was to assess "if are we in a position to identify the fundamental structural changes which would make possible the institutionalization of reflection processes in law and society" (p. 9) to assess what substantial changes in legal structures could be introduced. They pointed at an overburden on the legal system, an "over-socialization" of law in the welfare state necessitates such radical changes in legal structures that its very autonomous organization might be endangered".

⁵⁹ Rieder, B. & Hoffman J (2020). *Towards Platform Observability*.

⁶⁰ See Bobbio, N. (1982). *Democracy and Invisible Government* who makes a clear distinction between the two usages of the word public. Hildebrandt, M. (2015). *Smart technologies and the end(s) of law*, 181.

⁶¹ This movement has been condensed in the title of media scholar Benjamin, R. (2011). *Program or Be Programmed: Ten Commands for a Digital Age*.

⁶² That is why there have been proposals to make designers a protected profession, which would involve a "designer's oath". See Williams, J. (2018). *Stand out from our light*.

becoming an instrument among others to control the environment, and she highlights that the affordance of computational thinking, which “thrives on excluding ambiguity and on achieving control of the environment by means of data-driven feedback mechanisms” may not be compatible with the practical relationship between legislator, lawyers, and judges. That, plus “the end of the suspension judgment” allowed by the printed text, makes Hildebrandt wonder about what balance can be found for the rule of law in the computational era⁶³.

This focus on the materiality of the law was a necessary passage for discussing the relationship between the legal system and platformization. However, given the importance that the word *design* will have in my analysis, I first want to further discuss the relationship between law and design, especially regarding the design of computational systems.

4.1.3 The law and computational systems: technological management

The word design comes from the Latin *signum*, meaning ‘sign’. Philosopher Vilém Flusser explains that design as a noun means “intention, plan, intent, aim, scheme, plot, motif, basic structure, all these (and other meanings) being connected with ‘cunning’ and ‘deception’” (see also the etymology of machine) and as a verb “‘to concoct something’, ‘to simulate’, ‘to draft’, ‘to sketch’, ‘to fashion’”⁶⁴. According to Flusser, this word constituted a bridge between the sharp division between the world of the arts and that of technology and machines, between hard and soft sciences. For him, design is

an expression of the internal connection between art and technology. Hence in contemporary life, *design* more or less indicates the site where art and technology (along with their respective evaluative and scientific ways of thinking) come together as equals, making a new form of culture possible⁶⁵.

The problem of the relationship between the law and the design of computational systems was initially detected by legal scholars such as Laurence Lessig and Joel Reidenberg in the sense of

⁶³ Nevertheless, the advent of the digital infrastructure does not mean that others technology as printed texts, as well as the contemporary legal system, will just be removed and that digital technologies will take their place; what it is likely is that, as with all the others form of media (press, radio, television and computer) after a first period a new ecological balance will be found. See Arvidsson, A. & Delfanti, A. (2016) *Introduzione ai media digitali*. Those are the points of the media ecology traditions. See especially Strate, L. (2017). *Media Ecology*.

⁶⁴ Flusser, V. (1999). *The Philosophy of Design*, 17. In the following part, I will use the word design by referring to the “process of developing and engineering specific technologies, as well as the process of introducing and employing them in human society (design as a verb), including also the result of that process (design as a noun)”. See Hildebrandt (2017). *Saved by design? The case of Legal Protection by design*, 307.

⁶⁵ Flusser, V. (1999). *The Philosophy of Design*, 17.

the necessity to create computer code, which is never simply ‘found’⁶⁶. Similarly, Reidenberg argued that the informal technical customary rules govern information flows - what he called *Lex Informatica* – had characteristics. The *lex informatica* did not depend on national borders, it was flexible and customizable through a variety of technical mechanisms, and it was a self-enforceable without the need for compliance checks and without requiring third party oversight⁶⁷. In his *Code and others Law of Cyberspace*, Lessig suggested that in “cyberspace”, code was playing a role similar to that of the law, and that it could give rise to “architectures of control”⁶⁸. He included code among law, social norms, and architecture in the four modalities of regulation that, operating together, could be used for regulating cyberspace. The first modality that he distinguished was law itself, described by him as “orders given to people to behave in certain ways with the threat of punishment”. Secondly, social norms are also involved in regulation: for instance, one is “affected in the way one behaves with members of the opposite sex”.; third, markets regulate by price and regulation I is steered by the market, as “the price of gasoline limits the amount one drives”. Finally, architecture is a way of regulating since “a highway divides two neighborhoods limits the extent to which the neighborhoods integrate”. In the last category, Lessig referred to code as what “constitutes a set of constraints on how one can behave”⁶⁹. In Lessig, the political problem therefore was the production of code as a means of regulation. Politically, Lessig proposed the liberal answer of enhancing transparency and open-source code; however since Lessig’s focus was not so much on legal protection *per se* but on an instrumental view of regulation focused on how code shapes the behavior of people, his idea has been criticized on several grounds⁷⁰. Moreover, the debate since Lessig has evolved to include all data-driven services based on machine learning.

⁶⁶ Lessig, L. (2006). *Code 2.0*, 6.

⁶⁷ Reidenberg, J. R. (1998). *Lex Informatica: the Formulation of Information Policy Rules Through Technology*. Quoted in Bietti, E. (2023). *A genealogy of digital platform regulation*, 15.

⁶⁸ Lessig, L. (2006). *Code 2.0*, 38-43. Mark Lemley initially criticized the use of the metaphor of “cyberspace as a place” to justify the use of traditional laws governing real property to the Internet, but it turned out it was precisely what happened. See Lemley, M. L. (2003). *Place and Cyberspace*.

⁶⁹ Lessig (1999). *The Law of the Horse*, 506-508. More recently, the discourse around code is law has been developed in relation to blockchain technologies in the sense of “law is code”. See De Filippi & Hassan (2016). *Blockchain technology as a regulatory technology: From code is law to law is code*.

⁷⁰ For Laurence Diver, for instance, it ended to “obscure both the processes of code production and its ultimate embeddedness within society. See Diver, L. (2022). *Code as Law Rebooted*, 5. The most important critiques comes however from Gutwirth, S., De Hert, P.& De Sutter, L. (2008). *The trouble with technology regulation from a legal perspective. Why Lessig’s ‘optimal mix’ will not work*, 193-218. In particular, their critique is that the legal practice and its specificities are very different from the broad notion of regulation that Lessig used. Lessig’ regulation, they claim, is of political and not legal nature. In building their argument, they use Bruno Latour notion of ‘régimes d’annonciaton’. For them, regulation “is too powerful a concept to allow the novelty of emerging technologies to be taken into account by those who, like legal practitioners, have to deal with it at their own pace and with their own tools and responsibilities”. (p. 3) They add: “It is of the nature of the concept of regulation that law becomes the servant of politics.” Furthermore, they identify the problem of Lessig’s in the fact that (1) he reduces law to a regulation-oriented practice; (2) it makes law an activist practice. According to the authors, the problem is that Lessig

It is important to point out immediately that code is different from written law in a fundamental way: law, unlike architecture, can be disobeyed. The ‘code as law’ debate poses the question of what kind of normativity is this architectural, infrastructural, or technological normativity, since it is not, strictly speaking, normative, but it does have some effects in regulating behavior⁷¹.

Some famous examples of such “by design regulation” are provided by Langdon Winner. In a famous article, Winner’s told the story of Robert Moses’ bridge – which turned out to be counterfactual, but it still served its purpose. According to Winner, Moses designed low bridges so that “poor people and blacks, who normally used public transit, were kept off the roads because the twelve-foot-tall buses could not get through the overpasses”⁷². Other famous examples include Jeremy Bentham’s panopticon examined by Foucault⁷³. However, the question whether affordances can be understood as normative is debated. There is a consensus in the sense that they do have some effects on behaviors, but those effects ought to be understood in relation to a social background of reference, and not in their relational properties⁷⁴. One can

wants control, but in order to obtain it, “he does not give a chance to the unexpected possibilities that can emerge from the development of the new technologies that he wants to regulate. Neither does he give a chance to the unexpected creativity of the other practices that will come at grips with these technologies”. The authors conclude Lessig’s critique by stating that, from the legal practitioner’s side, it’s better to wait the emergence of a legal practice. I believe that these criticisms are on point. What is missing in this view is the problem of time in relation to computation: if and once those practices are established, the artifacts are already there, and it is much harder to change them. In this sense, the choice would be between politicizing judicial activities or acknowledging their irrelevance - a rather unsatisfactory alternative indeed.

⁷¹ Technological normativity is the label used by Hildebrandt, M. (2008). *Legal and technological normativity: more (and less) than twin sisters*. The normativity of affordances is object of a debate among ecological psychologists. See discussion around the normativity of affordances in Heras-Escribano, M. & de Pinedo, M. (2016). *Are affordances normative?*, according to which the possibility of error is not among the necessary conditions of affordances, and thus, they actually are-non normative in a strict sense: “Given that affordances (when they are categorized as normative relations) cannot face the paradoxical consequences of private norm following, perceiving affordances cannot be a normative practice. Affordances cannot be normative relations because in those contexts there is no way to include the possibility of error” (p. 22). For “the seizing of some affordance can be classified as wrong or right given a social, external background as a reference, and not because this is a special trait within this relational property”.

⁷² Winner, L. (1980). *Do Artifacts Have Politics?*, 124. A critique of this technological-centered attitude is set forward in Bernhard, J. (1999). *Do Politics have artifacts?*, where he claims that Winner’s article is valuable only as a ‘cultural structure’, and behind Winner’s move there is the legitimation of the professions concerned with the design and planning of human environments (p. 442). Berward also focuses on the discourse of control and contingency of designed artifacts. For his line of thought, Winner’s view is too design-centric, as “power represented in built and other technical devices is not to be found [only] in the formal attributes of these things themselves”. What Bernhard suggest instead is directing the attention to the ways in which designed artifacts “serve as media of mediation, negotiation and translation between the reciprocal expectations and requirements of many people or organizations (and especially of those who represent them, who are authorized to speak for them)”. In this view, it is the processes by which authorizations are built, maintained, contested and changed which is at issue in any social study of built spaces and technology. (p. 424)

⁷³ Foucault, M. (2020). *Discipline and punish: the birth of the prison*.

⁷⁴ Heras-Escribano, M. & de Pinedo, M. (2015). *Are affordances normative?*

think of the case of a traffic bump that has ‘inscribed’ the norm of slowing down⁷⁵. What is contested is in particular the presupposed notion of intentionality of the designer.

The initial argument by Lessig has been reposed and further developed by legal scholar Roger Brownsword. For him, digital technologies would force legal scholars to rethink the very basis of legal theory, since those twentieth-century jurists commit the mistake of assuming that rules and norms are the exclusive keys to social ordering⁷⁶. The shift here is again starting from a simple but decisive consideration: if before the digital revolution humans would live in environments made by natural resources and physical architectures, the environment now is a “computing environment” that allows certain behaviors and not others while allowing data collection⁷⁷. The path that legal theory should take is to develop “a concept of the regulatory environment that accommodates both rules and technological management – that is to say, that facilitates inquiry into both the normative and the non-normative dimensions of the environment”⁷⁸. This strand of literature, therefore, actively tried to show the limitation and shortcomings of the traditional paper-based concept of law, starting from some famous texts as Hart’s *The Concept of Law*. Essentially, the law stands as isolated from other social norms. Without falling into the regulatory and instrumentalist paradigm, it is clear for Brownsword that recent technological developments have replaced legal normativity in guiding the behavior of citizens (now users). The limitation of the law comes from treating “norms, and only norms, as within its field of inquiry” so that “jurists are disabled from assessing the significance of non-normative instruments such as technological management”⁷⁹. This is clear in the case of platforms that directly govern using the infrastructural mean of regulation.

Technological management also relates digital rights management via code and technical standards. By digital right management I mean a governing technique that relies on a technological, rather than legal and normative, solution for addressing a certain problem. A good example of digital right management which is prior to the platform is the famous Sony BMG scandal that occurred in of the mid-2000s. In this case, the company Sony had implemented an anti-piracy software on its physical CD releases that was “designed to limit the scope of playback and the ability to ‘rip’ the music as digital files or copy it to a blank CD”. When the user would insert Sony CD into his computer, a software would automatically be installed his computer - even without its awareness, consent or notice, for which “if the code detected existing CD copying software installed on the computer, it would cease playback and eject the

⁷⁵ Latour, B. (1992). *Where are the missing masses? The sociology of a few mundane artifacts*. In Bijker & Law (Eds). *Shaping Technology/Building Society: Studies in Sociotechnical Change*.

⁷⁶ Brownsword, R. (2015). *In the year 2061*, 3.

⁷⁷ Weiser M. (1991). *The computer for the 21st century*.

⁷⁸ Ivi, 4.

⁷⁹ Ivi, 13.

disc⁸⁰. In this case the system's code regulated what the end-user could do with the purchased CD, without any possible ex post modification of the CD. As Diver correctly argues that this problem can be separated by the enforcement of copyright rules, as it is an attempt to enforce the rules dictated by the producer.

In his analysis, Brownsword identified three types of regulation, that he frames as the past, the present and the future of regulation. The first type of regulation is the traditional, legal normativity, which is suited for regulating the natural environment, in which the regulator would rely exclusively on normative signals. Compared with technological management, the effects of legal normativity are only *indirect*: when regulating the actions of persons, they are attempts to “engage the agents whose conduct causes the harm or the problem, wanting to affect their practical reasoning in such a way as to make problem causing conduct the least salient option available”⁸¹.

In a second-generation regulatory environment, regulators would also consider architecture, in the sense of the design of products and places. The difference here would be that where regulators rely on such a design strategy, “the signal is no longer normative; instead, the design features signal what is practicable or possible”. Additionally, this way of regulation changes dramatically the relationship between “infrastructural hard-wiring (that has regulatory effects) and actions to be regulated”⁸². What is disrupted here are the assumptions of liberal legal theory on contestation, which “count acts of direct civil disobedience being available as an expression of responsible moral citizenship”. In other terms, according to Brownsword technological management narrows the agency of citizens to a great extent. Even if he initially defined “nonsensical” the attempt to “apply principles drafted for a normative regulatory enterprise to a quite different non-normative regulatory environment”, Brownsword has afterward changed his mind⁸³.

⁸⁰ Diver, L. (2022). *Digisprudence: Code as Law rebooted*, 17-18. Even the copies made using the system were themselves protected by the same restrictions.

⁸¹ Lucy, W. (2021). *Law School 2061*, 2.

⁸² Brownsword, R. (2015). *In the year 2061*, 31. He also adds the third-generation regulatory environment, which I find odd: in here, “regulators would go beyond traditional normative signals and design of products and places by incorporating the regulatory design within regulatees themselves (for example, by controlling their genetic coding). Where design is embedded in regulatees in such a way that it channels their behavior, it is likely to be much less apparent to regulatees that they are being regulated – if the design is reliable, regulatees will simply behave (like products) in accordance with their specification”. (31)

⁸³ Brownsword, R. (2016). *Technological management and the Rule of Law*. In particular, he tries to adapt the view of the “internal morality of law” of legal philosopher Leon Fueller, who tried to establish the legitimacy of laws according to its ‘inner morality’. For Fueller there are a series of golden rules for legitimate laws: they should be prospective rather than retrospective; they should not require the impossible; they should be clear and relatively constant; they should not be contradictory; they should be general. Nevertheless, Brownsword believes that in the age of technological management, what matters

These arguments have convinced another legal scholar, William Lucy, that the law as we knew - in the sense of the “distinctive mode of judgment that modern law embodies” - it is about to ‘die’. Instead of prohibiting a certain behavior, technological regulation aspires at making the problem causing conduct impossible by using technological means, seeking to prevent certain forms of conduct or action from ever arising by making them impossible⁸⁴. Seen from this perspective, norms are only *indirect*: here the problem can be “directly engineered out by technological management”⁸⁵. As an example of technological regulation, Lucy discusses the regulatory strategies for traffic management. In some cases, cars can be designed not to exceed a certain speed limit giving rise to the problem of the private regulation of such by design features, and that of the appeal in a cost-benefits analysis. If the absence of public supervision is misplaced problem for Lucy, because he believes that the public/private distinction is *per se* problematic, and that there is no guarantee that rule regulation is always and ever “public” in the sense that involves the state⁸⁶, the second problem is that it is appealing as costs are low and the result seems great. As such this techno-solutionist way of regulation seems to have effectiveness on his side, and it may appear to many as a much better regulatory response than allowing the problem “to occur albeit with penalty and enforcement regimes attached”⁸⁷.

The “death of law” depends on the decline of the four fundamental and distinctive characteristics of modern law according to Lucy. First – what he calls the ‘presumptive identity component’- there is an equality before the law which sees people as abstract beings⁸⁸. Second, according to the ‘uniformity component’ the law “judges its addressees by reference to general and objective standards equally applicable to all”. Third, the ‘limited avoidability component’ implies that the application of the standards of the uniformity component “is generally mitigated only by a

“is not that the rules that result from a ‘law-making’ process are published, but that proposals for the use of technological management are published”. (p. 19)

⁸⁴ Lucy, W. (2022). *The Death of Law: Another Obituary*, 114.

⁸⁵ Lucy, W. (2022). *Law School 2061*, 4. In this texts, law professor Lucy reviews the copious production of Brownsword, which includes Brownsword, R. (2019). *Re-imagining the Regulatory Environment*; Brownsword, R. (2020). *Law 3.0: Rules, Regulation, and Technology*, and more recently Brownsword (2022) *Rethinking Law, Regulation, and Technology*. Brownsword also depicts the foreseeable challenge for law schools, which would have to produce “smart regulators” who see every aspect of the problem before them and are able to assess, without prejudgment, which strategy from a mixed menu of legal, technological and other responses is most likely to solve it in the best way. (p. 5), while the second being that to “address the impact non-normative regulation has upon some of the fundamental components – the rule of law, the idea of coherence and freedom” – of the third one is “reinventing the canon”, the “process of rethinking and rewriting the standard doctrinal categories and textbooks” of normative law (p.7). In such a way, this “legal designer” would directly resemble the operation advocated by Stafford Beer.

⁸⁶ Ivi, 116.

⁸⁷ Lucy, W. (2022). *Law School 2061*, 4.

⁸⁸ Lucy, W. (2022). *The Death of Law: Another Obituary*, 111: “the law’s addressees are identical in two respects according to this component: they are regarded as the same in terms of those capacities, cognitive and physical, which enable humans to comply with achievable and intelligible legal standards; and they are accorded exactly the same entitlement to the same bundle of “formal” rights”.

limited number and range of exculpatory claims". What all these components have in common is that they presuppose an idea of the legal person based on two features. The first feature is "the ability to understand the general and objective standards by which the law seeks to govern them" while the second is the capacity to change behavior in light of those standards⁸⁹. Lucy's point therefore is that if the law's addressees lacked these features, then regulation by law would be pointless.

However, the rise of techno-regulation must also be paired with other contemporary trends that show the decline of the law, something that Lucy calls "law's pathologies". A first pathology is the realization of law in terms of litigation: the conflict and expense generated by testing and resolving legal claims are high, the court system is inefficient and needs management, "perhaps even complete eradication"⁹⁰. Secondly, the attempts to avoid litigation are carried out by the very internal organs of the legal system: courts themselves. If one regards trials as problematic, then it makes sense to reduce their incidence. Moves towards pre-trial mediation and settlement are therefore natural steps to take, particularly if "one of the greatest uses of judicial procedure is to bring the parties to a point where they will seriously discuss settlement"⁹¹. What Lucy is imagining is a legal system where trials play an increasingly irrelevant role, a "law without litigation":

how could we have law without that form of contestation and dispute? It is a mistake to assume a necessary connection between law and adjudication, since one is conceivable without the other. It is perfectly possible to imagine law, understood as a system of subjecting human conduct to the governance of rules, without that specific means of resolving disputes about those rules. Disputes could be resolved by many alternative means: voting, lotteries, singing contests and reference to the elders, to name a few⁹².

Therefore, techno-regulation is emerging as an effective means of administering the lives of others, a particularly salient governmental technology because increasingly easy to implement and effective across any domain dependent upon it⁹³. In this scenario, technological management

⁸⁹ Ivi, 112. Lucy calls modern "standard" idea of law the East coast paradigm, while technological management the West Coast paradigm.

⁹⁰ Ivi, 118. On the point see also Cohen, J. (2019). *Between Truth and Power*, 143 -170.

⁹¹ Ivi, 122.

⁹² Ivi, 123.

⁹³ Ivi, 129. Again, for Lucy is not about the public/private distinction: regulation in Western liberal societies has become more pervasive and plural, being exercised in many different forums through a

provides a vast range of continuous regulatory and corrective mechanisms designed into architecture, the environment and code which either completely obviates recourse to the agency of regulatees or radically reduces it⁹⁴.

Excluding the case of machine learning, where the computational system learns by itself, the problem can be shifted to the designer, and the “lack of agency of the regulatees” is still “driven by the agency of those who design various instances of technological management⁹⁵. Among the consequences of such an approach, techno-regulation “seems prone to transgress the principles that inform the rule of law”, that it “undermines human dignity, on the one hand, and freedom, on the other, since it either treats human beings as objects or illegitimately limits their sphere of action”⁹⁶. Lucy’s discussion of technological management is not limited to computational technologies, but points at a larger trend in regulatory techniques. A more computational focus has been recently provided by Laurence Diver, according to which when dealing with the process of self-enforcing automation brought by code, the law has less power because it is dependent upon the very medium it is attempting to regulate⁹⁷.

This line of reasoning wants considerably to rethink what the law is by taking into account what has been considered outside of its domain – code as “the body of normativity that works parallel to institutional law”. For Diver, since code cannot be interpreted and contested *ex-post*, the moment of production becomes crucial. The problem, then, becomes one of legitimacy of such production: producers of “code” are not constrained by *ex ante* standards to ensure “legitimacy during operation and the possibility of *ex post* remediation”⁹⁸. If code is more than law because it

multitude of agencies, practices and mentalities, few of which register or represent a version of the public/private distinction (129)

⁹⁴ Ivi, 130.

⁹⁵ Lucy, W. (2022). *The Death of Law: another Obituary*, 131.

⁹⁶ Ivi, 137-138.

⁹⁷ Diver, L. (2022). *Code as Law Rebooted*, 11.

⁹⁸ Diver, L. (2022). *Code as Law Rebooted*, 13. The proposals to create “legitimate code” seems to me impossible to operationalize. For instance, Diver’s argument goes as follows. Given the broadness of the concept of design, one can think at norm production as a design problem in order to assess the production of code in relation to its legitimacy. According to Diver, the issue is not viewing code as a source of law, but how the ‘non-law’ of code can be produced in ways that are legitimate from the perspective of the law and of constitutional democracy”. He distinguishes between the legitimacy in terms of input (the moment of production) and output (*ex post* assessment). “The shift towards input criteria puts the focus on the design process, to ensure *ab initio* that certain design characteristics are in place that allow for better output assessments but simultaneously reduce the need for them, because the initial configuration of the system is more legitimate from the outset”. In this sense, it is an extension of the reach of legal communication. Among the criteria for input legitimacy of techno-regulation, Diver lists the respect for individual dignity through the preservation of choice (and more choice is better), reciprocity between the regulator and the regulatee in the designing of norms, and the need for a delaying ‘regulatory margin’ that can facilitate this reciprocity. See Diver, L. (2022). *Code as Law Rebooted*, 46. Furthermore, this line of reasoning, albeit clear

is self-enforcing regulation, it is also less than the law because it lacks the possibility of being contested. This brings the problem of the legitimacy of platform infrastructures. For him, the point is that designers limit individual and collective freedom in ways that have not been sanctioned by the democratic polity, via mechanisms that are technically and socially opaque and which are not straightforwardly susceptible to public contest, redress, and (judicial) review”⁹⁹.

Instead of the restricted focus on code *per se*, I prefer to use the word computational infrastructure, as it better describes the complex assemblages of algorithmic systems that I described in chapter two. As legal scholar van Hoboken described it, we are facing the problem of the “institutionalization of computing”, of creating a bridge between infrastructure and law¹⁰⁰. The GDPR, with its focus on compliance and risk assessments, has notably excluded the liability of designers and with it the “very active role that designers play in the creation of such normative ‘reality’ in and through the code that they produce”¹⁰¹. Similarly, Mireille Hildebrandt has proposed the notion of “legal protection by design” to account for the change of the environment of the law “from language to computation”¹⁰². This notion builds on that of privacy by design present in the GDPR¹⁰³, aiming at extending it to a systemic level and making it enforceable. The notion of legal protection by design considers both this ‘technological normativity’ - which should comply with substantive law - and the fact that this normativity should be contestable in a traditional court of law¹⁰⁴. As such, legal protection by design is an analogy from the legal conditions of the rule of law articulated in natural language to be

and linear, can somehow miss the unpredictability of the design practice. For Bratton, every design produces a new accident, and no designer can really foresee the consequences of its craft. The global computational infrastructure is defined as an “accidental megamachine”, emergent and uncontrollable. See Bratton, B. (2015). *The Stack*.

⁹⁹ Diver, L. (2022). *Code as Law Rebooted*, 21.

¹⁰⁰ See my interview with van Hoboken, “*Platform Regulation and the Institutionalization of Computing in the European Union*”, in Cristofari, G. (2023). *The Politics of Platformization*, 162 -173.

¹⁰¹ Diver, L. (2022). *Code as Law Rebooted*, 26. See also Recital 26 of the GDPR, where this problem is generally stated but left to a non-enforceable mechanism. The never approved e-privacy directive contains more explicit obligations for manufacturers. In turn, designers have proposed to make design a “protected profession” similarly to doctors and lawyers. See Williams, J. (2018). *Stand Out of Our Light: Freedom and Resistance in the Attention Economy*. Another problem of the compliance paradigm is that its practice results in the institutional mechanisms of compliance agencies such as the “Big four”. See Kiechel, W. (2010). *The Lords of Strategy: The Secret Intellectual History of the New Corporate World*.

¹⁰² Hildebrandt, M. (2017). *Saved by Design? The Case of Legal Protection by Design*, 308.

¹⁰³ GDPR art. 25, which at par. 1 states: “Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organizational measures, such as pseudonymisation, which are designed to implement data-protection principles, such as data minimization, in an effective manner and to integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects ». The concept was originally proposed by Ann Cavoukian (2011). *Privacy by design: the 7 foundational principles*.

¹⁰⁴ Diver, L. (2022). *Code as Law Rebooted*, 146.

translated “into the technical requirements that inform the data-driven architecture of our everyday environment”¹⁰⁵. The political project of by design regulation asks the law to engage with techno-regulation in order to make it legitimate: “instead of ‘anything goes’ for the architects of this new world, democratically legitimated law must regain its monopoly on setting the defaults of societal order, defining the rules of the game in a way that brings the data-driven machinery under the Rule of Law”¹⁰⁶. It is not only the about recognizing the governance by platforms, but rather to understand that paper-based law starts where the infrastructural affordance ends.

I believe that the debates that I reconstructed here are relevant in showing the clash between legal normativity and computational ‘normativity’ that is at the basis of the governance by platforms. Nevertheless, in Hildebrandt and Diver’s account there is an overfocus on the end-user¹⁰⁷. Even if I agree with those analyses pointing at the fundamental problem of the legitimacy non- paper based legal mechanisms of regulation and control, I believe that such question of legitimacy should not be asked for code itself, but about the organization of the systems producing code, namely of the platform infrastructure, what in the previous chapter I have defined as and infrastructural authority. I discuss the problem of the legitimacy of this authority that derives from having built a certain kind of infrastructure in the final chapter, while I now want to discuss the case studies of some sub-systems of the law in an attempt to observe how platformization has affected them.

¹⁰⁵ Hildebrandt, M. (2017). *Saved by Design? The Case of Legal Protection by Design*, 309.

¹⁰⁶ Ibidem.

¹⁰⁷ Diver contends that end- users should have the possibility of observing the rules to which the system is subjecting them; to exercise choice as to which rules apply, and to contest those rules in court. Other versions of this idea are even more utopistic. For instance, Asscher contends that criteria that when there are rules enforced by code, it must be transparent, trustworthy and reliable; the producers of the code must be identifiable, and end-users must have the choice of whether or not to obey its rules. Diver, L. (2022). *Code as Law Rebooted*, 153.

The old rules are no longer effective, the new ones are not yet in force.

Fabio Bassan

4.2 Platformization and the sub-systems of the law

If we understand platformization anthropological revolution in discontinuity with the past - a new Polanyian 'great transformation' driven by smartphones and cloud infrastructures¹⁰⁸ - and hence the platform as a new organizational model, some considerations on repercussions on the legal system becomes necessary. Van Dijck, Poell and de Waal, at the end of their analysis of the platform society, pointed out the need for legal reforms in light of platformization, datafication and commodification as new phenomena that were not accounted in legal frameworks. The Dutch authors highlighted that the "offline apparatuses for regulating physical spaces and fair markets appear to be premised on the very dichotomies that datafication and commodification mechanisms undermine"¹⁰⁹, asking for the creation of new taxonomies of governance to render the ecosystem more transparent and accountable. This concern was also something shared in US context by law professor Orly Lobel, who pointed out that "distinctiveness of the regulatory questions presented by the rise of the platform lies in the potential these innovations have for disrupting previously accepted legal categories and regulatory goals"¹¹⁰.

Regarding the need to carry out such legal reforms we can distinguish between two positions that I call the 'reformist' and the 'exceptionalist'. The reformists do recognize the need for a round of legal reforms to restore the unbalance brought by digitization and, but they believe that this intervention can be carried out inside the existing legal framework. That is, for instance, the position of economic historian Balazs Bodo, who draw a historical comparison with the industrial revolution, where pervasive child labor in coal mines was taking place. Only after decades laws were defined that prevent child exploitation, define the maximum amount of work to be done in a period through unionization, and define what kind of responsibility a workplace has toward its employees¹¹¹. The reformist, therefore, acknowledge the need to update the rules, as the European Union has been doing in the attempt to catch up with this legal gap with the regulatory instruments available to it, as well as with some imagination¹¹². The EU started to

¹⁰⁸ See the introduction for the interpretations of Polanyi's work in the platform economy. For an overview of Polanyi's thesis of the great transformation see Dale, G. (2010). *Polanyi*, 44 – 88.

¹⁰⁹ Van Dijck, J. et al (2018). *The Platform Society*, 145. See also Suzor, N. (2019). *Lawless*.

¹¹⁰ Lobel, O. (2016). *The Law of the Platform*, 144.

¹¹¹ Bodo, B. "Platform skepticism and private trust infrastructure", in Cristofari, G. (2023). *The Politics of Platformization*, 48.

¹¹² See the work of the chair of the expert group on the online platform economy advising the European Commission Alexandre de Streel in Alexiadis, P. & de Streel, A. (2020). *Designing an EU intervention standard for digital platforms*.

update competition rules, data protection rules, and arrived so far at creating new institutions for controlling platforms (while negotiating with them)¹¹³.

In carrying out such legal interventions, however, one encounters serious problems regarding what we can call the internal functional differentiation of the legal system vis-à-vis platformization and the model of digital innovation¹¹⁴. First, the issues involved are very heterogeneous, as they are not restrained to a single discipline but lie at the interface of different branches of the legal system¹¹⁵. The problem deals with how the legal system was developed before the advent of the digital revolution, giving rise what law professor Fabio Bassan has called the “European legal matrix”¹¹⁶. Looking at the regulatory European landscape, one can in fact find two different regulatory areas. On the one side, vertical and horizontal ‘siloes’ or sectorial framework of specialized regulations which includes fields as banking, media, education, energy, insurance. On the other, a horizontal framework or ‘siloes’ that are applicable to all sectors: privacy and data protection, competition law and antitrust, intellectual property, and others. The existence of these established frameworks combined with what van Dijck has called the “slippery ontology” of platforms - that adopts features always in between private and public interest, market and non-markets, and sectors and infrastructures - makes legal intervention complicated. Each of these legal frameworks, in fact, has “a limited scope and reach, commonly focusing on single actors (e.g. firms, markets) and arguing in the private interest of consumers or in the public interest of citizens”¹¹⁷.

The EU has been trying to tackle such problems in two ways. First, by identifying a new hermeneutic criterium for choosing the applicable law and the competent institution to intervene on certain issues. Instead of using the usual criteria of the specialty of the law or temporality of the law - using the criterium of specialty would have led to sectorial regulation to prevail - the DSA regulation now states that potential conflicts will be solved by the Digital Service Coordinator, a competent authority designated by each member state that will be responsible for the supervision of providers of intermediary services and enforcement¹¹⁸. The criterium now is that of the “cooperation” between national authorities and European authorities, and Digital Service Coordinators.

¹¹³ It is the creation of the “Digital Service Coordinator”, with powers of investigations and enforcement. See *infra*.

¹¹⁴ For Luhmann, the starting point of sociological analysis is the difference between system and environment, which can also be observed within a system itself. System differentiation “means that differentiation is applied to itself: the system repeats the difference between system and environment within the system itself”. See Baraldi et al (2021). *Unlocking Luhmann*, 61 -63.

¹¹⁵ Resta, G. (2019). *Digital platforms and the law*, 231.

¹¹⁶ Bassan, F. (2021). *Digital Platforms and Global Law*.

¹¹⁷ Van Dijck, J. et al (2021). *Seeing the forest for the trees: visualizing platformization and its governance*, 2810.

¹¹⁸ See art. from 49 to 55 of the DSA.

A second innovation lies in what has been defined as the shift from the horizontal regulatory frameworks to a regulation “by product” in which few general codified rules of public regulation are posed, but they are specified in real time according to the changes in the market practices¹¹⁹. This mechanism, meant to speed up the regulatory process to face the fast changes of the digital economy, has been defined by Bassan the European “regulatory cycle”, a multi-level and multi-actors system of norms and standards production that works as follows:

The best practices on the market are adopted by the national regulatory and supervisory authorities as benchmarks and brought to the forum of the European authorities, which develop technical standards or, when necessary, proposals to the EU Commission, which then adopts executive acts, or launches legislative acts that the EU Council and EU Parliament then approve, making them binding. The advantage of the ‘regulatory circle’ is that the best practices are binding (self-binding the companies that adopt them) immediately, or as soon as the national and European authorities propose them as standards or guidelines¹²⁰.

As these regulations have not yet come into force, we will have to see how they are going to be implemented in practice and whether they will end up trapped in the lack of enforcement and in the inactivity, like in the case of the GDPR and the Irish Data protection Commissioner¹²¹.

I adhere to a second position that I call ‘exceptionalist’, which recognize, as seen in the previous part, that a great part of the regulatory activities now is carried out with technological management and the policy by infrastructure. The reformist position that focuses on the need on paper-based regulation falls short in dealing with platformization, and I believe that the main contribution is of symbolic nature. It shows that the EU is at the forefront of the fight against the tech giants, but it does not bring substantial changes in the life of European citizens. This is not to downplay the importance of reforms such as the DSA, but only to highlight its limited scope: it brings some fairness in the relationship with content creators and complementors, but it does not address the structural problems of the platform economy. In other terms, I believe that regulatory paradigm is not enough; for achieving the goal of changing the path of neoliberal platformization, it would be more useful to frame this phenomenon in constitutional terms, and carry out a series of meant at changing both the European institutional system and the internal structures of the legal system (*infra*).

¹¹⁹ Bassan, F. (2021). *Digital Platforms and Global Law*, 15-17.

¹²⁰ Ivi, 16.

¹²¹ See the consideration of Palka on the conference “The future of data protection: effective enforcement in the digital world” in Palka, P. (June 20, 2022). *What if it's *not* the enforcement? Reflections post EDPSConf2022*; Irish Council for Civil Liberties (2021). *Europe's enforcement paralysis*.

Both traditional legal categories and regulatory strategies are limited in platformed environment. I call this phenomenon, borrowing the terminology of the free software movement, the ‘cracking of the legal system’. In the following paragraphs, I am going to briefly focus of some of the horizontal frameworks of the law with two goals. The first one is to show the dynamics of such cracking by looking at administrative law, privacy and data protection, competition law and antitrust. The second is to show that as the political debate of platformization examined in the previous chapter, also legal debates are starting to recognize platforms as infrastructures.

4.2.1 Platformization, privacy and data protection

A first area heavily impacted by platformization is that privacy and data protection. These two notions are usually used interchangeably in the discourse, but the notion of data protection, especially in Europe, is the result of an evolution of the original notion of privacy¹²², and a reaction to his foreseen “death”¹²³.

According to Daniel Solove – a privacy scholar coming from the Anglo-American world – privacy the “Cheshire cat of values”, disappearing precisely when trying to grasp it. It can be considered an “umbrella concept”, as it is meant to protect from many different harms at the same time. Solove singled out the theories of privacy into six categories. The oldest one, coming from Brandeis, is the *right to be let alone*¹²⁴. The second one is the *limited access to the self*, i.e. the ability to shield oneself from unwanted access by others. The third one deals with *secrecy* and attains the concealment of certain matters from others. The fourth one is *control over personal information*, i.e., the ability to exercise control over information about oneself. The fifth is what Solove calls *personhood*: the protection of one’s personality, individuality and dignity¹²⁵, while the final theory of privacy would equate privacy with intimacy. All these conceptions originated

¹²² For a first conceptualization of privacy in the USA in the 20th century, see Westin, A.F. (2014). *Privacy and Freedom*. For the history of privacy, see Scoglio, S. (1994). *Privacy: Diritto Filosofia Storia* and also Simitis, S. (2010). *Privacy – An endless debate*. For a more philosophical perspective that traces the connections with Locke, Kant, and Mill see Janice, R. (2017). *Law and the Philosophy of Privacy*. For the history of data protection see González Fuster, G. (2014). *The Emergence of Personal Data Protection as a Fundamental Right of the EU*. For Gonzalez Fuster, the use of different terms actually points out a “displacements of legal meaning which have not been neutral, or without consequence”, as “the passage from a number of legal notions formally concerned with the regulation of a technological development more specifically”. (p. 263)

¹²³ Froomkin, A. M. (2000). *The Death of Privacy?*. Data protection protects personal data and their processing and circulations, while privacy sets a certain threshold of exclusions of others.

¹²⁴ It is interesting to note that this notion emerged as a tort action because of the new technological means of intrusion in private life: “for years there has been a feeling that the law must afford some remedy for the unauthorized circulation of portraits of private persons; and the evil of the invasion of privacy by the newspapers, long keenly felt, has been but recently discussed by an able writer”. Warren, S. & Brandeis, L. (1890). *The Right to Privacy*, 195.

¹²⁵ See Solove, D. (2009). *Understanding Privacy*, 12-38. As for others umbrella concepts, it is not about finding the common denominator of a series of things, but of “mapping the topography of the web” (p. 77) by looking at the specific types of activities disrupted by the activities of governments or businesses.

to create a private space of non-interference by the state. More recently and from a more analytical angle, Helene Nissenbaum pointed out the need to contextualize privacy and defined it as the appropriate information flow¹²⁶. It has to be noted, however, that privacy is not only a negative value, but also a positive one. There is a private element of privacy where one retreats to his personal sphere, but there are also some non-privative elements: privacy is also “a duty of the state to protect certain matters” via legal devices¹²⁷. In the context of surveillance capitalism, law professor Neil Richards has suggested that since people don’t know why and when they are surveilled, this could lead to lead people to refrain to experiment new ideas; what is needed would be what he calls “intellectual privacy”¹²⁸. For privacy scholar Spiros Simitis, given the relationship between information processing and democracy, the protection of privacy has gained even more relevance: it is “the price necessary to secure the individual's ability to communicate and participate”¹²⁹.

Nowadays, the role and function of privacy has significantly shifted since its creation because of the new technological environment that surrounds us. Privacy violations can still come from the state, but also from private companies and, at least since Edward Snowden’s revelations, from private and public powers that come together for surveillance¹³⁰. As Anna Weiner has put it, “if the reports are accurate, the veil between ad tech and state surveillance is very thin”¹³¹. That makes privacy inseparable from the notion of the public sphere, and especially connected to the

¹²⁶ Nissenbaum, H. (2010). *Privacy in Context*.

¹²⁷ Solove, D. (2009). *Understanding Privacy*, 33. For Solove privacy is a “set of protections against a plurality of distinct but related problems” and “when privacy protects the individual, it does so because it is in best society’s interest”. As such it is not just freedom from social control but is a socially constructed value (p. 174).

¹²⁸ For a summary of the debate with Danielle Citron, see Ziccardi, G. (2013). *Internet, controllo e Libertà*, 170-174. Richards, who, being American, always considers privacy together with and in opposition to free speech, defines intellectual privacy as “protection from surveillance or interference when we are engaged in the process of generating ideas – thinking, reading, and speaking with confidants before our ideas are ready for public consumption”. Richards, N. (2015). *Intellectual Privacy*, 5. On surveillance studies from a more sociological perspective, see Lyon, D. (2018). *The Culture of Surveillance: Watching as a Way of Life*.

¹²⁹ Simitis, S. (1987). *Reviewing Privacy in an information society*, 746.

¹³⁰ See in particular Snowden autobiography: Snowden, E. (2019). *Permanent record*, as well as Landau, S. (2013). *Making Sense from Snowden: what's significant in the NSA surveillance revelations*. For privacy scholar Simitis, the government “no longer sticks to the traditional direct collection of data. It turns instead to private entities. In doing so, the state not only acknowledges that the majority of data is stored in the private sector, but also establishes a processing model systematically combining information gathered in both public and private sectors”. Simitis, S. (2010). *Privacy – An endless debate?*, 2003. Additionally, Zuboff has described the “revolving doors” between Google and the American government. See Zuboff, S. (2019). *The Age of Surveillance Capitalism*, 122. Zuboff reports that the “Google Transparency report” found that by April 2016, “197 individuals had migrated from the government into the Googlesphere, and 61 had moved in the other direction. Among these, 22 White House officials went to work for Google, and 31 Googlesphere executives joined the White House or federal advisory boards with direct relevance to Google’s business”.

¹³¹ Wiener, A. (2020). *Uncanny Valley: Seduction and Disillusionment in San Francisco’s Startup Scene*, 127.

right of propriety¹³². At European level, one of the scholars that pointed out very early on that a change in the nature of the private sphere meant a need for a new approach to privacy - beyond a right to be let alone grounded in private property – was legal scholar Stefano Rodotà. Rodotà meant that the Internet meant a shift from privacy to data protection and informational self-determination, seen as the possibility to follow personal information online and oppose interferences. As such, privacy was necessary not only for the protection of others' fundamental rights but also for exercising citizenship *tout court*, something that he pointed out already in 2004 in his role of head of the Italian Data Protection Authority:

without strong protection of their information, people risk ever more being discriminated against for their opinions, religious beliefs, health conditions: privacy thus presents itself as a fundamental element of the society of equality. Without strong data protection regarding their relationships with institutions or membership of parties, trade unions, associations, movements, citizens risk being excluded from democratic processes: thus privacy becomes an essential condition for being included in the participatory society. Without a strong protection of the "electronic body", of all the information collected on our account, personal freedom itself is in danger and the thrusts towards the construction of a society of surveillance, of classification, of social selection are strengthened: thus it becomes clear that privacy is a necessary tool to safeguard the society of freedom. Without continuous resistance to micro violations, to the continuous, capillary, oppressive or invisible controls that invade daily life itself, we find ourselves naked and weak in the face of public and private powers: privacy is thus specified as an ineliminable component of the society of dignity¹³³.

Rodotà suggested creating a *habeas data*, an Internet Bill of Rights, as adequate forms of protection require full awareness of the power relations implied by the dimension of

¹³² This is the idea of Hannah Arendt, who dedicates a chapter in *The Human Condition*, (chapter 2.8, *The Private Realm*), to the relationship between the private and the public sphere in modernity and in Greek times. With the premise that this notion of privacy should be read in light of Arendt's philosophical anthropology, for Arendt the "privation of privacy lies in the absence of others; as far as they are concerned, private man does not appear, and therefore it is as though he did not exist" (p. 58). In her Greek model, privacy was "the dark and hidden side of the public realm, and while to be political meant to attain the highest possibility of human existence, to have no private place of one's own (like a slave) meant to be no longer human". (p. 64). The non-privative aspects of privacy are that first, in ancient times, private property was perceived as a need - different from modern accumulation of wealth- because "the four walls of one's private property offer the only reliable hiding place from the common public world, not only from everything that goes on in it but also from its very publicity, from being seen and being heard" (p. 77). This point is also and updated also by Zuboff, S. (2019). *The Age of Surveillance Capitalism* as she relates privacy to intimacy.

¹³³ Rodotà, S. (2004). *Relazione del 2004 del Garante per la Protezione dei Dati Personali*, translation mine.

surveillance¹³⁴. According to these authors, the new technological society necessitates going beyond privacy, to focus on the protection of the digital identity of the individual and on personal data.

In other terms, the very emergence of the field of data protection is inherently tied to technological developments and how these may amplify power asymmetries¹³⁵. In Europe, notwithstanding the great amount of lobbying to stop it, this shift from privacy to data protection was crowned by the coming into force of GDPR, with great expectations put on this regulation¹³⁶. As discussed in the introduction, the GDPR was created with the aim of strengthening individual rights, enhancing control over one's data, and raising people's awareness. In the GDPR one can find a strong emphasis on data subject rights and heightened attention to freedom of expression¹³⁷. The cornerstone principle of the GDPR is the accountability of the data controller, that should proactively carry out a self-assessment of the risks connected to its personal data processing¹³⁸. Furthermore, together with this regulation came some important decisions by the European Court of Justice, namely *Scherms I*, *Scherms II*, *Google Spain* and others affecting fundamental principles such as the territoriality of the jurisdiction¹³⁹. Jef Ausloos argued convincingly on the universal applicability of the GDPR to all

¹³⁴ Rodotà, S. (2014). *Il mondo nella rete*. The *Habeas Corpus* was a writ of the common law tradition, already present in the 12th century, through which a person could report unlawful imprisonment to a court; the custodian would have to declare on what day and for what cause he was arrested. See the conclusion for an attempt to rethink this concept.

¹³⁵ This point emerges also from the detailed historical analysis of Ausloos, J. (2020). *The Right to Erasure in EU Data Protection Law*, chapter 2. Historically, the first data protection law in Europe came in October 1970, from the German federal state of Hesse, which proclaimed its '*Hessisches Datenschutzgesetz*'. The *Guidelines on the Protection of Privacy and Transborder Flows of Personal Data* were adopted by the OECD in 1980. At European level, the main legal reference for data protection can be found in art 8 of the Charter of Fundamental Rights of the European Union, which states that: (1) Everyone has the right to the protection of personal data concerning him or her. (2) Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified. (3) Compliance with these rules shall be subject to control by an independent authority.

¹³⁶ See Costello, R. (2020). *The Impacts of AdTech on Privacy Rights and the Rule of Law*. See also the introduction to the present manuscript. For a discussion of the symbolic function of the GDPR in the creation of a European identity, see my interview with van Hoboken, "*Platform Regulation and the institutionalization of computing in the European Union*". After the introduction of GDPR, lobbying has even increased, with unprecedented investments by Big Tech. See for instance Bank & Silva (2021). *How Big Tech money skews the European playing-field* at <https://www.socialeurope.eu/how-big-tech-money-skews-the-european-playing-field>

¹³⁷ For a detailed reconstruction and discussion, see Ausloos, J. (2020) *The Right to Erasure in EU Data Protection Law*, 51 -81.

¹³⁸ See art. 24 of the GDPR on the responsibility of the controller, par. 1: "Taking into account the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for the rights and freedoms of natural persons, the controller shall implement appropriate technical and organizational measures to ensure and to be able to demonstrate that processing is performed in accordance with this Regulation. Those measures shall be reviewed and updated where necessary".

¹³⁹ In 2011 Max Schrems, then a law student, asked Facebook for the data it held about him, receiving 1200 pages of data. On the basis of the response to his request he filed 22 complaints the Irish data

kind of digital technology, seen as a legal “infrastructure for fair balancing”¹⁴⁰. For him, supported by Recital 4 of such regulation¹⁴¹, the expansive scope of the GDPR “is indicative of a broader rationale that extends beyond that of the right to data protection”¹⁴².

The five years following the coming into force of the GDPR have shown that there are, however, several limitations to the effective applicability of such regulation. One is platformization itself: the GDPR sets standards that must be applied by organizations and corporations, and it operates in an environment made of designed technological artifacts. Crucially, the GDPR does not provide protective *ex-ante* binding measures, which are the absolute requirements in order for *ex post* empowerment measures to have any practical effect¹⁴³. As such, the protection of the fundamental right to data protection must be assessed in relation to the computational environment in which this right shall be operationalized. That is why data protection scholars have pointed out the necessity to look also at infrastructure design in order to guarantee effective protection of the fundamental rights of European citizens.

In particular, this by-design dimension in the regulation of data protection has been accurately described by Seda Gurses and Joris van Hoboken in their paper *Privacy After the Agile Turn*, which is a coherent attempt to account for the main changes in the production of software of the last twenty years and their impact on privacy. According to the authors, whose analysis is similar to the one of the software studies tradition (3.3), there is a need to go beyond technology consumption and look at how software is *produced* nowadays. This need follows logically from the simple fact that the production of digital functionalities has changed conditions for privacy governance¹⁴⁴. In particular, software has become ‘on demand’, as the result of three parallel

protection authority. After 3 years he retracted most claims, citing the refusal to provide a formal decision and lack of procedural rights, and the excessive costs. However, Schrems cultivated the case regarding the transfer of his personal data outside Europe that led to the invalidation of the Safe Harbor by the ECJ. In 2014 Schrems started a class action against Facebook that was ruled out by the Court of Justice on the basis of the personal nature of the complaint. On Schrems I see Flórez Rojas, L. (2016). *Legal implications after Schrems case: are we trading fundamental rights?*. In 2020, in the “Schrems II” case (CJEU, 16 July 2020, Case C-311/18 *Data Protection Commissioner v. Facebook Ireland and Maximilian Schrems*) the ECJ invalidated the Commission’s Decision 2016/1250 of data transfer between the US and Europe (so called privacy shield) but not the Commission Decision 2010/87 on standard contractual clauses.

¹⁴⁰ Ausloos, J. (2020). *The Right to Erasure in EU Data Protection Law*, 72.

¹⁴¹ Recital 4 of the GDPR states that “The processing of personal data should be designed to serve mankind. The right to the protection of personal data is not an absolute right; it must be considered in relation to its function in society and be balanced against other fundamental rights, in accordance with the principle of proportionality. This Regulation respects all fundamental rights and observes the freedoms and principles recognized in the Charter as enshrined in the Treaties, in particular the respect for private and family life, home and communications, the protection of personal data, freedom of thought, conscience and religion, freedom of expression and information, freedom to conduct a business, the right to an effective remedy and to a fair trial, and cultural, religious and linguistic diversity”.

¹⁴² Ausloos, J. (2020). *The Right to Erasure in EU Data Protection Law*, 70-75.

¹⁴³ Ausloos, J. (2020). *The Right to Erasure in EU Data Protection Law*, 469.

¹⁴⁴ Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, in In Polonetsky; Omer; Selinger. (eds) (2017). *Cambridge Handbook of Consumer Privacy*.

developments: the shift from the ‘waterfall model’ produced by a company and offered to the client to lightweight and lean models of software production¹⁴⁵; the shift to “shrink-wrapped” software products (as Microsoft Word) to the software as a service model (Saas) or ‘service-oriented architecture’ (SOA) (as Google Docs)¹⁴⁶; the advent of cloud computing or Infrastructure as a Service (IaaS)¹⁴⁷. These novelties in software productions come with some clear advantages for third parties, as with modularized service components it is easy to connect and cooperate within an enterprise or across the industry; in turn users benefits from external data storage and continuous updates¹⁴⁸. The consequences of these shifts in software production are those that we witnessed in the review of the software studies tradition. After the ‘agile turn’

companies and organizations offering (information) goods and services through digital channels (shortly, curators) can now integrate themselves into the service environment, often through the mere addition of a few basic lines of code, outsourcing basic functionality such as authentication, advertisement placement, or security to a third party provider. Consequently, what to the end user looks like a seamless website offered by a single provider is often in reality a mix of a Frankenstein and a Matryoshka doll concealing dozens of services¹⁴⁹.

¹⁴⁵ The ‘waterfall model’ is the traditional model of software production in which software is sold to consumers. It relies on “rigorously regimented practices, extensive documentation and detailed planning and management”. In this model, software projects “have a clear beginning during which the requirements and design are settled, and a final stage during which a version of a software is tested and released to its users”. The “agile” lean model of software production is instead focus on “user-centricity, short development cycles, continuous testing”, together with greater simplicity of design and greater autonomy for developments. Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, 582.

¹⁴⁶ Shrinkwrap software means generally commercially available “off the shelf” software that may be obtained on generally commercially available terms and conditions. With pervasive connectivity software no longer runs only on the client side, but is redesigned “to run on a thin client that connects to a server which carries out most of the necessary computation”. In addition, APIs allow the optimization of “the core functional components of a service (e.g., authentication and payment)”. Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, 582.

¹⁴⁷ Cloud computing “involves the economic and physical restructuring of computing resources (processing, databases and storage) into flexible, scalable utilities, available on demand”. Historically, the emergence of cloud computing reflects a return to the mainframe, after the rise and decline of the PC, which became dominant in the 1980s and ’90s. In earlier days, computing hardware was very costly; than came personal computers where people had access to and control over their own, personal computing resources to run software (or develop it) themselves; while today, “users have less and less actual control over their devices as their data and software increasingly moves to servers in the cloud” (p. 585). For an examination of the web of legal areas involved see Noto La Diega, G. (2014). *Il Cloud Computing. Alla Ricerca Del Diritto Perduto Nel Web 3.0*.

¹⁴⁸ All these developments are taken into account by the management literature (3.2) by referring to platforms and complementors, which here are identified respectively as “services” and “curators”; in other terms, even if they were discussing the same thing, they were using with different words, even referring to the same “stacked” metaphor.

¹⁴⁹ Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, 583-584.

After their assessment in the changes of software production, the authors propose three perspectives to understand the consequences of the agile turn on the privacy governance framework: modularity, temporalization and capture. The first problem is *modularity*¹⁵⁰ for which there is not a single entity but a “network of relationships between different services and users” - platforms and their ecosystems. Modularity raises the question of who is the proper addressee for privacy norms in such an environment:

What choices do curators [complementors] have that want to cater to the privacy of end users? Services such as Google data analytics, Facebook authentication and advertising networks are likely to present curators with take it or leave it options. Clearly, such take it or leave it options across different types of curators and end users are unlikely to take account of the contextual nature of privacy norms¹⁵¹.

The second perspective, which they call *temporalization*, includes “the blurring of the distinction between the production phase and use in combination with the acceleration in the dynamic production of services”. The author points out that the entire privacy governance framework still implicitly relies on the static waterfall model and its temporal underpinnings. For instance, at the core of data protection lies the rules of data retention and the right of erasure, rules that play the fundamental function of “regulating the expectations of data capture”. In other terms, the platform sovereignty implies that there is no obligation to notify the continuous (by design) reconfiguration and that those reconfigurations are generally not open to negotiation. This is a great deal for the entire privacy framework based on informed consent, which runs in its temporal limits:

Even if the service bundle remains stable, changes to features means that the information captured by the services is easily likely to be repurposed. This raises the question whether and under what conditions changes to features require re-establishing informed consent¹⁵².

In particular, for Gurses and van Hoboken, the third dimension of capture is relevant insofar as entire economies rely on data capture the fundamental mechanism of innovation and competitiveness, because it is not reasonable to keep on “treating information flows as the

¹⁵⁰ It is interesting to note that a direct result of modularity, is that “end users are increasingly confronted with bundles of service relationships when using digital functionality”, as we have analyzed “bundling” as a management technique in chapter two.

¹⁵¹ Gurses, S. & van Hoboken, J. (2017). *Privacy After the Agile Turn*, 589.

¹⁵² Ivi, 594.

central concern to privacy, and as something that can be discussed independent of the design and production of functionality”.

In complementary paper, van Hoboken and Fathaigh have carried out a complementary analysis regarding the regulatory activity of platform’s computational infrastructures. Referring explicitly to smartphones as privacy regulators, the authors investigated the possibilities to reconcile a protective function for privacy with the reality of platforms have been at the forefront of eroding privacy in constructing data-intensive service ecosystems. Consequently, they asked how platforms should be incorporated in existing and upcoming regulatory frameworks¹⁵³. First, the authors investigate the role of platforms in setting privacy standards both in the EU and the USA. For van Hoboken, current privacy law and policy are not well-developed, as the GDPR does not contain any platform-specific provisions, but only a set of obligations for data controllers¹⁵⁴. As such, the problem is one of a mismatch between the innovation of platformization and the categories of the law. Furthermore, principles of privacy by design by default apply to data controllers, but not to developers. Even for the European Data Protection Supervisor those constitute a “serious limitation” of the obligations under Article 25¹⁵⁵. Van Hoboken points out how this framework is further complicated by recent European case law on joint controllership¹⁵⁶ and the proposed e-privacy regulation that is meant at changing the ePrivacy directive¹⁵⁷.

Furthermore, the authors here separate the “three layers of privacy governance by platforms” into technical standards¹⁵⁸, contractual standards¹⁵⁹, and enforcement. They claim that platforms

¹⁵³ van Hoboken, J. & Fathaigh. (2021). *Smartphone platforms as privacy regulators*, 3.

¹⁵⁴ Ivi, 4. According to art. Of the GDPR, the data controller is whoever decides the means and purposes of data processing; this definition has remained fundamentally the same as the privacy directive in force before the GDPR.

¹⁵⁵ See EDPS (2018). *Preliminary Opinion on privacy by design*, paragraph 37.

¹⁵⁶ Specifically, the CJEU concludes that the operator of a Facebook fan page is jointly responsible for the processing of personal data of visitors of the fan page by Facebook, even though the fan page does not have access to the personal data itself. Similarly, in the related *Fashion ID* case, the CJEU held that a website that embeds a social plugin (such as a Facebook like button) for the processing of personal data by a third-party service, can be considered to be a joint controller under the GDPR.

¹⁵⁷ <https://digital-strategy.ec.europa.eu/en/policies/eprivacy-regulation>

¹⁵⁸ van Hoboken, J. & Fathaigh. (2021). *Smartphone platforms as privacy regulators*, 9. The technical standards are those that I analyzed in the second chapter, namely the fact that platforms as Apple and Google have put in place technical mechanisms to put conditions on the data that app providers can access when operating on people’s smartphones. Therefore, those platforms use APIs to “build the architectures that determine the conditions under which different sources of data can be collected from smartphones by apps and related services”. They have also developed a privacy by design technique isolates “apps within containers that hold only data that the app itself generates” called sandboxing.

¹⁵⁹ “Apple and Google require developers to comply with local laws; platforms implement rules on mobile device identification, use of certain unique identifiers, and other types of data; options for users to limit ad-tracking and personalization; both platforms impose requirements on developers and third-parties to comply with do-not-track (DNT) standards; platforms impose child-specific rules, with Apple, for example, prohibiting ‘behavioral’ advertising in children’s apps, and contextual ads are required to be appropriate for young audiences; the use of certain technical resources is governed under contractual conditions, such

have a higher-level privacy function in activities such as the creation and management of trust, in translating regulatory requirements into platform policies, and as stakeholders in policy discussion. Finally, platforms control the app developer programs (for examples, Apple Developer Program and Google Play), the app marketplaces (App Store and Play Store), policing “privacy behavior both during the app development phase, submission phase, and while the app is available in the app store”¹⁶⁰. For the authors, what is crucial in this regard is platforms are those who strike a balance between ensuring the respect for data privacy and “the optimization of the value and business opportunities connected to the platform and underlying data for users of the platform on the other hand”¹⁶¹.

As an example of the cracking of the legal system, then, we can see how Van Hoboken’s conclusion is that platforms act as *de facto* privacy regulators of the mobile app ecosystem, giving rise to three fundamental concerns:

First, this role played by platforms is taking place outside of a legislative data protection framework that specifically applies to platforms. Second, platforms are in a position of making trade-offs between protecting user privacy, and revenue-making from the operation of their app marketplaces. And yet, again, there are no rules in privacy legislation on how this trade-off should be managed. Third, a major issue with this role of platforms acting as privacy regulators is that platforms also provide apps and services that compete with apps available in their app marketplaces. Prominent companies that compete with these services have argued that platforms are misusing privacy rules, and the question must be posed if there is a risk of platforms weaponizing these rules to engage in anti-competitive behavior or other abuse of dominance¹⁶².

There are therefore several limitations in the data protection regime set by the GDPR vis-à-vis platformization. First, the privacy framework continues to place the burden of regulation to individuals¹⁶³. Second, privacy governance goes on outside the legislative framework and largely depends on what I call infrastructure design, which is outside the scope of the GDPR notwithstanding the principles of privacy by design and by default. Here the modularity of software production makes it hard to identify a single addressee for data protection norms (spatial element), and the fast and interactive changes in software production clashes with a

as using a social media account log-in. van Hoboken & Fathaigh. (2021). *Smartphone platforms as privacy regulators*, 10-11.

¹⁶⁰ van Hoboken, J. & Fathaigh, Ó. (2021). *Smartphone platforms as privacy regulators*, 12.

¹⁶¹ Ibidem.

¹⁶² Ivi, 17. See also the innovation brought by the DMA and DSA.

¹⁶³ Bietti, E. (2023). *A Genealogy of Digital Platform Regulation*, 47.

static data protection model based on data erasure (temporal element). Finally, third, the role of platforms standards-setters and regulators becomes relevant in terms of competition law, which is why I now turn to this sub-field of the law.

4.2.2 Platformization, antitrust and competition law

A second field of law highly impacted by corporate platformization is that of antitrust and competition law¹⁶⁴. Corporate platforms, because of their size, power, and wealth, have been attracting a lot of attention in the press, in academic debates, and in political discourse in relation to their monopolistic position¹⁶⁵. They have been addressed as monopolists, oligopolists, or even new kind of “monigopolists”¹⁶⁶. Moreover, antitrust is a field that bears much expectation for challenging platform power, especially because of the strong enforcement mechanism of competition law. Here the debate spans over several issues at the same time. A common debate had been whether major digital platforms should be either “regulated” or “broken up” according to antitrust laws. The debate is by now of little help as it is now clear that both options should be explored. In fact, antitrust and regulation “are not substitutes for one another or opposites; they instead must be understood as overlapping frameworks encompassing functionally equivalent remedies”¹⁶⁷. Antitrust and regulatory law are converging in ways that might imply a radical rethinking of antitrust *tout court*, especially in relation to the infrastructural role of platforms. Giorgio Bassan has highlighted that, both at a legislative and

¹⁶⁴ See Cucinotta, A. (2020). *Antitrust*, 66 -69, In *Enciclopedia Italiana Treccani di Scienze, lettere ed arti*; Antitrust is the set of legal rules and administrative and judicial decisions aimed at protecting competition in the markets by regulating and controlling the power of large companies when such power counters the benefits of competition ensured to the public and especially to consumers. Cucinotta A., Pardolesi R. & Bergh R. van den. (2003). *Post Chicago developments in antitrust law*; See also the excellent volume by Maggiolino, M. (2018). *I Big Data e il diritto antitrust*, for an historical reconstruction and contextualization of the notion of antitrust damage.

¹⁶⁵ Of particular political relevance is the work of Margaret Vestager, whom in her capacity of European Commissioner for Competition (since 2014) and of “Executive Vice President of the European Commission for A Europe Fit for the Digital Age” (since 2019) has targeted platform multinationals corporations operating in the EU. It is the case of Google, which was fined on several occasion by the Commission based on antitrust rules: in 2017, for €2.42 billion for abusing dominance as search engine by giving illegal advantage to his own shopping service; in 2018 for €4.34 billion for illegal practices regarding Android mobile devices to strengthen dominance of Google’s search engine; in 2019, for €1.49 billion for abusive practices in online advertising. See https://ec.europa.eu/commission/presscorner/detail/es/MEMO_17_1770 and https://ec.europa.eu/commission/presscorner/detail/en/IP_19_1770

¹⁶⁶ Nicholas Petit has tried to show that the picture of big tech firms as monopolists is intuitively attractive, but analytically wrong. He claimed that the “monopoly findings based on observations of limited rivalry in the tech giants’ origin market constitute a narrow view of competition. In spite of patent dominant positions, big tech firms do not live the quiet life. Their intense degree of effort is inconsistent with standard monopoly theory. A better picture is one of big tech firms as moligopolists, that is firms that coexist as monopolists and oligopolists” (p. 257). His neo-Schumpeterian analysis, however, end to justify the activity of platform corporation, that he sees as creating two socially beneficial characteristics: growth (“the tech giants’ diversification is a source of increasing marginal benefits to users, and in turn of allocative efficiency”) and change (the tech giants’ flexibility is a source of dynamic efficiency, that is of increases in the discounted value of users’ future marginal benefits). See Petit, N. (2020). *Big Tech and the Digital Economy: The Moligopoly Scenario*, 257 – 258.

¹⁶⁷ Bietti, E. (2022). *A Genealogy of platform regulation*, 67, and for a reconstruction of the debate.

executive European level, the need for reform of the antitrust framework is unanimously felt. The tools available to the EU Commission for undertaking investigations is in fact limited both in terms as both the subjective element (the intention of the platforms) and regarding its object (algorithms through which antitrust violations are performed). Those things remain outside of the criteria for evaluation, which to date only include the “effects of the conduct on the market”¹⁶⁸.

Competition law scholars are therefore starting to point out pointed need for a conceptual move away from the “disciplinary siloes” and discontinuous remedial solutions and toward a joint approach to” law in digital ecosystems”:

Antitrust cases are increasingly sensitive to infrastructural power and digital market regulation is becoming consciously procompetitive. As such, deregulatory justifications for the distinction between antitrust and regulation, and between pre-legal and legally constructed market dynamics, are weakening¹⁶⁹.

Nicholas Petit summarized the two main positions towards competition law debates by distinguishing between the “neo-structuralist” and “consumer welfare” frameworks. The first group, represented by scholars as as Lina Khan and Julie Cohen, contend that “each tech company must be regarded as a structural monopoly in one product or service area”, with conducts ranging from “structural dominance, predatory pricing, leveraging of their monopoly to other business segments, killer merger acquisitions, gatekeeping and political harms”¹⁷⁰. We may say that the neo-structuralist focus is on the *politics of antitrust*, since it is interested in the political harms of platforms. The goal of this movement would be that abrogating the consumer welfare standard that governs the application of US and EU antitrust laws. Looking at some relevant historical cases such as the separation of AT&T¹⁷¹, their proposals include breaking up big tech companies, banning the possibility of further mergers, and regulation digital platforms as a public utilities and common carriers.

The second group, named “consumer welfarism” – to which Petit adheres - is not really a movement, but a method applied since the late 1970s for the conduct of antitrust policy and it reflects the internal economic neoliberal positions since the deregulatory wave. Consumer

¹⁶⁸ Bassan, F. (2021). Digital Platforms and Global Law, 28.

¹⁶⁹ Bietti, E. (2022). *Pre-Structuring Digital Platform Markets: Antitrust and Utilities’ Convergence*. For the arguments in favor of pro-competitive markets see Rogerson, W. P. & Shelanski, H. (2020). *Antitrust Enforcement, Regulation, and Digital Platforms*.

¹⁷⁰ Petit, E. (2020). *Big Tech and the Digital Economy: The Mologopoly Scenario*, 7 – 15.

¹⁷¹ See Wu, T. (2011). *The Master Switch: The Rise and Fall of Information Empires*, 55– 57.

welfarism expresses a “policy preference for consumers over producers in the assessment of business conduct and transactions by displaying a relatively superior concern for allocative efficiency over productive and dynamic efficiency”¹⁷². According to this position, “no categorical inference of monopoly can be drawn from tech giants’ single supplier positions. Monopoly power, if any, is to be feared for its adverse economic consequences and potential for abuse. This, in turn, requires serious factual evaluation of tech companies’ market power and business conduct under the antitrust laws”¹⁷³. The two functions of consumer welfarism are summarized by Petit as follows:

CW standard makes clear that the proscriptions enunciated in the antitrust rules are about conduct that reduces or is likely to reduce economic welfare and are not intended to prevent noneconomic harms such as harm to the political process or to serve other social objectives [and it] provides a criterion to guide the formulation and case- by- case application of the specific rules that are used to identify prohibited, anticompetitive conduct¹⁷⁴.

In the following section I would like to focus on three aspects of the antitrust debated. First, the limitations of current antitrust tools; second, the problem of data and the definition of market in relation to antitrust damage; third, the relationship between antitrust and platform infrastructures.

The first point deals with the fact that the platform organizational model brought a series of challenges to an economic analysis of competition. As we have seen in the genealogical analysis of the platform concept, the emergence of value in its internal ecosystem can be partially orchestrated by the platform. This implies that a holistic analysis is always needed, in terms of the need to consider the two sides at once. A first tool of competition that cannot be applied is the definition of “market” itself because of the different nature of multi-sided markets (platforms). Strategies such as “tying” and “bundling” seen in 3.2 are used to cross-subsidize between groups of users can lead to misleading conclusions regarding the competitive

¹⁷² Petit, N. (2020). *Big Tech and the Digital Economy: The Mologopoly Scenario*, 16.

¹⁷³ Ivi, 3-4.

¹⁷⁴ Ivi, 20. Petit’s proposal to rely on the “hard facts” of competition law is very questionable. His final advice is to focus on tipped/ untipped markets (the effects that takes place once a product crosses a critical point of user adoption, catapulting the supplier away from competition and towards a monopoly equilibrium, [<https://www.promarket.org/2021/04/06/measure-test-tipping-point-digital-markets/>]). “One way to create pressure on incumbent big tech firms without losing the efficiency of large market shares consists in limiting the monopoly rents in the tipped market, so as to incentivize them to pursue indirect entry and competition in untipped markets. Second, antitrust should be agnostic toward conduct or transaction by both incumbent and new firms in untipped markets, unless there is a suspicion that the incumbent firm will “turn off” the pressure created by the new market” (p. 187).

constraints on a platform¹⁷⁵. For this reason, economists Diane Coyle argued that economics didn't deliver practical antitrust tools to competition regulators "to enable them to draw up theories of harm in platforms markets and implement them empirically"¹⁷⁶. In other terms, the antitrust tools were developed for the average market models. The novelty of this new organizational form, which coordinates supply and demand "in the absence of complete information", is one cause that led to the shortcomings of antitrust policy. Other factors identified by Coyle are barriers to entry (due to the presence of indirect networks effects that makes entry harder for new competitors) and potential price discrimination and in their activity of regulators of their ecosystems. For Coyle, those shortcomings are affecting competition authorities and should be revised at a legislative level, since "it is not the business of competition authorities to select between business models"¹⁷⁷, nor it is the assessment of welfare. Moreover, Coyle identifies as second tool of competition law that have been made ineffective by platformization is the notion of "price as a signal" since for antitrust agencies and courts operating under the consumer welfare framework it is hard to identify a harm in the absence of price¹⁷⁸. Furthermore, as we reviewed the economics tactics in the "management view" of platforms (cp. 3.2), even when present, price doesn't help to understand the underlying economics, since, on the one hand, there is no obvious relationship between price and marginal cost on either side of the platform, and on the other because of cross-subsidization.

A second challenge for competition law deals with notion of market power law in relation to the effects of datafication. Here competition lawyer Inge Graef has examined four of the Commission's decisions on data-related competition issues from 2007 onwards. The problem that emerges in the case of merger review is that of understanding in which circumstances data evolves into market power so that it can justify competition intervention. Graef reports three positions in scholarly debates: those who exclude the role of competition enforcement because of the nonexclusive nature of data and its wide availability; those that advocate non only for interventions and enforcements, but that highlight the need to go beyond competition rules to be effective; an intermediate view that sees collection and use of data as something that can trigger the use of competition law¹⁷⁹.

¹⁷⁵ Coyle, D. (2018). *Platform Dominance*, 64. Coyle also comments on the two main counter-arguments used by platforms: first, that despite winner-take-all logic, the identity of the winner can change; second, that as platform dominance increases consumer welfare, deconstruct the market position would harm consumers.

¹⁷⁶ Coyle, D. (2018). *Platform Dominance*, 50. That is due mainly to two factors: the hybrid market firm of the multi-sided platform; and the role of data.

¹⁷⁷ Ivi, 66.

¹⁷⁸ Petit, N. (2020). *Big Tech and the Digital Economy: The Moligopoly Scenario*, 21.

¹⁷⁹ Graef, I. (2018). *When Data Evolves into Market Power*, 72.

The first case is Google's acquisition of Double Click, where the merger of databases could be used for achieving a better targeting advertising for users. This first market investigation didn't lead to stop the merger, as the new entity - the Commission reasoned - didn't have a competitive advantage that could not be matched by competitors. That depended on three arguments: first, such a combination of information was already available to a number of Google's competitors at the time of the proposed concentration; second, competitors such as Yahoo and Microsoft offered similar ad services; third, data could be also purchased by third parties¹⁸⁰.

A second case has been Facebook's acquisition of Whatsapp in 2014, which was also approved without the need for any commitments from the parties involved. Again, the Commission thought that Whatsapp did not collect data valuable for advertising purposes at the time of the merger¹⁸¹. Afterwards, Facebook was eventually fined 110 million € for providing misleading information to the commission¹⁸² in May 2017. What is relevant for Graef is that in both the Google/DoubleClick and the Facebook/Whatsapp acquisition's, the Commission did not engage in a detailed analysis of what type of information was necessary to provide a particular advertising service: both Google and Facebook could not be regarded as close competitors in the relevant market for the services they offered¹⁸³. That is because the definition of the market under strict competition law standards is rather static, as it requires the existence of supply and demand of the products or services included in the relevant market. The problem dealt with considering "data" as objects: Google and Facebook didn't directly trade data, but they used them merely as input of their services¹⁸⁴. According to Facebook's service, the data were supposed to be used only for targeted advertising, they were never offered to third parties, and no data analytics was performed¹⁸⁵.

The third case in front of the Commission, Microsoft/LinkedIn, has shown some evolution in the Commission reasoning. While investigating the post-merger combination of data in relation to online advertising, the Commission distinguished between two ways in which the merger could pose horizontal issues¹⁸⁶. In the first case, contrary to previous decisions, data collection is seen

¹⁸⁰ Ivi, 73.

¹⁸¹ Ivi, 74.

¹⁸² It was about the possibility to create automated matching between Facebook users' accounts and WhatsApp users' accounts, which they eventually did by changing their terms for services in 2016.

¹⁸³ Graef, I. (2018). *When Data Evolves into Market Power*, 75.

¹⁸⁴ Ivi, 76.

¹⁸⁵ As such, Graef concludes that digital businesses compete not only in the product market for specific services, but also in the broader (but virtual) market for data. The recognition of the importance of data power in relation to innovation has eventually lead to the "data governance act" on the mandatory sharing of data by large platforms.

¹⁸⁶ In antitrust there is a distinction between horizontal merger (one between firms on the same level of a supply chain that could compete with each other) and vertical (a company on one level of a supply chain buys a company on another, and these companies are related in some way that does not involve substantial direct competition).

as requiring competitors to collect larger datasets to compete efficiently, irrespectively of how the data is used; here the assessment has shifted to a “hypothetical market for the supply of this data”. In the second case, the Commission looked at the previous competition between the two entities, stating that such competition would be eliminated by the merger even if there is no intention or technical possibility to combine the dataset¹⁸⁷. Despite this evolution, however, the Commission concluded that the merger was not incompatible with the internal market in relation to online advertising¹⁸⁸. Finally, the fourth relevant case is that of Verizon/Yahoo, which made the two principles stated in the Microsoft/LinkedIn case the relevant legal framework to assess data concentration under merger review but again led to a negative answer¹⁸⁹.

Graef concludes that the objective of competition law is to address anti-competitive practices on a case-by-case basis, while abusive commercial patterns should be resolved through regulation. However, some indicators of market power resulting from data can be identified: first, whether data is a significant element of a product’s success; second, the value of the data at stake in the sense of the strength of the economies of scale, the economies of scope, and the transient nature of data; and third, the availability of data in terms of the ability to obtain substitutable data from third parties on the market or to collect the necessary data directly from users and thereby replicate the relevant dataset. Finally, the relevant limitation of competition law vis a vis platformization and datafication make competition scholars look at other fields such as data protection and consumer protection¹⁹⁰.

A third challenge for antitrust comes the infrastructural role that of platforms markets. Of great impact and relevance is the work of the “neo-structuralist” Lina Khan that started with an article

¹⁸⁷ Graef, I. (2018). *When Data Evolves into Market Power*, 78-79. The Commission reasoned that Microsoft and LinkedIn: 1) did not make their data available to third parties for advertising purposes; 2) the combination of the dataset did not result in barriers to entry; 3) the parties involved were small markets player and competed with each other only to a limited extent in the advertising market.

¹⁸⁸ Both in relation to “the ability to foreclose competing providers by refusing access to LinkedIn full data” and with regard to the use of machine learning in productivity software solutions. In both cases, the answer was negative, as LinkedIn did not appear to have a significant degree of market power in any potential relevant upstream market. See Graef, I. (2018). *When Data Evolves into Market Power*, 80. The Microsoft/LinkedIn case is also relevant for the assessment of data in relation to machine learning.

¹⁸⁹ Graef, I. (2018). *When Data Evolves into Market Power*, 82. In the meantime, several competition authorities have examined the role of data in competition law and policy. For instance, the United Kingdom Market and Competition Authority outlined three characteristics to be taken into account as indicators of market power: first, the nonrival nature of data (even if access can be restricted and knowledge has to be created from data); second, the high fixed cost of data collection, storage, processing and analysis, forming economies of scope and scale that may act as barriers to entry; third, the diversity in value of the data collected, as some personal data have persisting value (name, date of birth) and others lose value over time(p. 85-86).

¹⁹⁰ Graef, I. (2018). *When Data Evolves into Market Power*, 94. The article has been revised and updated in Khan, L. (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, in Moore, Tambini, D. (Eds)(2018). *Digital Dominance*, from which I will quote.

entitled *Amazon's Antitrust Paradox*, initially published in the *Yale Law Journal* in 2017¹⁹¹. Khan analyzed Amazon as a particularly important platform for its size and for the variety of its services, in the attempt to unveil his long-term strategy to position itself as a new kind of monopolist¹⁹². The new paradoxical challenge posed by Amazon starts from the fact that Amazon's rivals are also its customers. Not only this arrangement creates conflicts of interest, given that Amazon is positioned to favor its own products over those of its competitors; but Amazon's competitors rely on its infrastructure for delivery, deploying and selling their products on the Internet, and renting its cloud infrastructure¹⁹³. Her analysis starts with a critical assessment of the overall influence of the Chicago School on the legal doctrine of antitrust of the consumer welfare framework¹⁹⁴. If before the Chicago school analyses of vertical integration were reviewed under the same standards as horizontal mergers, its influence led to a believe that predatory pricing rarely occurred in practice and that "direct profit maximization is the singular goal of predatory pricing"¹⁹⁵.

Looking at Amazon's business strategy beyond the lenses of the Chicago School shows the need to look at companies as Amazon as an "integrated entity" – what I discuss as the need for a holistic analysis of the platform – in order to understand the company's choice to pursue, throughout its history, heavy losses in several sectors in exchange for market shares. This strategy allowed Amazon to leverage the advantages in one sector to boost the business in

¹⁹¹ Khan, L. (2017). *Amazon's antitrust paradox*. *The Yale Law Journal*. Another in-depth analysis of Amazon in economic terms can be found in Kenney, M.; Bearson, D.; Zysman, J. (2021). *The platform economy matures: measuring pervasiveness and exploring power*.

¹⁹² Apart from retail, Amazon is a "retailer, it is a marketing platform, a delivery and logistics network, a payment service, a credit lender, an auction house, a major book publisher, a producer of television and films, a fashion designer, a hardware manufacturer, and a leading provider of cloud server space and computing power". Khan (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, 98. See also the considerations of Knee, J. (2021). *The Platform Delusion: Who Wins and Who Loses in the Age of Tech Giants*.

¹⁹³ *Ibidem*, 108. We see here how Khan's argument goes in the direction of the infrastructural view of platforms.

¹⁹⁴ The so-called Chicago School was an economic movement that believed in the supremacy of the market, its ability to self-correct, and the rationality of the consumer. It valued price theory as a basis for antitrust. According to Khan (pp. 101-102) the two main consequences of the shift from the "economic structuralism" of the Harvard School to the (neoliberal) view of the Chicago School are two to be found in a significant narrowing of the concept of entry barriers, and - of according to the influential exponent Robert Bork - to the fact that consumer welfare views the purpose of the antitrust laws as ensuring that prices are as low as possible, so "showing antitrust injury requires showing harm to the consumer welfare". Even if her analysis refers to US antitrust legislation and cases, I believe that it can be included in the present analysis for several reasons: the overall influence of the Chicago School also on European Antitrust; the global nature of the Amazon company.

¹⁹⁵ Khan, L. (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, 103. Khan notes that during a long period of the last century, enforcers reviewed vertical integration under the same standards as horizontal mergers. Based on two theories of potential harm: leverage and foreclosure. "Leverage reflects the idea that a firm can use its dominance in one line of business to establish dominance in another. Foreclosure, meanwhile, occurs when a firm uses one line of business to disadvantage rivals in another line".

another¹⁹⁶. Khan analyses how Amazon established scale over the years, passing, for instance, through the Amazon Prime Service, which made it lose money, but gain buy-in and changed people’s mentality to buy everything on the platform¹⁹⁷.

Khan identified three problematical aspects of Amazon’s “structural dominance”: discriminatory pricing and fees; cross-sectorial dominance; and the advantage of data extraction from its marketplace. As for discriminatory pricing, Khan reports practices of rapid and constant price fluctuations and personalized pricing, but also Amazon’s attempt to recoup its losses by introducing fees on services that were previously offered for free. Analyzing the case of Amazon’s business on books, Khan argued that the current predatory pricing framework fails to capture the harm posed to the book market. Amazon had been selling best-sellers e-books below marginal cost, capturing 65% of that market, but recouped its losses “by raising prices on less popular or obscure e-books, or by raising prices on print books”, by discriminating in price and by “extracting more from publishers, who are dependent on its platform to market both e-books and print books”. The point is that in either case, Amazon would be recouping *outside the original market where it sustained losses*, so that “courts are unlikely to look for or consider these scenarios”. The systemic consequences of this strategy are to

diminish the quality and breadth of the works that are published, but since this is most directly a supplier-side rather than buyer-side harm, it is less likely that a modern court would consider it closely¹⁹⁸.

As for cross-sectorial dominance, Khan shows how Amazon achieved dominance as an online retailer, and how that, in turn, has been translated into bargaining power to third-parties delivery companies of its products as FedEx and UPS. Those companies, in turn, answered with a “waterbed effect” – they sought to make up for the discounts they gave to Amazon by raising the prices they charged to independent sellers. In other terms, what is a virtuous circle for strong buyers ends up being a vicious circle for competitors¹⁹⁹. For Khan, two concerns are relevant

¹⁹⁶ Khan, L. (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, 104. It is what Casilli has called a “systemic coordination” besides the algorithmic and economic one.

¹⁹⁷ Ivi, 105.

¹⁹⁸ Ivi, 113.

¹⁹⁹ Ivi, 114. Thanks to the Fulfillment-by-Amazon service, independent sellers can store their products in Amazon’s warehouses, and Amazon packs, ships, and provides customer service on any orders. Products soldt hrough FBA are eligible for service through Amazon Prime. Those sellers could have contacted the delivery companies directly, but it was cheaper to pass through Amazon’s delivery service, because of its better deals. See Khan, L. (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, 114 – 115.

here. First, how Amazon achieved these cross- sector advantages in part due to its bargaining power:

because Amazon was able to demand heavy discounts from FedEx and UPS, other sellers faced price hikes from these companies— which positioned Amazon to capture them as clients for its new business²⁰⁰.

Second, Amazon is positioned to use its dominance across online retail and delivery in ways that involve tying, that are exclusionary, and that create barriers to entry. That is, Amazon's distortion of the delivery sector in turn creates anticompetitive challenges in the retail sector. For example, sellers who use "*Fulfillment by Amazon (FBA)*" – Amazon's service that allows businesses to use *Amazon* to store, pick, pack, and ship customer order - "have a better chance of being listed higher in Amazon search results than those who do not, which means Amazon is tying the outcomes it generates for sellers using its retail platform to whether they also use its delivery business". Amazon is also positioned to use its logistics infrastructure to deliver its own retail goods faster than those of independent sellers that use its platform and fulfillment service - a form of discrimination that exemplifies traditional concerns about vertical integration. And Amazon's capacity for losses and expansive logistics capacities mean that it could privilege its own goods while still offering independent sellers the ability to ship goods more cheaply and quickly than they could by using delivery companies²⁰¹.

The third problematic aspects identified by Khan concerns Amazon marketplace in relation to data collection. Amazon Marketplace is used by independent sellers and allows Amazon to extract data from them, using it as a laboratory. Khan quotes the case of the company "Pillow Pets" which had been selling its products for months on Amazon marketplace. One day Amazon decided to go directly to the manufacturer and offered the same product for the same price, causing a drop of sales for the company. These logic was the base for the creation of the "Amazon basics" products: what were identified as successful products sold over the years on the platform and replicated by Amazon, which means an "outsourcing of risk and innovation":

in using its Marketplace this way, Amazon increases sales while shedding risk. It is third-party sellers who bear the initial costs and uncertainties when introducing new products; by merely spotting them, Amazon gets to sell products only once their success has been tested.

The anticompetitive implications here seem clear: Amazon is exploiting the fact that some of

²⁰⁰ Khan, L. (2018). *Amazon – An Infrastructure Service and Its Challenge to Current Antitrust Law*, 116.

²⁰¹ Ivi, 114.

its customers are also its rivals. The source of this power is: (1) its dominance as a platform, which effectively necessitates that independent merchants use its site; (2) its vertical integration— namely, the fact that it both sells goods as a retailer and hosts sales by others as a marketplace; and (3) its ability to amass swaths of data, by virtue of being an Internet company. Notably, it is this last factor— its control over data— that heightens the anticompetitive potential of the first two²⁰².

As such, phenomena as platformization and datafication brought competition scholars to doubt about the adequacy of many theoretical assumptions as well as tools of competition law. All the basics notions from antitrust have been contested in their efficacy to do what they were supposedly meant at doing: the notion of price as signal, the delivery of free goods, the nature of a multi-sided market that can be centrally planned, the notion of antitrust damage, the assessment market power in relation to data, the paradox of competing with a company that is also an infrastructure on which you rely. It is clear that in the EU the real moves on market remained outside the scope of the Commission’s intervention: as for the problem of automated management, there are structural and procedural limits of the Commission’s action, such as the *ex post* nature of the intervention by the competition authorities and the power to impose only financial sanctions²⁰³. This impasse is mirrored also in cases in front of courts, where it was hard to argue for the illegitimacy of platform’s conducts in court according to antitrust frameworks. In many cases, it was impossible for the plaintiff to demonstrate *actual* anticompetitive harm in antitrust cases²⁰⁴.

In conclusion of the antitrust section, it is worth pointing out the complexity and the difficulties of recognizing the infrastructural role of platforms according to the existing antitrust framework²⁰⁵. In order to recognize a platform as an infrastructure and therefore force its opening with non-discriminatory conditions and reasonable prices, the existing framework requires the evidence of dominance on the upstream and downstream markets, the proof of the essentiality of the infrastructure (lack of alternative platforms) or, at least, the proof that the platform constitutes a bottleneck because it holds a product or service that it does not sell²⁰⁶.

4.2.3 Platformization and administrative law, tax law, intellectual property

²⁰² Ivi, 119.

²⁰³ Bassan, F. (2021). *Digital Platforms and Global Law*, 31-32.

²⁰⁴ Bassan, F. (2021). *Digital Platforms and Global Law* and for case studies.

²⁰⁵ Busch, C. (2021). *Regulation of digital platforms as infrastructures for services of general interest*; Hermes, S., Schreieck, M., & Thatcher, J. (2022). *Essential Platform Infrastructure and the Need for Regulation*.

²⁰⁶ Bassan, F. (2021). *Digital Platforms and Global Law*, 30.

Other fields that have been impacted by platformization are administrative law, tax law, consumer law and intellectual property²⁰⁷. Starting with administrative law, it is possible to note how digital platforms exercise administrative powers that are normally vested in public authorities²⁰⁸. The starting point is that platformization has challenged some of the traditional categories and tools of administrative law. According to Maria Vittoria La Rosa, these challenges pass through the classic instrument of administrative law, namely authorizations issued by the state²⁰⁹. Administrative authorizations are both the *instrument* through which the state exercised its sovereignty and the *place* to exercise its discretionary powers, especially the sense of balancing interests. Taking Italy as an example, a clear manifestation of the concept of sovereignty can be found the Giolitti Reform from 1913. At that time, the production and distribution of medicines was substantially a prerogative of religious subjects, but the Giolitti reform established the need of a statal concession to carry out the profession of pharmacist²¹⁰. In such a way, the state established a monopoly over the production of medicine. The state could then delegate the right to distribute medicines to third parties via authorizations. These authorizations also had the important function of balancing out various constitutional interests: in the words of La Rosa, the administrative authorization proper to the modern state “is concerned with recognizing citizenship in the economic world only to those realities that are not incompatible with the social contract on which the very life of the Republic is based”²¹¹. Consequently, some environmentally dangerous activities require *ex ante* authorizations, together with potential denials to carry out commercial activities for those who received a conviction for financial crimes. Moreover, pursuant Italian law 231/200, a company that committed administrative offenses can be sanctioned with the ban of contracting with the public administration or with to the suspension or revocation of authorizations, licenses or concessions functional to the commission of the offense²¹².

A such, the power of the state to issue (or deny) authorizations has been a direct emanation of its sovereignty, understood in the sense of legitimizing certain economic dynamics and sometimes also in the sense of political programming. However, platformization has, to a certain

²⁰⁷ I am going to exclude the analysis of consumer law under the Eu framework, even if it plays an important role in platformization. See Quarta, A. (2020). *Narratives of the Digital Economy: How Platforms Are Challenging Consumer Law and Hierarchical Organization*; Goanta, C. (2021). *European Consumer Law: The Hero of Our Times*.

²⁰⁸ See Pollicino, O. (2021). *Judicial Protection of Fundamental Rights on the Internet*, 200.

²⁰⁹ La Rosa, A. (2020). *Autorizzazioni, sovranità, piattaforme digitali*. In the case of Italy, *ex ante* administrative authorizations were largely required to carry out any economic activity, with differences between a “concessione” (where the right is created by the administrative act) and an “autorizzazione amministrativa” (where the right is only recognized by the act). During the last years, however, there has been a rise of self-certifications, that now extend to many cases (like starting an economic activity and self-certified building permits).

²¹⁰ *Ibidem*. All translations from this article are mine.

²¹¹ *Ibidem*.

²¹² *Ibidem*.

extent, broken this circle, and the reasons for such a crisis are manifold. In some cases, they are the result of a precise regulatory choice. It is the case of the e-commerce Directive of 2001, that at art. 4 introduced the notion of “information society service provider”. This provider, which usually coincides with the platform manager, cannot be subject to prior authorization to carry out its business in a country other than that of establishment²¹³. The consequences of this notion according to the ECJ in the Airbnb Ireland case, that lean platforms as Airbnb cannot be considered real estate agents. Consequently, to operate on the French market, the platform does not need the license that was required under French law²¹⁴. However, we are still in an area in which (i) the exemption from the obligation to obtain licenses or authorizations is in any case the result of a conscious legislative choice and (ii) the need to obtain those authorizations which are prescribed by the law of the State of the establishment.

In other cases, the crisis of the administrative state is the result of what I called the ‘cracking of the legal system’ and of outdated regulatory frameworks, which when it was prepared could not contemplate those sociotechnical developments. For example, to operate in Italy, the Whatsapp does not need to obtain general authorization pursuant to art. 25 of the Electronic Communications Code because it does not fall within its objective scope of application, as it was conceived in 2003²¹⁵. Other examples include platforms established abroad as Amazon or Alibaba that, contrary to physical commercial activities that open a website, do not need to formally signal the beginning of the commercial activity²¹⁶. The paradoxical consequence is that the State continues to exercise control over the launch of commercial activities of modest size, but not on huge platforms corporations do not have to submit to the approval or control of an authority that authorizes them to do. As such, the concept of state authorization simply doesn’t apply to Google and Facebook because they do not sell anything²¹⁷. A third reason lies in the fact that the platform is itself an administrative, proto-legal system of its own: *de facto* sovereign on certain matter, with a population, a territory and an authority of its own²¹⁸.

At EU level the crisis of administrative law has been the object of a report of of the European Parliamentary Research Service (EPRS) entitled *Digitalization of Administrative Law*. In the

²¹³ Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce')

²¹⁴ See Airbnb Ireland (C-390/18). Airbnb was sued by the *Association pour un hébergement et tourisme professionnels*. In the decision where the judges stated that the directive “must be interpreted as meaning that an intermediation service which, by means of an electronic platform, is intended to connect, for remuneration, potential guests with professional or non-professional hosts offering short-term accommodation, while also providing a certain number of services ancillary to that intermediation service, must be classified as an ‘information society service’”.

²¹⁵ La Rosa, A. (2020). *Autorizzazioni, sovranità, piattaforme digitali*.

²¹⁶ Ibidem.

²¹⁷ See the European report of EPRS (2022). *Digitalization and Administrative Law*.

²¹⁸ Cohen, J. (2019). *Between Truth and Power*.

report the EPRS identifies five “regulatory gaps” in the current administrative framework. The first one is what they call the “scoping fallacy”: it is unclear what administrative actions should be subject to controls. The second is the “discrepancy problem”, in the sense of the limited coherence between different sets of norms governing digital rules and administrative law. The third one is the existence of “known unknown”, which implies the fact that individuals and legal persons have limited information on the use of their data, and “unknown unknown” in the sense that individuals and legal persons cannot know if a mistake has been made. Finally, they identify a “redress gap” for whom avenues for individuals and legal persons to seek redress are not well developed. In this report they suggest three potential policy options: *administrative procedure regulation* (focuses on individual redress mechanisms in the context of administrative procedures that often result in an administrative act), *administrative activity regulation* (regulate information rights and procedures) and 'Digital EU administration' code²¹⁹.

Another problem that has received much attention at EU level is that of the taxation of digital platforms²²⁰. A paradigmatic example of tax avoidance is that of Google, which has been engaging in aggressive tax avoidance strategies to minimize its tax liabilities and maximize its worldwide margins of profit. Since the advent of ICIs, it has become easier to relocate activities and to establish fake companies around the world creating problems to fiscal capabilities of nation states²²¹. The initiatives carried out by the European Commission resulted in the agreement on the proposal on administrative cooperation between Member States for the automatic exchange of information on the revenues generated by sellers on digital platforms, regardless of the platform being located in the EU. The approved proposal is not only expected to allow national authorities to identify situations where tax should be paid, but also to reduce the administrative burden placed on platforms, who often have to deal with several, different national reporting requirements with amendments to Directive 2011/16/EU²²². Even here, platformization

²¹⁹ EPRS (2022). *Digitalization and Administrative Law*.

²²⁰ For an ethnography of the internal action of the EU Commission see the chapter Mérand, F. (2021) *The Political Commissioner: A European Ethnography*, 197-214. The proposal was that of a European Digital tax. On 12 of December 2022, the Council adopted a directive to implement at EU level the minimum taxation component, known as Pillar 2, of the OECD's reform of international taxation. The profit of the large multinational and domestic groups or companies with a combined annual turnover of at least €750 million will be taxed at a minimum rate of 15%. See <https://www.consilium.europa.eu/en/policies/digital-taxation/>. For an economic study see Sánchez-Cartas (2021). Intellectual property and taxation of digital platforms. Bourreau, M., Caillaud, B., & De Nijs, R. (2017). *Taxation of a digital monopoly platform*. Trovato, M. (2014). *La tassazione dell'economia digitale: una soluzione in cerca di un problema?*

²²¹ Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 7.

²²² Council Directive 2011/16/EU of 15 February 2011 on administrative cooperation in the field of taxation. This directive has been amended six times, to include information on financial accounts, on tax rulings and advance pricing agreements, on country-by-country reports, on beneficial ownership, on reportable cross border arrangements and now on digital platforms. See in particular the Draft Council Directive amending Directive 2011/16/EU on administrative cooperation in the field of taxation (DAC7).

intensified the problems posed by transnational corporations while presenting new specific challenges of multi-sided markets. On the one hand, transnational companies avoid taxation via tax havens and the exploitation of legal loopholes in national and international tax rules²²³. On the other hand, like in the case of competition law, the international tax law system was designed around single-sided cross border businesses. According to Victoria Plekhanova,

tax policy makers were ill-equipped to tax the profits of multilateral platforms, because tax laws and international tax system were designed around single-sided cross-border businesses. Without any international consensus on the taxation of multinational platforms, some countries have adopted unilateral measures including the extension of the permanent establishment definition, introduction of anti-avoidance taxes and provisions, levying of withholding or excise taxes on some digital services²²⁴.

Plekhanova has identified two problems that we have already encountered in the analysis on platformization and antitrust: the problem of price and the problem of place of taxation. It is in fact hard to measure intangible goods in multi-sided markets and in an environment in which value creation takes place among users and complementors²²⁵. This constitutes a new challenge to the fiscal capabilities of nation states, also in the sense that it is easy to relocate relocating and establishing fake companies around the world because of the spread of new information and communication technologies²²⁶. The second problem of place in these sense of the difficulties of identifying the geographical location of economic value creation when a value creation process is non-territorial²²⁷.

The last important field that I wish to briefly analyze is that of intellectual property and copyright. I omit here an extended assessment of copyright because it plays a 'secondary' in the power of platforms, as things like data and machine learning, despite the corporate attempts of creating a framework for 'data monetization', cannot be easily made the object of object of

See *Fair Taxation: Member States agree on new tax transparency rules on digital platforms* https://ec.europa.eu/commission/presscorner/detail/en/ip_20_2253

²²³ Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 7.

²²⁴ Plekhanova, V. (2020). *Value creation within multinational platform firms: a challenge for the international corporate tax system*, 318. For the notion of value creation in the platform 3.2.

²²⁵ Ibidem.

²²⁶ Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 7.

²²⁷ Plekhanova, V. (2020). *International Tax Policy for the Global Platform Economy*.

property²²⁸. In comparison with other industries as the pharmaceutical industry, digital corporate platforms do rely on trademark law for commercial settings – some examples are Google’s PageRank and Amazon “one-click” shopping - but the critical platform drivers as algorithms and machine learning and data remain unowned in the traditional sense of ownership. They can, under some circumstances, be protected under by trade-secret law²²⁹.

There is however one European case that shows well the misunderstanding of the platform model by the European Court of Justice case cause by the platform’ performative discourse that Tarleton Gillespie unveiled. The case ‘Luis Vuitton vs Google France’ case shows at the same time how Google used in his favor the outdatedness of the copyright directive and how the judges weren’t able to understand the novelty of the platform form, judging it with old economic categories. In June 2008 Luis Vuitton sued Google France because, since 2003, if internet users typed ‘Luis Vuitton’ into Google’s search engine, they would be directed to websites selling imitations of Vuitton’s products under the heading of sponsored links. Additionally, Google had enabled the advertisers to pair Luis Vuitton registered trademarks with terms such as ‘imitation’ and ‘copy’. Hence, a French court was asked to ascertain Google’s infringement of Luis Vuitton trademark. The case went up to the European Court of Justice, who decided that the unfair matching created confusion among buyers it had to be sanctioned somehow, so the court recognised that

the proprietor of a trade mark is entitled to prohibit an advertiser from advertising, on the basis of a keyword identical with that trade mark which that advertiser has, without the consent of the proprietor, selected in connection with an internet referencing service, goods or services identical with those for which that mark is registered, in the case where that advertisement does not enable an average internet user, or enables that user only with difficulty, to ascertain whether the goods or services referred to therein originate from the proprietor of the trade mark or an undertaking economically connected to it or, on the contrary, originate from a third party²³⁰.

However, as suggested by the general attorney Poiares Madouro, the court excluded that Google could be held directly liable for allowing these unfair practices on his self-service. The decisive

²²⁸ See Kapczynski, A. (2020). *The law of informational capitalism*, note 224, based on Cohen, J. (2019). *Between Truth and Power*, 49. For the intellectual property debate around platformization see Xue, H. (2022). *Copyright on digital platforms: shifting paradigms*. In Ghidini, G. & Falce, V. (Eds.), *Reforming Intellectual Property*; Sánchez-Cartas, J. M. (2021). *Intellectual property and taxation of digital platforms*. For intellectual property in general, Sinnreich, A. (2019). *The Essential Guide to Intellectual Property*. May, C., & Sell, S. K. (2005). *Intellectual Property Rights: A Critical History*.

²²⁹ See Kapczynski, A. (2020). *The law of informational capitalism*, 1500 – 1501.

²³⁰ Ruling of Case C-236/08 CURIA.

factor had to be found in the absence of Google's active role, to conceive Google's software as being architectonically agnostic to advertiser's choices – the platform's neutrality. Therefore, art. 14 of the Directive on electronic commerce had to be interpreted

as meaning that the rule laid down therein applies to an internet referencing service provider in the case where that service provider *has not played an active role of such a kind as to give it knowledge of, or control over, the data stored*. If it has not played such a role, that service provider cannot be held liable for the data which it has stored at the request of an advertiser, unless, having obtained knowledge of the unlawful nature of those data or of that advertiser's activities, it failed to act expeditiously to remove or to disable access to the data concerned²³¹.

The problem here was that holding Google liable would have given trademark owners an absolute power on their trademark, something that was far beyond the scope of the directive and probably not a good balancing solution the governance of the Internet²³². However, the court did not consider that Google not only did not self-structured itself as a neutral space of interaction in which all the keywords could be chosen, but it had a direct economic interest of allowing the market of counterfeit products.

The platform model has therefore impacted even the field of intellectual property. One analysis of the power of platform in relation to intellectual property is provided by law professor Marco Ricolfi, who suggested the need to shift the focus for regulating what he calls *de facto* powers, that I discussed in terms of technological or automated management. Similarly to the case of administrative law, the role of intellectual property has been traditionally conceived to design a system of intellectual property rights that is the result of a balancing of competing interests. However, when this is confronted with the regulatory power by technology of the platform, this balancing becomes impossible: it is the "holder of *de facto* power over a resource becomes the sole arbiter of the uses it will allow or prohibit to third parties"²³³. The platform sovereignty is evident here, and for Ricolfi technological management is not a functional equivalent to the exclusivity of intellectual property rights, because even if they are both ways to shut out third

²³¹ Ibidem.

²³² See the Opinion of Advocate General Poiares Maduro, paragraph 108, who was concerned that "if trademark proprietors were to be allowed to prevent those uses on the basis of trademark protection, they would establish an absolute right of control over the use of their trademarks as keywords. Such an absolute right of control would cover, *de facto*, whatever could be shown and said in cyberspace with respect to the good or service associated with the trademark". Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62008CC0236>.

²³³ Ricolfi, M. (2021). *Regulating de facto powers: shifting the focus*, 179, In Ghidini, G. & Falce, V. (Eds.), *Reforming Intellectual Property*, 179.

parties from using a resource, in intellectual property law the extent, terms, and conditions of exclusivity are established *ex ante* by law, but platform use of technological management “is in no way mediated by societal choices and is entirely in the hands of the holder of the resource in question”²³⁴. Ricolfi’s conclusion for the field of intellectual property is the same that we have seen for data protection, antitrust and administrative law: the internal regulatory tools available to intellectual property are ineffective, and the new regulatory tools “are bound to be remarkably different from the ones which characterize the tradition of the regulation of intellectual property rights”²³⁵.

4.2.4 Is platformization outside the European legal framework?

With this brief analysis of the sub-fields of law of data protection and privacy, antitrust and competition law, administrative law, tax law and intellectual property, I have tried to show what I historically interpret as the ‘cracking of the legal system’ that led to the unaccountability of platform corporations. Such cracking depended on many factors, among which we can include: the impossibility to reconduct platform technological innovation into existing legal categories; the outdatedness of the tools available to the various field to deal with the multi-sided platform model and to datafication; and because the platform itself constitute a regulatory environment in which self-enforcing rules that enable or avoid certain behaviors are posed by the platform. History cannot be changed, and surveillance capitalists, like Spanish *conquistadores*, colonized the new territory of human experience by declaring it was their property²³⁶. This legal hiatus has created a space for an act of “original accumulation”²³⁷ that allowed digital platforms to enjoy a long period of uncontested growth and leverage their regulatory exemptions and the competitive asymmetry over traditional business to grow to an infrastructural level. In legal terms, this means that the platform model was used by corporations to outsource risk to complementors and users and to elude accountability.

I believe that from the perspective of system theory, the sub-systems of the law show a mutual irritation that can be hardly overcome using the system’s internal structures. Every field ended up advocating for some forms regulation and for the need of political intervention also in other sub-fields to tackle the limitations of its own. Data protection worries about the monopolistic function of platforms, the lack of enforcement, the regulatory function of fast-changing software infrastructures and difficulty to address its norms in the platform ecosystem. Antitrust worries about the difficulties of dealing with data power, about the absence of price in exchanges carried out on platforms, about the different nature of multi-sided markets, and about competition

²³⁴ Ibidem.

²³⁵ Ivi, 181- 182.

²³⁶ An image used by Zuboff, S. (2019). *The Age of Surveillance Capitalism*.

²³⁷ See Mezzadra, S. (2008). *La “cosidetta” accumulazione originaria*, in *Lessico Marxiano*, 23- 52.

taking place with platform companies whose competitors are dependent on them. Administrative law worries about the administrative function of the platform that issues authorizations besides that of the state that are not the result of a legal exercise of balancing; tax lawyers about the legal loopholes that allow tax avoidance and about a tax framework designed around a classical notion of the market that does not translate well into that of a multi-sided market. Intellectual property worries about the *de facto* power of platforms in managing resources via technological standards that do not balance rights and interests. In all cases, it is the platform that sets the rules by design and without being subjected to a limitation of power. In this sense, the platform infrastructural power is ‘absolute’ in its etymological meaning of unleashed from constraints and checks and balances.

The politico-legal problem is therefore that of how public power can intervene in such a context. At the beginning of the present part, I have criticized the incrementalism positions according to which legislative changes can bring, over time, to a settlement of the challenges brought by platformization to the European legal system. On the opposite side of the political spectrum, there is what we can define as the radical ‘interventionist’ position of those that, by looking at the political preconditions for any meaningful legal intervention, have suggested the need to nationalize digital platforms²³⁸ or at least, on the basis of the EPRS’s recognition that “Member States of the EU are gradually losing control over [...] their ability to shape and enforce legislation in the digital environment”²³⁹, to ban non-European platform infrastructures whose geopolitical role is incompatible with EU interests²⁴⁰. This view would consider the need for an exceptional political intervention like China’s banning of American platforms²⁴¹. This is a protectionist view that could be justified over European national security concerns and technological sovereignty by the infrastructural role of non-European platforms. However, such an approach seems to me politically unfeasible for well-known reasons relating to Europe’s

²³⁸ Srnicek, N. (2017, aug 30). *We need to nationalize Google, Facebook and Amazon. Here’s why.*

²³⁹ See also the papers of the European Parliamentary Research Service (EPRS): Madiaga (2020). *Digital sovereignty for Europe*. That of digital sovereignty is a concept that has mobilized by a diversity of actors, from heads of states to indigenous scholars, to grassroots movements, and anarchist-oriented ‘tech collectives’, with very diverse conceptualizations, to promote goals as diverse as state protectionism, multistakeholder Internet governance or protection against state surveillance [Couture, S. & Toupin, S. (2019). *What does the notion of ‘sovereignty’ mean when referring to the digital?*, 2]. See Pohle, J. & Thiel, T. (2020). *Digital sovereignty*. See also Floridi, L (2020). *The Fight for Digital Sovereignty: What It Is, and Why It Matters, Especially for the EU*, and Pollicino, O. (2021). *Judicial Protection of Fundamental Rights on the Internet*, 176 – 182. For a more quantitative approach that tries to measure digital sovereignty see Kaloudis (2021). *Sovereignty in the Digital Age – How Can We Measure Digital Sovereignty and Support the EU’s Action Plan?*

²⁴⁰ See van Dijck, J. et al (2018). *The Platform Society*, 163–166; Gray, J. E. (2021). *The geopolitics of “platforms”: The TikTok challenge*. Hen, H., & He, Y. (2022). *The geopolitics of infrastructuralized platforms: The case of Alibaba*. Torreblanca, J. R., & Ignacio, J. (2022, May 17). *The Geopolitics of Technology: How the EU can become a global player*.

²⁴¹ For a reconstruction of the political reasons that brought to the Sino-Google war see Bratton, B. (2015). *The Stack*.

political status on the matter, for the lack of competences according to European treaties and for the political divisions of the Member States. Furthermore, carrying out such intervention – for instance, banning access to Google - without a ready-made alternative could cause unpredictable economic and political effects and lead to a ‘balkanization of the Internet’. As these companies operate in a transnational and supra-national system where shareholders and corporate structures are mixed and intertwined and where sovereign European funds have invested in them, the mere European origin of supposedly new platform corporations would not tackle the challenges of the platform model, but maybe only enhance the public control of the state on those platforms²⁴². Given the degree of globalization and of interdependence of EU politics with other international actors²⁴³, the option of nationalizing or banning the access to non-European platforms while building alternatives should be further investigated, but it seems hard to cover without an exceptional political intervention.

A third position is what I would define as politically ‘realist’ – infrastructural platforms are not going to disappear - but legally ‘exceptionalist’. The infrastructural status of platforms is a ‘state of fact’ that confronts the legislator with the problem of placing them in an *ex post* regulatory matrix²⁴⁴. Therefore, since I believe that the incrementalist *ex post* attempts to react to platformization only by adjusting the laws are simply bound to fail, and since there is an incompatibility between the modern positivist legal framework and the policy by infrastructure, platforms cannot really be regulated in an old-fashioned, top-down perspective. They should be rebuilt from scratch, but that I complicated, as I have just discussed. From a realist perspective the EU interventions leave only the space for a pluralist legal framework in which such entities become co-regulators, which implies the acknowledgement that regulation and competition are inadequate tools vis-à-vis platformization. There are ‘new sovereigns’ besides national states and the European Union whose power exceeds even that of traditional multi-nationals corporations.

As a conclusion of the present part there are three politico-legal takeaways that I suggest regarding what can be done after the cracking of the legal system. If infrastructural platforms are going to be left operative on the European territory, the need would be to negotiate their role in the European space, ultimately hoping that the pressure triggers some internal

²⁴² The case of the Chinese state, with a due contextualization, is very important in this regard. I have restricted the analysis to European platformization, and I avoided to consider the western debate, that is often times culturally biased, depicting Chinese platformization as an authoritarian world of total surveillance, with the risk of social credit. For the literature on platformization and China see the conclusion.

²⁴³ See Robé, J.P. (2020). *Property, Power and Politics: Why We Need to Rethink the World Power System*.

²⁴⁴ Bassan, F. (2021). *Digital Platforms and Global Law*, 133. Other suggestions may come from the ‘principled-based regulation’ paradigm. See Black, J. (2007). *Making a success of Principles-based regulation*; Black, J. (2008). *Forms and Paradoxes of Principles Based Regulation*.

changes²⁴⁵. This implies recognizing the status of transnational platform corporations as quasi autonomous legal orders in a sort of global legal pluralism where multiple legislative sources other than the state co-exist²⁴⁶. Second, the EU could supervise the expansion of the platform model to not-yet platformed sectors of society, providing a system to prevent the infrastructuralization of platforms in those sectors. Third, I believe that there is a need to recognize the constitutional status of platformization and therefore focus, following Stafford Beer, on what can be managed: the renovation of the European institutional system in light of computation, what van Hoboken has called the “institutionalization of computing” in the EU. This implies changing the internal structures of the legal system in the search of what I would call a constitutionalization of platform infrastructures.

²⁴⁵ See for instance Helberger, N., J. Pierson & T. Poell (2018). *Governing Online Platforms: From contested to cooperative responsibility*. See the next chapter on the constitutionalization of platforms.

²⁴⁶ The notion of legal pluralism comes from the field of anthropology, where researchers of former colonies study the existence of multiple legal systems within the same geographical area. Giudice, M. (2014). *Global legal pluralism: what's law got to do with it?*; Berman, P. S. (Eds) (2020). *The Oxford Handbook of Global Legal Pluralism*. Davies, G. T. & Avbelj, M. (2018). *Research handbook on legal pluralism and EU law*. But the existence of multiple sources of law applicable in different contexts to different subjects is also something that can be found, for instance, in medieval Europe. See Berman, H. J. (1983). *Law and Revolution*.

Law is what governs the relations between simple exorganisms and complex exorganisms, and, secondarily, the relations between two or more complex exorganisms.

Bernard Stiegler

4.3 Platform law and the legal governance by platforms

At the begging of the present chapter, I have reconstructed the becoming-computational of the law together with the problem of technological management. In the second part, I tried to account for the impact of platformization on the European legal system by focusing on how some of the sub-systems of the law were ineffective to protect from the harms of platformization. In the final part of this chapter, I want to shift the focus from the perspective of the legal system on the platform to the platform as a proto-legal system: the governance *by* platforms.

We shall start from a distinction between what law professor Orly Lobel has called the “law of the platform” from what has been called “platform law”. In a relevant text, Lobel thought of the law of the platform as the regulatory environment in which platforms operate – what we have analyzed in the previous part first part. Lobel recognized that the rules for the platform economy needs a new approach:

it is both true that the platform should be understood in light of basic legal principles that existed before its rise *and* that, unlike in the case of horses, there is something new and unique about the law of the platform²⁴⁷.

On the other hand, David Kaye, in his quality of Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression for the UN, has used the expression “platform law” to refer to the activity of platforms as regulators in the context of freedom of expression. Kaye noted that platform companies, “despite taking steps to illuminate their rules and government interactions [...] remain enigmatic regulators, establishing a kind of “platform law” in which clarity, consistency, accountability and remedy are elusive”²⁴⁸. Since then, the

²⁴⁷ Lobel, O. (2016). *The Law of the Platform*, 144.

²⁴⁸ Kaye, D. (2018). *Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression*, 3. For Kaye, companies where “are implementing “platform law”, taking actions on content issues without significant disclosure about those actions. Ideally, companies should develop a kind of case law that would enable users, civil society and States to understand how the companies interpret and implement their standards. While such a “case law” system would not involve the kind of reporting the public expects from courts and administrative bodies, a detailed repository of cases and examples would clarify the rules much as case reporting does. A social media council empowered to evaluate complaints across the ICT sector could be a credible and independent mechanism to develop such transparency (pp. 19). See also Kaye, D. (2021). *Libertà vigilata. La lotta per il controllo di Internet*.

expression has entered the vocabulary of scholars and regulators²⁴⁹. With the premise that this debate focuses mainly on the subtypes of social media platforms, the law of the platform is therefore seen as the intersection with the norm-generating role of actors others than the state.

The question is, therefore, what kind of law is the platform law. Land K. Molly understands it as the “broad array of mechanisms that companies deploy to control user behavior and mediate conflicts” that are composed of the formal and informal rules generated by social media platforms to govern the rights and liabilities of their users²⁵⁰. Land focuses on the level of coercive control that the platform exerts via curation and moderation, considering this law as the result of various factors such as community standards, contract, technological design, and case-specific practice²⁵¹. She distinguishes between four elements of platform law: contract law, substantive law, procedural law, technical law²⁵². In relation to privacy governance, we have instead seen that van Hoboken and Fathaigh distinguished between three layers of governance by platforms into technical standards, contractual standards and enforcement²⁵³. From my perspective, platform law is should be understood as a general notion that designates the hybrid nature of the governance of the platform. As in the case of the definition of the platform, I would like to underline the feedback between two components. The first components is that of technological management via software architecture and infrastructure design, including digital right management (setting the conditions of exchange in the ecosystem and enabling certain behaviors). The second components are written rules governed by contract law known as Terms of Services. Written policies and software infrastructures, if taken together in their evolution and adaptation to external changes, allow to recognize a point that we have addressed at 3.3 while analyzing the management literature: the platform is the regulator if its internal ecosystem. It is again management scholar Annabelle Gawer that have described this point in detail when she noted that:

most digital platforms act as private regulators of their ecosystems. They establish the rules through which their various users (be they individuals or organizations) interact, decide

²⁴⁹ See Bassan, F. (2021). *Digital Platforms and Global Law*, 110- 111; for instance, it is used by Land, M. (2020). *The Problem of Platform Law: Pluralistic Legal Ordering on social media*, and by Burchardt D. (2022). *The concept of legal space: a topological approach to addressing multiple legalities*.

²⁵⁰ Land, M. K. (2020). *The Problem of Platform Law: Pluralistic Legal Ordering on Social Media*.

²⁵¹ Ivi, 975.

²⁵² Land, M. K. (2020). *The Problem of Platform Law: Pluralistic Legal Ordering on Social Media*. Substantive Law would in this case be composed by a subset of rules, such as Community Standards; Internal Guidance, that is, training material given to moderators. The Platform jurisdictional system: Decisional law (moderation) and the Oversight board, that functions as a court of appeal; Software architecture: including algorithmic content curation; It is of utmost importance to point out the platforms are not real jurisdictional systems, even if they would like to be portrayed as such. The jurisdictional system in fact inspires a sense of justice and equity.

²⁵³ van Hoboken, J. & Fathaigh. (2021). *Smartphone platforms as privacy regulators*, 10-11.

what behaviors to encourage or discourage on the platform, and choose how to enforce them. As such, they design the business environment and exercise significant control over members of their platform ecosystem. This rule-setting function is part of what some called 'platform governance', which also includes enforcement of such rules²⁵⁴.

I shall now examine the role of these two components of terms of services and infrastructure design.

4.3.1 Neither terms nor services

Terms of services (ToS) are the contractual documents set by the platform that governs the relationships between users, complementors and the platform itself. Since these rules are posed by the platform and can be unilaterally changed by it, this can be seen as a *quasi-legislative* power: it is the ability to “define the range of behaviors that are allowed within a platform and to fashion users’ capacity to exercise their fundamental rights online”²⁵⁵. Moreover, through the terms of services, a platform normally defines alternative dispute resolution systems, a point well addressed by art. 21 of the DSA on out-of-court dispute settlement, in the sense that these bodies will have to be certified by the EU Commission²⁵⁶. There is therefore a *quasi-judicial* power which must now deal with recent new requirements of EU regulations: platforms are already working as “courts of first instance” to implement new European rights in their policies. For instance, even before the DSA Google had implemented changes in its internal mechanisms of corporate governance in order to implement the European decisions on privacy and data protection, commissioning an independent advisory council of experts to formulate the criteria that allegedly orient its internal “case law”²⁵⁷. Their details are now regularly published in its transparency report, together with other data and statistics about its “rulings” on the so-called “European privacy requests for search removals”. Its own technology or “code” also had to be adapted in order to deal with the vast number of these requests. Facebook had instead created his own oversight board in the attempt to provide some fairness in the decisions on content removal²⁵⁸.

²⁵⁴ Gawer, A. (2022). *Digital platforms and ecosystems: remarks on the dominant organizational forms of the digital age*, 114.

²⁵⁵ Belli, L. & Venturini, J. (2016). *Private ordering and the rise of terms of service as cyberregulation*, 4. The authors also Second, the platform enjoys a *quasi-executive* power, “having the possibility to autonomously implement their self-defined regulations via technical means, such as algorithms, thus making sure that the service is structurally conceived to impose the respect of the contractual provisions” Third, platforms may enjoy a *quasi-judicial* power t autonomously deciding how to implement the contractual provisions regulating the interactions within the ecosystems on which they can exert control

²⁵⁶ See art. 21 of the DSA.

²⁵⁷ Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 171.

²⁵⁸ See Klonick, K. (2020). *The Facebook Oversight Board: Creating an Independent Institution to Adjudicate Online Free Expression*; Bietti, E. (2021). *From Ethics Washing to Ethics Bashing: A Moral Philosophy View on Tech Ethics*.

It is important to highlight that drafting terms of services, there is always some ambivalence: on one side, platforms have to comply to national and international regulations and are even mandated by state authorities to enforce a great number of regulations directly; on the other, they are to a great extent free to design and re-design ToS in a way that maximizes their interests, usually creating asymmetrical legal conditions. As such, the very combination between unilaterally drafted ToS and unilateral control over the code is problematic in terms of the difficulty of contesting the platform architecture. Regarding Tos there are two points to be discussed: first; the lack of relevance of the category of individual consent in the platformed environment; second, their misleading legal status as contracts.

Starting from a sociological point of view, empirical research shows that ToS are not read by users²⁵⁹. Even when there are read, they are not understood²⁶⁰. Evidently, this does not depend on the laziness of users, but on the logic of contemporary society, as reading them would resolve is a great waste of time. According to a study dating back to 2008, the time needed to fully read all the privacy policies that one encounters in a year would require 76 full workdays²⁶¹. Moreover, the shift of medium from paper to computation has to be highlighted again, because it changed the material conditions of possibilities of these contracts, the shift of medium has to be highlighted here. Scholars such as Nancy Kim have pointed out that when contracts were made of papers, some natural restraints were imposed on contracting behavior “simply by virtue of their cost to produce, distribute, and archive”, such as a physical signature. On the contrary, digital terms are “weightless”: they can be expanded, reproduced, distributed, and archived at no additional cost²⁶². Kim connects ToS to the problem of timing: those rights are acquired “by declaration”, without bargaining; as such, they give rise to practices even before users and regulators realize what has happened.

The unilaterality and sovereignty of the platform in drafting and modifying Tos have brought some commentators to suggest that we are dealing with is a private legal system in its own right. For legal scholars Venturini and Belli, these “internet intermediaries” form a “kind of private law-making system, because the substantive provisions set in the agreements – which may apply transnationally – regulate the relationships between the parties with a binding force that may be analogue to or even stronger than the one exercised by the law”²⁶³. The unilaterally defined terms of services regulate users’ behavior “exactly as the law of the land regulates individuals’

²⁵⁹ Obar, J. & Oeldorf-Hirsch, A. (2016). *The Biggest Lie on the Internet: Ignoring the Privacy Policies and Terms of Service Policies of Social Networking Services*.

²⁶⁰ Bakos, Y. et al (2014). *Does Anyone Read the Fine Print? Consumer Attention to Standard Form Contracts*.

²⁶¹ McDonald, A. M. & Cranor, L. F. (2008). *The Cost of Reading Privacy Policies*.

²⁶² Kim, N. S. (2013). *Wrap Contracts: Foundations and Ramifications*, 50–69, quoted in Zuboff, S. (2019), 53.

²⁶³ Belli, L. & Venturini, J. (2016). *Private ordering and the rise of terms of service as cyberregulation*, 2.

behavior within the national territory”. Furthermore, those terms can be “directly implemented through technical means such as algorithms, within online platforms, or internet traffic management techniques, within electronic networks”²⁶⁴. As such, these authors see ToS as “a tool of unilateral imposition of rules, despite being presented as voluntarily accepted by the involved parties through the expression of free and informed consent”²⁶⁵. The very category of the user’s and consumers consent seems to me inadequate to regulate the relationship with digital platforms because of their different position in the platform ecosystem regarding value creation and extraction. Legal platform scholar Elettra Bietti sees the notice and consent mechanism of acceptance as an “empty construct” that nevertheless legitimates and enables platforms’ data processing, acting as a free pass for a variety of intrusive activities which include profiling and behavioral advertising. Moreover, consent to Tos positively harms consumers in at least three ways: burdening them with decisions they cannot meaningfully make, subordinating their core inalienable rights to respect and dignity to the economic interests of platforms, and creating widespread ideological resistance against alternatives²⁶⁶. Legal scholar Margaret Radin came so far to this “private eminent domain” of unilateral seizure of rights without consent a “democratic degradation” of the rule of law and the institution of contract, a perversion that restructures the rights of users granted through democratic processes²⁶⁷.

This leads to the second element of terms of services that I find problematic, which deals with their legal status. ToS are generally considered private contracts for services under private law, but this status is highly questionable. In his analysis of Tos of some major platforms, Przemyslaw Palka has argued that ToS are not contracts for service and potentially not contracts at all and EU law. Terminologically, a ‘term’ is different from a contract because the service is “used” instead of “received”. The *essentialia negotii* of a contract for service encompass one party’s obligation to supply a service to another party, but the clause stipulating such an obligation (or any corresponding right) is not present in ToS of major platforms (Google, Youtube, Facebook and Twitter)²⁶⁸. In a platform, the triangular relation platform – user –

²⁶⁴ Ibidem.

²⁶⁵ Belli, L. & Venturini, J. (2016). *Private ordering and the rise of terms of service as cyberregulation*, 3.

²⁶⁶ Bietti, E. (2020). *Consent as a Free Pass: Platform Power and the Limits of the Informational Turn*.

²⁶⁷ Zuboff, S. (2019). *The Age of Surveillance Capitalism*, 52, referring to Radin, M. (2012). *Boilerplate: The Fine Print, Vanishing Rights, and the Rule of Law*, 14.

²⁶⁸ Palka, P. (2018). *Terms of Service are not contracts – Beyond contract law in the regulation of online platforms*, 138. His analysis is built on the definition of contract given under EU law by the “The Draft Common Frame of Reference”, which defines a contract for service as “a contract under which one party, the service provider, undertakes to supply a service to the other party, the client”. Another, more quantitative assessment of ToS is that conducted by Center for Technology and Society at FGV Law School (CTS/FGV), which “assessed the degree to which such documents may be deemed as respectful of the human rights to freedom of expression, privacy, and due process by implementing an analysis methodology derived from international human rights standards” and found out that “26 of the unanalyzed foresee that if user-generated content is removed, the affected user may not receive any notification or have the opportunity to challenge the removal”. See Belli, L. & Venturini, J. (2016). *Private*

complementor employs that the actual service is carried out by complementors or offered by the platform thanks to advertisers. Hence, Palka noted the inner imbalance of the ToS, where the platform includes statements about copyright, privacy, data protection, and software license, while the only right given to the user is the “revocable right to use the service”. For instance, in the case of Google, we have a full exclusion of any liability; an assertion of Google’s right to modify the ToS as well as the service (platform) itself; a choice of law (California); a jurisdiction clause (Santa Clara County, California), while on platforms such as Youtube and Twitter there is also a detailed description of what the user is allowed to share²⁶⁹.

However, if one challenges the legal status of Tos as contract, the question becomes what they should be considered. According to Palka, they should be seen as an exercise of property rights, similar to rules and regulations in physical proprietary spaces:

one can draw a parallel between a private shop, where a customer can be asked to leave if not abiding to the rules of the owner, and the platform. In the first case, being in the realm of private law, the owner can do anything that public law does prohibit (such as anti-discrimination law). However, if a customer enters in a shop holding an ice cream where ice creams are prohibited, the owner cannot forcefully remove that person, unless the person poses a danger to life, health or property²⁷⁰.

For Palka, platforms problematize the very notion of the state as the place for the execution of rights: via operations on the code, the platform is making use of ‘force’ without physically interfering with someone’s bodily integrity²⁷¹. However, viewing platforms only as proprietary spaces – the metaphor of the political economy literature was that of the platform as a shopping mall – would also be limited. In fact, a platform is also *quasi-jurisdiction*. For instance, Palka draws a parallel between the human rights movement of the nineteenth and twentieth centuries, “aimed at securing the freedom of speech and association from the intervention of the state”, and the current power held by the online platform owners, “who also happen to be multinational

ordering and the rise of terms of service as cyberregulation. This aspect is now addressed by EU regulation such as the DMA and DSA.

²⁶⁹ Palka, P. (2018). *Terms of Service are not contracts*. The Platform law here consists in a double movement: first, prohibiting in the Tos would be already prohibited by law, such as hate speech and the violation of intellectual property rights; second, they prohibit and limit acceptable behavior by the company’s standard, such a ‘impersonating someone for the purpose of a parody or sharing with the public personal information’.

²⁷⁰ Palka, P. (2018). *Terms of Service are not contracts*, 146.

²⁷¹ Ivi, 147. To give an example: to remove a customer from a tangible shop, the owner would need to physically displace him or her; to remove a customer from an online platform, it is sufficient for the platform owner to click a button within the IT system.

corporations”²⁷². As a result, as platforms are directly interfering with rights and liberties in ways that are new, Palka believes that the problem has constitutional relevance²⁷³. This preoccupation is shared by Venturini and Belli, for whom,

it seems clear that ToS are a very pervasive regulatory tool, allowing platform providers to regulate not only their users’ behavior within the platform but, frequently, the users’ possibility to enjoy their fundamental rights when browsing the internet without having accessed the platform²⁷⁴.

A similar point has been proposed by Nick Suzor, who analyzed the ToS of 14 major social media platforms as “constitutional documents” that are “integral to the way our shared social spaces are constituted and governed”²⁷⁵. As Van Dijck, Poell and de Waal write, the relationship between users is governed via terms of services, but and it is the infrastructural role of the major platforms that makes it impossible to live without them. Theoretically

users can decide at any moment— individually or collectively— to opt out of Google, Facebook, Apple, Microsoft, and Amazon services; in practice, opting out is hardly an option for users who want to participate in society or who simply need to make a living. The more the ecosystem turns into a global connective utility - like infrastructure, the more citizens become dependent on that system for their private, public, and professional activities. We cannot simply assume that individual consumers are savvy enough to fend for themselves when it comes to protecting their digital rights. The intricacies of data flows and algorithmic processing are simply too complex for users to understand the conditions to which they “agree” by checking a box²⁷⁶.

²⁷² Ivi, 158.

²⁷³ See the next chapter. Palka also suggest three ways to “regulate code” (p. 160), one more ineffective and problematic than the other: 1) monitor the results of the code’ s functioning; 2) ask for the disclosure of the source code; 3) regulate the design of the code *ex ante*, either by creating some standards in the most vulnerable spheres, or by requiring some normative components to be built into the software.

²⁷⁴ Belli, L. & Venturini, J. (2016). *Private ordering and the rise of terms of service as cyberregulation*, 10.

²⁷⁵ Suzor, N. (2018). *Digital Constitutionalism: Using the Rule of Law to Evaluate the Legitimacy of Governance by Platforms*, 3. For Suzor, ToS are a central element of the unaccountability of platforms because of their “double duty”, which is acceptable only by considering them private spaces: “for users, the subjects of regulation, they reserve to the platform complete discretion to control how the network works and how it is used. For those who would ask that platforms exercise their power to control behavior for other ends—including users themselves, copyright owners and other third parties with grievances, and governments who seek to surveil users or censor content— the Terms are structured to disclaim liability or responsibility for how autonomous users act”. (p. 3)

²⁷⁶ Van Dijck, J., Poell, T. & De Waal, M. (2018). *The Platform Society*, 149. In some cases, ToS were considered unfair under consumer protection law. See Resta, G. (2019). *Digital platforms and the law*, where he analyses the acquisition of Whatsapp by Facebook under consumer protection law. Here the

The second element of the governance by platforms is what we have seen at the beginning of the present chapter, namely technological management and digital rights management. When designing a platform, regardless of whether it is for profit or not for profit, this is the first point to be addressed. For example, platform designer Martijn De Waal pointed out that while building a digital platform he realized he was not only building “an administrative system but a governance system” in which it is the system itself that tells someone if he is allowed to sell something, to who else and under what conditions. Those assignment of rights and interests are a by design decision of whoever designs and set up the platform²⁷⁷.

4.3.2 Is the platform an autonomous legal order?

We have seen that the governance by platforms implies the regulation of its ecosystem, the posing of rules via ToS and the posing of technological standards. As such, the platform is and administrative system of governance. Consequently, legal scholars, I trying to account for the quasi-judicial function of the platform and the self-enforcement of its sovereign decisions which came to be relevant also in the international arena, have asked whether infrastructural platforms should be considered something like an autonomous legal order. The matter has been investigated by Fabio Bassan, who pointed out that problem is that the internal law of digital platforms escapes in many ways the legal system of the state that regulates it.

The new regulation of the DSA, in trying to subject platform to its new rules, implicitly acknowledge this proto-legal function of platforms at EU level by establishing a co-regulatory framework to address the of curation and moderation of the platform in relation to content removal and shadow banning²⁷⁸. According to art. 20 of the DSA the platform acts as the court of first instance about the decision, for instance, to remove contents and suspend accounts, and for carrying out such activity it must put in place proper internal complaint-handling system’. Moreover, pursuant art. 21, art. 21, out-of-court dispute settlement is allowed insofar as is left to bodies certified by the Digital Service Coordinator, a delegation that recalls platforms those used in the governance of the Internet infrastructure (see 3.5). This institutionalization of the judicial function of platforms required by the EU is one of the novelties that makes some authors lean on the considering platforms as autonomous legal orders. Bassan writes that “all digital platforms,

Italian Competition Authority (ICA) maintained that the procedure adopted to obtain consumers’ consent was technically a “commercial practice”, with a have a political-economic value, and ruled that five clauses of the ToS were unfair under EU law (limiting the trader’s liability; regulating the availability and termination of service; providing for the unilateral modification of contractual terms; solving jurisdiction and choice of law issues; and those concerning the use of English language).

²⁷⁷ See my interview with De Waal, “*The production of public values trough digital platforms*”, in Cristofari, G. (2023). *The Politics of Platformization*, 96 -107.

²⁷⁸ See Leerssen, P. J. (2023). *An end to shadow banning? Transparency rights in the Digital Services Act between content moderation and curation*.

closed or open, provide for internal dispute settlement mechanisms. Their existence is not only admitted by the states but also expressly requested by national regulation and, de facto, legitimized”²⁷⁹.

In particular, Bassan identified an analogy between the new provisions of the DSA and the international law principle of ‘prior exhaustion of domestic remedies’. The platform, in his view, ought to be understood as legal order, and its relationship with the state as a relationship between different legal orders. Platforms are “concrete” orders, equally legitimate as the others because they exist regardless of external recognition, they evolve and they are transnational, operating within the states, of which they respect certain rules and principles, but also *outside* states (in different state systems) and *beyond* the states (subjects of transnational law)²⁸⁰. For Bassan,

digital transnational companies are legal systems, whose social circle is easily identifiable, autonomous and unitary, as well as spontaneous in its formation. They apply their own rules, partly originating from their state of incorporation order, partly created by the companies themselves, and sometimes also conforming to rules and principles originating from states or international organization, which are not binding (they are located at various levels of the scale ranging from soft to hard law) but become so when integrated into the legal order of the transnational company²⁸¹

The consequences of understanding platform as a legal order are that the attempts to regulate platforms from the outside are bound to fail, and competition law itself becomes an inadequate tool to deal with them. This is in line to my understanding of platforms as infrastructures that enables a certain type of social action.

4.4 The challenges of platformization to the legal system

In the present chapter, I have identified some specific challenges for the European legal system with regards to platformization. First, the becoming-computational of the law, a very shift in the mode of existence of the law. It is modality of governance in which via fast-changing rules are embedded in the technology used by the platform to coordinate and regulate their ecosystems. The problem of how create a *legitimate* form of technological management and policy by infrastructure remains open. Second, after the establishment of sub-fields of the law that are the result of a functional differentiation, I showed how platform have been historically unaccountable for their actions: the ‘cracking of the European legal system’. Moreover, I showed

²⁷⁹ Bassan, F. (2021). *Digital Platforms and Global Law*, 97.

²⁸⁰ Ivi, 94

²⁸¹ Ivi, 90.

the limits of an *ex-post* regulatory intervention aimed at controlling infrastructural platforms and changing the rules of the platform economy. Those infrastructural platforms pose a law of their own, a “platform law”, a regulatory activity of the platform in its ecosystem, that governs via infrastructure and terms of services, and which performs a quasi-judicial function, I asked the question whether those platforms should be considered not as private companies, but as autonomous legal orders. Hence, during this chapter I tried to observe platformization from the internal perspective of the legal system. Since both traditional legal categories and regulatory strategies are limited in platformed environment, my ‘exceptionalist’ conclusion is that the internal structures of such a system needs to be changed to deal with platformization. This turns platformization into a constitutional question, rather than regulatory one, which will be the object of the next chapter.

*So it's thanks to that Magna Carta
that was signed with the barons old
that in England today we can do as we like
- so long as we do as we're told.*

Stafford Beer, *Designing Freedom*

5. A constitutionalization of platform infrastructures?

5.1 Platformization and the rule of law

In the third chapter, I have analyzed the politics of platformization and how platformization affected several societal systems. Correspondingly, in the fourth chapter, I have shown how platforms are administrative systems directly involved in regulatory activities via standard setting, infrastructure design, terms of services, and quasi-judicial procedures that makes them proto-legal entities. Furthermore, I have proposed an internal perspective of the legal system on how platformization has impacted the functional sub-systems of the law established after the industrial revolution, suggesting that platformization ended up 'hacking' existing legal categories and enhancing the 'irritation' of such fields¹. In the following chapter, I am going to focus on what, from the perspective of system theory, is considered the structural coupling between politics and law: the constitution². Systemic evolutionary analyses have shown how this concept originated as a reaction to the differentiation between law and politics - the separation of both functional systems and to the following (paradoxical) problem of their re-coupling³. What system theory has more problems to explain seems to be the inclusion of technological

¹ A term that Niklas Luhmann uses to describe the need for the system to evolve according to changes that occurred in its environment that can be coped by they evolve either by increasing its indifference or by varying its structures. See Baraldi, C. et al (2021). *Unlocking Luhmann*, 116 – 120.

² Luhmann, N. (2008). *Law as a Social System*. That is the sociological definition of the constitution, created for a political system based on nation-states; it has a paradoxical double nature, at the same time as the supreme text of legal authority and as the political foundation of a society. It is worth noting immediately that such structural coupling is however missing in what Luhmann considers the *world society*. See also Thornhill, C. (2010). *Niklas Luhmann and the sociology of the constitution*.

³ Luhmann, N. (1996). *La costituzione come acquisizione evolutiva*, 87, as the constitution is a 'legal' text that fixes the political constitution of a state. With the constitutions, the parameters for the legitimacy of all other laws are set. The result is the paradoxical and autological foundation of law as a social system, which is normally explained by Kelsen by recurring to the axiom of the foundational norm to stop the *regressus ad infinitum*. Luhmann has a different explanation based on the "re-entry of the difference", so one can read: "The law becomes the unity of the difference between two kinds of texts: constitutional law and other laws". "The code law – nonlaw generates the constitution so that the constitution can generate the code". "The novelty of the eighteenth-century constitution project lies in the fact that the constitution makes possible both a legal solution to the problem of self-referentiality of the political system and a political solution to the problem of self-referentiality of the legal system (p. 110)". Luhmann also points out the importance of *procedural norms* in constitutional texts, since it is thanks to them that the political system observes the predicament of the legal system without neglecting the needs of the political system (p. 116). On fundamental norms, see also Luhmann, N. (2008). *Are There Still Indispensable Norms in Our Society?*; Graber, C. B. (2017). *Bottom-up Constitutionalism: The Case of Net Neutrality*; Loughlin, M. & Walker, N. (eds) (2007). *The Paradox of Constitutionalism*.

changes in the system's internal structures⁴ and the irritation of social systems caused by technological evolutionary advancements⁵.

In the previous chapter I have also highlighted the limitations of and *ex-post* legal regulatory intervention vis-à-vis the existence of existing infrastructural platforms. If one looks at the conditions for protecting fundamental rights in a platformed environment from the perspective of the various field – for instance, data protection, labor law, independent knowledge creation or the protection of free democratic discourse – he is going to find the same set of problems. For instance, we have seen in chapter four how van Hoboken carried out this exercise regarding the protection of privacy in relation to technological and organizational practices such as Cloud computing and agile software development. He concluded that the space “to protect things like privacy is very deeply reconfigured in quite a problematic way” and he acknowledges the constitutional relevance of these reconfigurations⁶. Similarly, legal system theorist Guilherme Guimaraes, taking the Google platform as a case study, noted that corporations, governments and citizens are all concerned with its power, which is manifested as market power that affects competition and the basic “economic constitution” of the European Union, as the financial power that affects the public finances and tax collection capabilities of European nation-states and as the power over global flows of information and personal data that affects the fundamental rights to privacy and freedom of expression of European citizens⁷.

In other terms, there is a growing acknowledgement of the incompatibility between the modern conception of the “rule of law”⁸ and the platformed organization of contemporary society. Such a

⁴ Esposito, E. (2017). *Artificial Communication? The Production of Contingency by Algorithms*, has focused on the problem of algorithms in relation to double contingency, while others have investigated a possible new stage of functional differentiation via algorithms. See Taekke, J. (2022). *Algorithmic Differentiation of Society – a Luhmann Perspective on the Societal Impact of Digital Media*.

⁵ “Technology (always provided that it works) thus makes it possible to couple completely heterogeneous elements. A physically actuated signal may set off communication. A communication may bring a brain to cause levers to be moved. And all this happens in (almost) reliably repeatable manner. Technology therefore operates orthogonally to the operational closure of autopoietic systems. This is likely to explain why societal evolution takes recourse to technology in order to secure couplings between the societal system and its environment to which internal processes of information processing and social technization can connect. This does not contradict the theorems of the theory of autopoietic systems, for technology, too, can be observed and installed only if a system determines which of innumerable elements are to be coupled. Technology accordingly provides good evidence in support of my initial thesis that operational closure does not mean causal isolation but makes it possible to realize couplings with the environment”. Luhmann, N. (2012a) *Theory of Society*, 318. Others see technology itself as a system: see for instance Rafael, E. F. (2013). *Technology as a Social System: A Systems Theoretical Conceptualization*.

⁶ See the interview with Van Hoboken *Platform Regulation and the Institutionalization of Computing in the European Union*, in Cristofari, G. (2023). *The Politics of Platformization*, 171.

⁷ Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*, 8.

⁸ There are great differences in the various European traditions about the rule of law. What in France follows from Montesquieu's *Esprit de la loi* is the principle of division of power (legislative, executive, judicial), and later on in Benjamin Constant's version of “garantism”; the *Rechtsstaat* in Germany is instead grounded on the idea of the impersonality of power, that focuses on the development of control of the

conclusion had been already reached since the '80s by system theorists and realists of democratic theory that reasoned on the future of the informatic revolution. For instance, Danilo Zolo had pointed out

the extreme unlikelihood that the information society will guarantee the preservation of the procedural mechanisms of democracy and the rule of law. Instead, these mechanisms appear to be in increasing danger of being replaced by more efficient forms of the exercise of power, attractive as a result of their ability to 'manage complexity' with a more economical use of money, time and attention⁹.

As we have seen, digital platforms, working as catalysts of users' attention and time, have created precisely a more efficient way to manage complexity and organize markets by centralizing and decentralizing at once. The problem is therefore assessing the extent to which the platform' form can be subjected to a separation of powers and their mutual balancing. For this is the crucial question of constitutional theory, which is an attempt to solve the problem of deciding the methods and levels of political regulation by subjecting political regulation to itself. According to Zolo, democratic political regulation works through a "recursive procedure by which a requirement for 'retro-action' (i.e. participation in — or at least control over — the sovereign decision) exists to benefit the recipients themselves of the sovereign decision". For him, the principle of the division of powers should not be understood simply as a segmentary differentiation of power functions, but, in "somewhat more complex terms, as recursivity and functional self-limitation"¹⁰. According to this perspective, democracy functions as *negative feedback on the operation of political power*, and such notions of separation of powers and checks and balances imply the cybernetic idea of homeostatic equilibrium that we have seen in the first

public administration via independent courts; the rule of law from the English tradition – theorized by A. V. Dicey – is not focused on the idea of the state but of the government. In more modern times, the rule of law came to refer to the idea of the practical supremacy of the law, with three characteristics: a written constitution; the rigidity of such document; the existence of an organ that checks on the just character of the law and resolves conflicts between the other organs of the state. See Matteucci (2016) *Costituzionalismo*, 203-213. See also Fioravanti, M. (2009). *Costituzionalismo: percorsi della storia e tendenze attuali*.

⁹ Zolo, D. (1992). *Democracy and Complexity*, 107. For Zolo, this meant that democracy wouldn't be ready to cope with its 'evolutionary risks', and that some 'unforeseen obstacles' had already made inoperative traditional categories such as pluralism, inter-party competition and the sovereignty of the political consumer between competing elites. Much of politics was already in the hand of "demoscopic agencies" (i.e. public-opinion assessment), in a sort of teledemocracy.

¹⁰ Zolo, D. (1992). *Democracy and Complexity*, 60. As noted by Richardson, the modern constitutional solution to "was not to abandon the goal of democratic government, but to design it so that its tendencies toward instability were countered by the form of government itself". Richardson, J. P. (1991). *Feedback Thought in Social Science and System Theory*.

chapter¹¹. Consequently, a project aimed at constitutionalizing platforms would be involved in designing a (paradoxical) form that counters the tendency towards the concentration of power.

As I tried to make clear in the previous chapters, keeping in mind that my focus is on the specificity of the platform form rather than on its corporate structures¹², my thesis here is that to date, this form lacks proper checks and balances and a proper limitation of powers. Therefore, this problem can also be interpreted as a problem of institutional design, both in the sense of finding out standards that would constitute such checks, and about changing the institutional systems for what has been called the ‘Rule of Law 2.0’¹³. However, before engaging in this exercise of institutional imagination, I will focus on the development and reaction of constitutional theory vis-a-vis datafication and platformization, namely the emergence of what has been called “digital constitutionalism”¹⁴.

5.2 From global to digital constitutionalism

It is worth starting from the debates on constitutionalism beyond the nation-state grouped under the label of global constitutionalism, something that emerged as a reaction to the last wave of globalization and the emergence of networks of transnational governance¹⁵. Constitutionalism have been trying to rethink its own basis¹⁶ and a fundamental premise of such analysis is the need for constitutionalism to move beyond the state and beyond the narrow idea

¹¹ There is the idea of feedback in the Federalist papers, and the very idea of the checks and balances “were a conscious effort to design a system of stabilization feedbacks”. Richardson, P. (1991) *Feedback Thought in Social Science and System Theory*, 64.

¹² For which one can look at the groundbreaking work of Robé, J. P. (2020). *Property, Power and Politics*, especially chapter 8, ‘*The Spreading of the Corporate System and its Consequences*’, 241-292.

¹³ One of the major figures who advocated for such an approach is Julie Cohen, according to which “taking networks and standards seriously as organizing principles for law raises urgent questions about whether and how network- and- standard- based governance institutions might be configured differently— and underscores the high costs of failing to pursue such efforts. The disconnects between network- and- standard based governance and rule of law ideals point to the beginning of an important institutional design project that emphasizes both the ultimate problem of arbitrary power and the ultimate goal of accountability to global networked publics”. Cohen, J. (2019). *Between Truth and Power*, 237. See also Brownsowrd, R. (2022). *Rethinking Law, Regulation and Technology*, 72 – 89.

¹⁴ As explained *infra*, the keyword groups together several different theoretical positions. Some of the references, in chronological order, are the following: Fitzgerald, B. (1999). *Software as Discourse? A Constitutionalism for Information Society*; Karavas, V. (2010). *Governance of Virtual Worlds and the Quest for a Digital Constitution*; Redeker, D., Gill, L., & Gasser, U. (2018). *Towards Digital Constitutionalism? Mapping Attempts to Craft an Internet Bill of Rights*; Suzor, N. (2018). *Digital Constitutionalism: Using the Rule of Law to Evaluate the Legitimacy of Governance by Platforms*; Padovani, C., & Santaniello, M. (2018). *Digital Constitutionalism: Fundamental Rights and Power Limitation in the Internet Ecosystem*; Celeste, E. (2019). *Digital constitutionalism: a new systematic theorization*; Guimaraes, G. (2019). *Global Technology and Legal Theory: Transnational Constitutionalism, Google and the European Union*; Pollicino, O. (2021). *Judicial Protection of Fundamental Rights on the Internet: A Road Towards Digital Constitutionalism?*; De Gregorio, G. (2022). *Digital Constitutionalism in Europe: Reframing Rights and Powers in the Algorithmic Society*; Costello R. Á. (2023). *Faux ami? Interrogating the normative coherence of ‘digital constitutionalism’*.

¹⁵ Peters, A. (2015). *Global Constitutionalism*.

¹⁶ See in particular the work of Teubner, G. (1993). *The many headed Hydra: Networks as Higher Order Collective Actors*; Teubner, G. (2004). *Societal Constitutionalism: Alternatives to State-centred Constitutional Theory?*; Teubner, G. (2011). *Constitutionalizing Polycontextuality*.

of the national constitution as a piece of paper, a *Papier Stück* destined to succumb in the conflict with the existing relationships of power¹⁷. If such theories have the merit to be much closer to the existing world and its dynamics, they remain to a large extent an aspirational academic creation. We have seen that platformization stands in partial continuity with the discourse of globalization and the creation of networks of transnational governance¹⁸, but it also presents some distinctively new aspects, something that implied the creation of the label “digital constitutionalism”¹⁹. Among its proponents, Nick Suzor explains the need for a project of digital constitutionalism based on the fact that

the legal mechanisms that we have for protecting civil and political rights do not translate well to governance by platforms. The law of contract, which currently regulates these relationships, does not address these governance concerns. In this gap, we have an opportunity to develop a normative understanding of the responsibilities of platforms. This is an opportunity to set out the constitutional principles that we collectively believe ought to underpin our shared social spaces in the digital age. The values of the rule of law—values of good governance—provide a way to conceptualize governance by platforms in constitutional terms²⁰.

Suzor argues for the need to apply the rule of law, here intended as a set of rational principles, to non-state entities as writers of the rules of participation. In particular, Suzor abides by a limited version for whom “power is wielded in a way that is accountable, that those in positions of power abide by the rules, and that those rules should only be changed by appropriate

¹⁷ Answering the question “*qu'est-ce qu'une Constitution?*”, Ferdinand Lassalle hypothesized the destruction in a fire of all copies officers of the Prussian Constitution of 1850. If this were the case – stated Lassalle – this would not mean Prussia would remain without a constitution, because the constitution is something more than a sheet of paper, it is the law that has deeper roots than any other law, custom, principle or statute. See Ferdinand Lassalle, ‘Über Verfassungswesen’. Quoted in Vinx, L. (2021). *Hans Kelsen and the material constitution of democracy*, 466-490.

¹⁸ The author who has studied the relationship between platformization and globalization is Dal Jong Jin. See Jin, D. J. (2019). *Globalization and Media in the Digital Platform Age*; Jin, D. J. (2015). *Digital Platforms, Imperialism and Political Culture*.

¹⁹ Harold Berman noted that the term ‘constitutionalism’ was invented around the threshold of the nineteenth century ‘to refer chiefly to the American doctrine of supremacy of the written constitution over enacted laws’. Berman, H. (1983). *Law and Revolution*, 396; Loughlin points out the differences between the Constitution and constitutionalism as a political theory. The latter “was developed as part of a liberal philosophy to guide the formation of modern constitutions” and predicated “an arrangement of limited government constructed by free, equal, rights-bearing individuals”. As such, constitutionalism reflects the concerns of a particular time, place, and social situation; furthermore, already with the emergence of welfare-regulatory states during the twentieth century, it was often claimed that constitutionalism no longer carried much purchase”. Loughlin, M. (2010). *What is Constitutionalization?*, 59.

²⁰ Suzor, N. (2018). *Digital Constitutionalism: Using the Rule of Law to Evaluate the Legitimacy of Governance by Platforms*, 9.

procedures within appropriate limits”²¹. Suzor’s project of digital constitutionalism is articulated in three parts. First, a governance limited by law, which is now lacking Terms of Services, like constitutions, are documents that grant powers, but unlike them but they don’t regulate the ways they are exercised²². Second, the rule of law is based on principles such as equality and predictability, which is challenged by the constant changes in platform policies and by the power of curation and moderation to terminate users’ accounts and remove contents, resulting in “the arbitrariness, or perceived arbitrariness, of the way that platforms make decisions is a key source of anxiety around governance”. Finally, the third component of the rule of law according to Suzor is due process, understood as “some mechanism to resolve disputes”, which he sees as characterized by the existence of valid criteria and processes before a regulatory decision is made, and the existence of some avenue of appeal and independent review for those affected²³. To a good extent, these points are addressed by new the European regulation of the DSA and DMA²⁴.

However, as pointed out by legal scholar Edoardo Celeste, the discourse of digital constitutionalism is far being united. The term “has been used with different and sometimes conflicting meanings, apparently without reaching any agreement on what its scope is and on which normative instruments should implement its values²⁵”. At first, it had been called “informational constitutionalism” whose aim was to find a “mixed governance structure combining private sector’s self-regulation and public institutions’ oversight”. In another context, Vagias Karavas used the term to refer to the german judicial process to constitutionalize the ‘virtual’ environment²⁶. Other authors such as Redeker, Gasser and Gill, and used the term in the narrow sense of an ‘Internet bill of rights’²⁷. Consequently, for Celeste digital constitutionalism should be understood broadly as one of our ‘keywords’: a set of principles and values that informs, guides, and determines a set of normative counteractions for the balancing of power in

²¹ Suzor, N. (2018). *Digital Constitutionalism*, 5.

²² “Essentially, providers have control over the code that creates the platform, allowing them to exercise absolute power within the community itself. The exercise of this power is limited by the market and by emergent social norms, but it is barely limited by law”. Suzor, N. (2018). *Digital Constitutionalism: Using the Rule of Law to Evaluate the Legitimacy of Governance by Platforms*, 5.

²³ Ivi, 9.

²⁴ Suzor, N. (2018). *Digital Constitutionalism: Using the Rule of Law to Evaluate the Legitimacy of Governance by Platforms*, 7. The EU has worked on stabilizing what we could call, sociologically, the structures of expectations of the complementors and users by introducing some rules of due process.

²⁵ Celeste, E. (2019). *Digital constitutionalism: a new systematic theorization*, 77.

²⁶ Karavas, V. (2010). *Governance of Virtual Worlds and the Quest for a Digital Constitution*.

²⁷ Redeker, D. et al (2018). *Towards Digital Constitutionalism? Mapping Attempts to Craft an Internet Bill of Rights*. The authors claimed debate that the international law provided traditional individual-rights framework is no longer sufficient when dealing with current systemic issues such as international surveillance. Celeste summarizes the differences as follows: “Fitzgerald entrusts a constitutionalizing role to private law, Berman to constitutional law, Suzor to a private law informed by the principles of constitutional law, Karavas to norms produced by private actors, and finally Redeker, Gill and Gasser to the documents of Internet bill of rights” (p. 87).

the digital environment²⁸. In this sense, digital constitutionalism is seen as an answer to the “alterations of the constitutional equilibrium that are produced by the advent of digital technology”, but it also provides the ideals, values and principles that guide such counteractions²⁹. This resonates with the ideas of Giovanni De Gregorio, for whom the primary challenge for constitutional law in the algorithmic society is not “to regulate technology but to address the threats coming from the rise of unaccountable transnational private powers, whose global effects increasingly produce local challenges for constitutional democracies”³⁰.

In any case, at least digital constitutionalism did not remain a mere academic abstraction. For instance, Oreste Pollicino has investigated the consequences on the case law and judicial dialogue of the European courts - the Court of Justice of European Union (CJEU) and European Court of Human Rights (ECtHR) - by comparing it with the American courts. Pollicino found out that European judges have been involved in much stronger judicial activism in comparison to the American colleagues, with courts willing to go beyond the limits of interpretation and to give birth to “a sort of super fundamental right to privacy online” while also broadening the territorial scope of that right³¹. For Pollicino, courts, and not politics, are best equipped to deal with the challenges of digital technologies, and judicial activism can play a critical role in the information society as a solution to legislative inertia:

judicial power has moved from being the ‘weak link’ in the chain to become the strong one. Judge-made law seems to be better placed than legislative or administrative acts, in terms of flexibility and its pragmatic approach, to face the challenge of legal systems as they become increasingly more interdependent, while subject to constant and unforeseen transformation. To put it blandly, global governance seems to prefer the language of the ‘law in action’ rather than the ink of the ‘law in the books’³².

Since digital platforms exercise administrative powers that are normally vested in public authorities, Pollicino suggests, on the one hand, to apply existing instruments to digital challenges in the sense of the horizontal application of fundamental rights vis-^o

²⁸ Celeste, E. (2019). *Digital constitutionalism: a new systematic theorization*, 87.

²⁹ Ivi, 81.

³⁰ De Gregorio, G. (2022). *Digital Constitutionalism in Europe*, 3. This is reinforced by the lack of democratic participation and representation in the design of the digital technology in determining the rules governing their community and oversight on the exercise of private powers: a challenge to one of the pillars of democratic systems, namely “making laws chosen by the people” (19-20).

³¹ Pollicino, O. (2021) *Judicial Protection of Fundamental Rights on the Internet: A Road Towards Digital Constitutionalism?* 183.

³² Ivi, 190.

à-vis private parties³³; on the other hand, he advocates for the creation of new rights, which is, rethinking legal categories by providing new substantive and procedural safeguards³⁴.

This brief overview already shows that the digital constitutionalism discourse lacks a normative coherence. Roisin Costello has shown it clearly, contending that digital constitutionalism often conflates the practical realities of existing contractual governance models with the superficial appeal of constitutional structures³⁵. If by digital constitutionalism is meant the regulatory conduct of private actors in digital spaces, the label would not possess the normative or structural characteristics that would justify calling it ‘constitutionalism’. For Costello, this is particularly true when platforms themselves declare that their changes are part of a process of constitutionalization, which is actually the emergence of ‘private policy’ architectures; despite this invocation of constitutional values in the form of fundamental rights standards, the accounts grouped under the heading of digital constitutionalism to date “are notable for their failure to satisfy the other criteria that form the normative core of constitutionalism³⁶”. The problem here is that of distinguishing a norm as having or not having a constitutional nature. On the matter, sociologist of law Ghunter Teubner has developed its own ‘quality test’ that deals with several criteria: the *constitutional functions* of the norm; *the constitutional arenas* in which it operates; *the constitutional processes* of which it is part, and finally its *constitutional structures*³⁷.

Digital constitutionalism therefore is another umbrella term or keyword. The terms point out a preoccupation for the effective protection of fundamental rights to and balance of powers in a private and/or public platformed environments. According to Costello, however, the accounts of digital constitutionalism “seek to capitalize on that association with legitimacy but without engaging in an in-depth analysis of precisely why such legitimacy is present within the proposed (or actual) governance structures”. While adherence to broad fundamental rights standards or the requirements of the rule of law goes a significant distance towards ensuring this, they do not impose broadly structural restraints on the power of the central authority, nor do they provide

³³ An example is the creation of the concept of *Drittwirkung* by in the 1950s by the German Constitutional Court. According to it, an individual plaintiff can rely on a national Bill of Rights to sue another private individual alleging the violation of those rights – a form of horizontality in action. This concept has been exerting a strong influence even on the case law of the CJEU and ECtHR. See Pollicino, O. (2021), 203.

³⁴ Pollicino, O. (2021). *Judicial Protection of Fundamental Rights on the Internet: A Road Towards Digital Constitutionalism?* 200. The procedural safeguards may very well include “those situations in which powers are vested in private bodies charged with the performance of certain public functions” (p. 106). Pollicino adds that “while substantive rights concern the status of individuals as subjects of a kind of sovereign power that is no longer exclusively vested in public authorities, procedural rights stem from the expectation that individuals have to claim and enforce their rights before bodies other than traditional jurisdictional bodies, which employ methods different from judicial discretion, such as technological and horizontal due process”. (p. 204-205).

³⁵ Costello, R. (2023). *Faux ami? Interrogating the normative coherence of ‘digital constitutionalism’*, 1.

³⁶ Ivi, 11.

³⁷ Teubner, G. (2013). *The Project of Constitutional sociology*.

rules that compel the central authority to abide by these restraints into the future or that enforce compliance³⁸.

Hence, digital constitutionalism seems to have a double nature: the first, in continuity with global constitutionalism, has recognized the fragmentation of the traditional sovereignty and associated social orders that once informed the law” and therefore aims to integrate private actors “into a more broadly drawn conception of the sovereign or Republican constitutional project in order to ensure the values of that project emanate into areas in which the traditional state enjoys some control”³⁹. The second, cyberlibertarian nature of digital constitutionalism, views “digital spaces as distinct jurisdictional areas with sovereigns of their own, whose regulatory choices act as equivalent systems to traditional state-led constitutional models but may be influenced to echo the values and principles of traditional constitutionalism within the confines of their private spaces”⁴⁰.

5.3 Constitutionalism and constitutionalization

If digital constitutionalism only agrees on the imbalance of powers in the digital environment, but the normative positions of the various authors diverge significantly, the normative proposals often converge in the need to constitutionalize platforms⁴¹. Hence, before digging into how these normative proposals can take form, it is necessary to briefly reflect on the developments of constitutionalization *tout court*, as the necessity to extend constitutionalism to the transnational legal order and into the private sector.

According to Anne Peters, constitutionalization can be defined as the “evolution from an international order based on some organizing principles, such as state sovereignty and consensualism, to an international legal order which acknowledges and has creatively appropriated principles and values of constitutionalism”⁴². It was who Martin Loughlin focused on the modern use of the word constitutionalization and on its prominence. For him, after the realization that the activity of governing is increasingly being exercised through transnational or international arrangements that are not easily susceptible to the controls of national

³⁸ Ivi, 14.

³⁹ Ivi, 7.

⁴⁰ Ibidem. What is, then, the “normative core” of constitutionalism? For Costello, some minimum requirements are: first, structural restraints on the power of the central authority (whether this is the State or a private actor); second, binding rules that compel the central authority to abide by these restraints and that enforce compliance where necessary, ensuring minimal accountability; third, a minimum requirement that the rules promulgated by the central authority are clear, accessible, prospective and enforced in a non-arbitrary manner; fourth, that the subjects (citizens in a state-bound model, or users in a digital model) are entitled, as of right, to rely on the central authority’s ongoing compliance with those rules in place, and to challenge the authority where such compliance is absent.

⁴¹ See the work of Celeste, E. (2021). *The Constitutionalization of the Digital Ecosystem: Lessons from International Law*.

⁴² Peters, A. (2015). *Global Constitutionalism*, 2.

constitutions, constitutionalization has become “the attempt to subject the exercise of all types of public power, whatever the medium of its exercise, to the discipline of constitutional procedures and norms”.⁴³ This depends on the fact that the function of modern constitutions and of constitutionalization is at the same time *instrumental* – giving guidance for the future by establishing the authoritative modes of collective decision-making of a nation - and *symbolic*, providing a point of unity: “the constitution must operate in such a way as to bolster the established order of things”⁴⁴. However, for Loughlin, the role of contemporary constitutionalism has changed from its origin. Constitutionalism turned from an “evocative but vague theory which expresses a belief in the importance of limited, accountable government to be applied flexibly to the peculiar circumstances of particular regimes”, to a “meta-theory which establishes the authoritative standards of legitimacy for the exercise of public power wherever it is located”⁴⁵. The constitution, in this sense, is not a text but a set of rational principles with universal validity. Since the reference is not anymore to a written constitution, constitutionalism has been criticized on the basis of several arguments⁴⁶.

Moreover, Loughlin has identified two main forms of constitutionalization that he sees partially as a consequence of its supranational aspects. In the first form, constitutionalization aims to “reform the basis on which various supra or transnational bodies currently operate”. Some examples are the debate on the constitutionalization of the World Trade Organization⁴⁷, which Teubner sees as the existence of a *transnational regulatory regime*, i.e. autonomous legal orders at the global level without jurisdictional constraints which constitutes a new differentiation not based on nation-states⁴⁸. The existence of these regimes created problems for constitutional theory, as they lead to abandoning the assumption “that law derives its validity exclusively from processes of law-making initiated by the state, that law, to qualify as such, must either be derived from its well-known internal sources or from officially sanctioned international

⁴³ Loughlin, M. (2010). *What is Constitutionalization?*, 47. The old meaning of constitution, to be found for example in Burke: “The ancient sense of the constitution treats the state as an organic entity. Just as the body has a constitution, so too does the body politic. Drawing on this metaphor, the ancient idea of the constitution expressed the health and strength of the nation, and the constitution evolved as the nation itself increased in vitality” (p. 48); instead, modern constitutions are written documents that establish the “main institutions of government, enumerating their powers, and specifying the norms that would regulate their relations”.

⁴⁴ Loughlin, M. (2010). *What is Constitutionalization?*, 52.

⁴⁵ Ivi, 61.

⁴⁶ First, critics claim it is an academic or at best a judicial undemocratic artifact, since constitutionalization is not driven by governments and international treaties. Second, constitutionalization in international law would be intrinsically impossible due to the lack of global governance institutions. Third, critics pointed out that the principles heralded by constitutionalization are too general and imprecise to solve any concrete political problem or to guide legal reform. Finally, constitutionalization has been criticized on the base of being an imperialistic imposition from some groups to others. Peters, A. (2015). *Global Constitutionalism*, 2 - 3.

⁴⁷ See Klabbers, J., Peters, A. & Ulfstein, G. (2009). *The Constitutionalization of International Law*.

⁴⁸ Teubner, G. (2013). *The Project of Constitutional Sociology*, 331.

sources". Like for the 'platform sovereignty' these regimes imply going beyond the "political principle of territoriality", into a "relatively autonomous national legal orders" "which defines the external reach of their jurisdiction along issue specific rather than territorial boundaries"⁴⁹. The second form of constitutionalization is the one that I see closer to the project of digital constitutionalism to redirect platformization. According to this position, the emergence of networks of transnational governance has eroded the foundational elements of modern constitutions, thereby undermining their authority. It is therefore argued for the need "to reconfigure the basis of constitutionalism in the light of late modern conditions, for instance, as "multi-level constitutionalism"⁵⁰. The advocates of multi-level constitutionalism highlight that at the domestic level, non-governmental actors are now exercising governmental tasks, and therefore that state constitutions can no longer regulate the totality of governance in a comprehensive way. For Teubner, that meant a shift in regulatory competencies that is both vertical - from nation-states to international regimes – and horizontal - from states to non-public actors as transnational companies and collective actors in civil society⁵¹. He identifies many areas involved in the evolution of constitutionalization: transnational human rights protections; the global economic constitution; transnational regime constitutions; the *lex mercatoria*; the so-called "corporate constitutionalism"; global administrative law; finally, the constitutionalization of international law⁵².

As to platformization, we have seen how governance by platforms is given as a starting point of the debate⁵³. Platformization can be seen as further confirming and reinforcing the conclusions of the advocates of the constitutionalization of corporations, but this time adding another layer of complexity regarding the design of the platform infrastructure. As such, I fundamentally agree with the new constitutional question asked by Gunther Teubner, which creates new problems for legal theory, by adding platformization to the other processes of privatization and globalization:

how is constitutional theory to respond to the challenges arising from these two major trends of privatization and globalization? This is what today's 'constitutional question' ought

⁴⁹ Ibidem.

⁵⁰ Loughlin, M. (2010). *What is Constitutionalization?*, 63-64. The best example of multi-level constitutionalism is the European Union itself. See Tuori, K. (2015) *European Constitutionalism*.

⁵¹ Teubner, G. (2013). *The Project of Constitutional Sociology*.

⁵² Ibidem. On the *lex mercatoria* see Berger, K. P. (2017). *The lex mercatoria as a legal system*.

⁵³ Gillespie, T. (2017). *Governance of and by platforms*; Lynskey (2017) *Regulation by Platforms: the Impact on Fundamental Rights*, 83-98, in Belli, L. & Zingales, N. (2017). *Platform Regulations: How Platforms are Regulated and How They Regulate Us*. See also all the debates that I reconstructed on algorithmic management and automated management.

to be. Today's constitutionalism moves beyond the nation state. It does so in a double sense: constitutionalism moves into the transnational context and into the private sector⁵⁴.

It is clear that the question about the horizontal effects of fundamental rights – whether the obligations can be imposed also to ‘private governments’ - acquires much more dramatic dimensions in the transnational sphere than it ever possessed in the nation-state context⁵⁵. As such, the conclusions of Teubner regarding the preeminence of Google as international corporations are relevant here. For the German sociologist, the advent of Google – what I refer to as platformization – is not only a matter of regulation in the sense of trying to influence the actor's behavior externally. Instead, it is a constitutional question in the sense of changing the internal structures of platform corporations as collective actors⁵⁶. I believe that digital constitutionalism is not immune to the critiques of global constitutionalism identified above, as it presents both elements of continuities and discontinuities with global constitutionalism. In a first sense, global and digital constitutionalism are linked by the fact that both put the traditional concept of sovereignty and its territorial dimension out of play. Moreover, digital constitutionalism is by default global in several senses: the necessary focus on the transactional character of platform corporations; the need for constitutionalization as a normative reaction to the new imbalances of power; the inclusion of legal sources other than the state; and finally, the problem of limitations of private powers notwithstanding the polycentric nature of global governance institutions. As we have seen, however, with respect to the fragmented network of corporations analyzed by global constitutionalism, platform corporations do have a centralized exercise of power, something that can be the object of political intervention.

5.4 Operationalizing the constitutionalization of platforms

5.4.1 Institutional changes

At the end of the present manuscript, I would like to review some of the proposals that have been made for the effective protection of fundamental rights in Europe *vis a vis* platformization and put forward my speculative proposals. These proposals are of theoretical nature, but they can ideally be operationalized in European context. They basically aimed at strengthening the

⁵⁴ Teubner, G. (2010). *Fragmented Foundations: Societal Constitutionalism beyond the Nation State*, 328.

⁵⁵ Teubner, G. (2010). *Fragmented Foundations: Societal Constitutionalism beyond the Nation State*, 327. On the matter see also Frantziou, E. (2019). *The Horizontal Effect of Fundamental Rights in the European Union: A Constitutional Analysis*; Callamard, A. (2019). *The Human Rights Obligations of Non-State Actors*, in Jørgensen, R. F. (eds) (2019). *Human Rights in the Age of Platforms*.

⁵⁶ Teubner, G. (2013). *The Project of Constitutional Sociology: Irritating Nation State Constitutionalism*, 44. “In the case of Google, a constitutional change would imply a ‘division of powers’, dividing the ‘software provision’ from the ‘service provision’ and subjecting them to different legal regimes”. The aspects identified by the functionalist analysis of Teubner are the *rationality conflicts in a polycentric global society*, where the functional differentiation of several global subsystems that operate autonomously and maximize their own rationality represent collisions of institutionalized rationalities (p. 330).

activities of the two non-business actors of the multistakeholder model, namely civil society and public European institutions⁵⁷. To a large extent, it seems clear that these proposals imply nothing less than a redesign of the European institutional system. This is something advocated, in a completely different spatial and temporal context, by Stafford Beer: his drastic conclusion was that the old institutional system for the printing press was simply incompatible with the new organizational capabilities of computers⁵⁸. Even if the best level to tackle the problem is undoubtedly the global one – it is, in the end, a problem of *geodesign*⁵⁹ - at the European level a legitimate form of platformization could require a new set of multistakeholder negotiations⁶⁰.

The need to undertake an exercise of institutional design engaged with the logics of dematerialization, datafication, and platformization is also the conclusion of legal scholar Julie Cohen. In particular, Cohen has suggested three kinds of institutional changes for the protection of fundamental rights in the platformed environment. The first one deals with the goals of fundamental rights protection. If modernity built a space of freedom and praised private entrepreneurship, now the role of institutions in recognizing and enforcing fundamental rights is to counterbalance private economic power rather than reinforce it⁶¹. Second, Cohen points out the need for new modalities for oversight and enforcement that harness informational resources and tools without falling into managerialist traps, with steps that are both conceptual and institutional (“it will also require new methods of administrative oversight and new thinking

⁵⁷ Multistakeholderism is an evolution of the concept of stockholderism aimed at restructuring the global governance model that emerged after the second world war. In parallel, the concept of “Corporate Social Responsibility” was developed for the idea that profit is the only goal of the firm. For a proposition of Corporate Social Responsibility in the context of platforms see Helberger, N.; Pierson, J.; Poell, T. (2018). *Governing Online Platforms: From contested to cooperative responsibility*.

⁵⁸ And therefore computers, screens, and feedbacks between the government and the people ought to be used to invent new institutions, now understood as dynamic systems. This is explained in the set of lectures given by Stafford Beer in 1970 entitled *Designing Freedom*: “In order to get rid of the concept of an institution as a fixed entity, we have to get rid of the classical picture of its organization. You know how this looks. The institution’s activity is divided into chunks, which are also perceived as entities; these chunks are divided into smaller chunks, and so on.” Stafford Beer also suggested new methods to reduce the variety of institutions and create what he called the *Liberty Machine*. We have seen in chapter 1 how Beer, starting from an individualistic point of view, understood freedom as a “computable function of effectiveness”, something that makes sense only if compared with the degree of individual freedom of other systems. See Vickers, G. (1970). *Freedom in a Rocking Boat*, 5.

⁵⁹ Bratton, B. (2015). *The Stack*. According to the systemic analysis of Guimares, the structural coupling between law and politics at the supranational level works “to limit the range of action of Member States in the regulation of the single market without providing the EU institutions with the legitimacy and adequate powers to compensate this loss of public regulatory capacity. While freedom of contract, property rights and competition acquire a sort of constitutional status due to the primacy of EU economic law over national law, the historically very important issue of taxation is only addressed at the supranational level when it comes to removing the obstacles to economic integration. To a certain extent, the constitutionalization of markets outpaces the constitutionalization of politics”. Guimaraes, G. (2019). *Transnational Constitutionalism, Google and the European Union*.

⁶⁰ That is what follows, in practice, from my analysis together with the Amsterdam proposals. See van Dijck, J. et al (2018). *The Platform Society*.

⁶¹ Cohen, J. (2019). *Between Truth and Power*, 267. For a critique of the contemporary system of fundamental rights see the book of Moyn, S. (2019). *Not Enough: Human Rights in an Unequal World*.

about the appropriate relationship(s) between administrators and courts”)⁶². Third, Cohen suggests paying more careful attention to the policy by infrastructure and technological management, which is to say the mechanisms of network and standard-based transnational governance and particularly to the ways that powerful state and for-profit actors have exploited those mechanisms for their own benefit⁶³.

A second institutional proposal comes from Annabelle Gawer and Nick Snircek in their role of experts advising the Commission on the societal and economic effects of platforms. For the authors – who represent the managerial view and the politico-economic view of platforms – the new rule for the platform economy will need to “combine ex-ante robust yet flexible regulation, stronger ex-post enforcement, and enrolling the active participation of online platform firms and their ecosystem members⁶⁴. The authors have recommended that the regulation of platforms should institutionalize a robust and adaptive set of enforcement mechanisms and recommended to change the internal composition of the European Commission to establish three new institutions:

(1) a Platform Compliance Unit (PCU) in DG CONNECT that would be in charge of new and platform-specific regulatory obligations. It would be formed to be competent for the ex-ante regulation of platforms, for monitoring platforms, and for issuing compliance orders as well as forward-looking guidance;

(2) an Early Alert Unit (EAU) in DG COMP would have to investigate cases where platform-led 'unnatural tipping' of a market is suspected of developing, and the 'Platform Compliance Unit' would ensure swift compliance in case of evidence of platforms contravening the rules;

(3) a Platform Complaint Panel (PCP) in DG COMP would act as an adjudicator of private complaints⁶⁵.

Conceded that my proposal is located at a high level of abstraction, I suggest a program of reforms composed of two distinct but interrelated interventions.

5.4.2 *Habeas Infrastructura?* The right to the digital infrastructure in the Chart of Fundamental Rights of the EU

The first proposal is of theoretical nature, and I see it as an update of the proposals for a constitution of the Internet to the new platformed environment⁶⁶. Throughout the manuscript, I

⁶² Ibidem.

⁶³ Ibidem.

⁶⁴ Gawer, A. & Snircek, N. (2021). *Online platforms: economic and societal effects*, VII.

⁶⁵ Ibidem. The Commission is organised into policy departments, known as Directorates-General (DGs), which are responsible for different policy areas. DGs develop, implement and manage EU policy, law, and funding programmes. See https://commission.europa.eu/about-european-commission/organisational-structure/how-commission-organised_en

have tried to argue for the importance of understanding platforms as infrastructures of society with a prominent common role⁶⁷. In the third chapter, we have seen how the legal system was loosely equipped to react to platformization with the right timing and instruments. Here I have suggested that at the national and European levels, platformization should be framed as a constitutional issue: as the digital transition continues, the digital infrastructure becomes the *precondition for the exercise of every other right*. But the meaning of the ‘right to have rights’ in the platform society passes through infrastructure design and ownership. It is not a problem of regulation in the sense of changing the behavior of people; the protection of fundamental rights needs a space designed for rights to be protected, and the legal discourse tends to consider space live *a priori* already given and neutral. However, political ecology has shown the need for a co-implication of spaces and norms towards a “constitutionalization of space”⁶⁸. For legal scholar Stefano Rodotà, the rise of the Internet meant a theoretical shift from the *Habeas Corpus* what was called the *Habeas Data*⁶⁹ – the right to informational self-determination. I would instead call *Habeas Infrastructura* the right to a common digital infrastructure⁷⁰. For this reason, the first proposal is to update the Chart of Fundamental Rights of the European Union to include two

⁶⁶ Rodotà, S. (2012) *Il diritto di avere diritti*, who borrowed the formulation from Hannah Arendt; Rodotà, S. (2010). *Una costituzione per Internet?*

⁶⁷ These kinds of platforms in fact elude the public-private dichotomy. If we look at the etymology of the word public retains a double meaning, as both the opposite of private (it is the case of the traditional distinction of *ius publicum* and *ius privatum*) and of secret (and in this sense public means "manifest," "plain," or "visible"). Democracy theorist Norberto Bobbio even gave a definition of democracy in relation to visibility as “the rule of public government in public”. See Bobbio, N. (1982). *Democracy and Invisible Government*; Pinelli, C. (2016). *Global Financial Oligarchies, National Democracies and the Dichotomy Public/Private: Some Considerations for Jurists*. On public infrastructures see Collier, S., Mizes, C., & von Schnitzler, A. (2016). *Preface: public infrastructures/infrastructural publics*.

⁶⁸ Capone, N. (2020). *Lo Spazio e la Norma: per un’ecologia politica del diritto*, especially chapter 4, 84 – 111, rightly focuses on the notion of “constitutionalization of space”, a paradigm shift that lays the foundations for overcoming those practical representations of space that understand the territory of the state as an *object of property*. Space becomes historically substantiated, since in the positivistic-naturalistic conception space had been “rendered empty and formless and reduced, together with time, to a pure categorical form, useful for the effectiveness of the norm, which always needs to be determined in a space-time dimension for be applied and performed”. (88, translation mine). Capra, F. & Mattei, U. (2015). *The Ecology of Law: Toward a Legal System in Tune with Nature and Community*. On the relationship between space and the law see Burchardt, D. (2022). *The concept of legal space: a topological approach to addressing multiple legalities*.

⁶⁹ The *Habeas Corpus* was a writ of the common law tradition, already present in the 12th century, through which a person could report unlawful imprisonment to a court; the custodian would have to declare on what day and for what cause he was arrested. When Stefano Rodotà proposed an *Internet Bills of Rights* – an idea later developed by Tim Berners-Lee – he was aiming for a *Habeas Data*: a right to informational self-determination. Rodotà, S. (2010). *Una costituzione per Internet?* Where one can read that “the reference to fundamental rights and freedoms, in the new context identified as the internet, requires a re-reading of the set of rights elaborated by the whole of constitutional modernity”. (p. 348, translation mine). In a post-national constellation, where the global government seems a mirage, it is precisely the institutional form fit for network exploitation – the platform - that constitutes such exercise of power.

⁷⁰ See Cristofari, G. (2023). *The Politics of Platformization*, 42, in the interview with Niels Van Doorn, *The Political Economy of Democratic Platformization*. See Hanna, T. M. et al (2020). *Democratic Digital Infrastructure*. Coccoli, L. (Eds) (2013). *Omnia Sunt Communia: il dibattito internazionale su commons e beni comuni*; Bauwens, M., Kostakis, V., & Pazaitis, A. (2019). *Peer to Peer: The Commons Manifesto*; Jiménez, A. C. (2014). *The right to infrastructure: a prototype for open source urbanism*.

provisions, the first one being such right to a common digital infrastructure. I believe that such right needs to be recognized via legal instruments in both a formal and abstract way to overcome the sectorial limitations of the various subfields of the law. However, since it is of no use to write things on paper without creating the mechanisms for translating them into the “material constitution”, the second provision of such a new article would have to focus on the possibility to *contest the legitimacy of the design of the infrastructure in evolutionary terms*. For it is clear that if some new rules are to be agreed upon, that should be done in evolutionary terms: it is about changing the legal system’s internal structures to cope with unforeseeable future changes. It is about giving the legal systems the instruments to identify platformization as legal communication, to transform a political problem into a legal one.

As shown in the analysis of the software-driven material existence of the law in chapter 3, when a new communication media (such as computers) emerges, the legal system, that normally allows “the reaction of society to unforeseen situations that lead to disruption (i.e., to contradiction and conflict), despite lacking complete knowledge of all the factors involved”⁷¹ cannot help itself without engaging in judicial activism willing to go beyond the interpretation of the norms. Consequently, the second point I would like to make is the importance to create new mechanisms of contestation of the legitimacy of infrastructure design at the European level⁷². Human rights are, in fact, an historical achievement: religious freedom is an effect of religious wars; civil liberties are an effect of the parliamentary fights against absolute sovereigns; political and social freedoms are the result of the worker’s movement and of the poor classes that fought for social assistance⁷³. Therefore, the creation of such a right could be the objective of a political revendication and operationalization. Finally, in putting forward such proposals which are limited to the European space, I do not intend to downplay the importance of the international level - the debate could be also linked to the development of similar ‘Ruggie principles’ for digital infrastructures in the United Nations⁷⁴ - but merely to recognize that a of platforms

⁷¹ Baraldi, C. et al (2021). *Unlocking Luhmann*, 127.

⁷² My approach is therefore different for the “right to lodge a complaint” of art. 53 of the DSA, which states: “recipients of the service and anybody, organization or association mandated to exercise the rights conferred by this Regulation on their behalf shall have the right to lodge a complaint against providers of intermediary services alleging an infringement of this Regulation with the Digital Services Coordinator of the Member State where the recipient of the service is located or established [...]” On the contestation of the digital infrastructure see Rone, J. (2022). *The politics of data infrastructures contestation: perspectives for future research*; Rone, J. (2023). *The shape of the cloud: contesting data centre construction in North Holland*.

⁷³ Bobbio, N. (1990). *L’età dei diritti*, 44-65. See also the work of Moyn, S. (2019). *Not Enough: Human Rights in an Unequal World* for a contextualization of the historical and political-economical limits of the human rights framework.

⁷⁴ The so-called Ruggie principles are the three UN Guiding Principles on Business and Human Rights. The three pillars as the responsibility to protect, the responsibility to respect, and access to redress, that brought to the creation of a Human Rights Impact Assessment. See the United Nations (2011). *Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy”*

constitutionalization should include a multi-stakeholder participation in the design of the infrastructures for data production.

5.4.3 New mechanisms for contesting the legitimacy of infrastructure design: analogies with environmental law

The operationalization of such a mechanism at the European level needs further analysis. Here the topic intersects with the problem of the *collective* dimension of data-driven harms, which has so far received less attention than the individual and society-wide ones, and on *collective action* as a means to access rights⁷⁵. To put it simply, the contestation of platformization needs to be linked to easier access to justice. At the European level, the protection of collective interests is still in a rudimentary state, but, at least, there are no obstacles to the introduction of mechanisms for their protection⁷⁶. The starting point is that, nowadays, the burden of contestation of the digital infrastructure is in practice left to the individual, for the benefit of data-processing organizations⁷⁷. As pointed out by Ausloos, Toh and Giannopoulou, collective action is understood in legal terms as the right to procedural class action and/or to the positive protection of a collective interest⁷⁸. With reference to the GDPR, researchers and strategic litigation have tried to use the right of access to break the information and power asymmetries, although with mixed results⁷⁹. Consequently, the enforcement of the GDPR turned out to be left to individuals:

big tech industry [is] setting the tone on how the law is interpreted and applied in practice, unsurprisingly much to their own benefit and satisfying perhaps only the minimum requirements and standards. Examples of this behavior range from problematic cookie-walls, to ignoring data subject rights, to vague and misleading privacy policies and much more. Combined with the general paralysis of enforcement agencies and the limited

Framework. Others, as Muldoon, J. (2022). *Platform Socialism*, have envisioned the creation of a Global Digital Service Organization working within the United Nations as a specialized agency, as well as a Global Wealth Fund. Muldoon also suggests combining the platform cooperative model with the resources and infrastructures available to municipalities, and public-common partnership (PCPs), which “allow local communities and municipal authorities to participate in a joint enterprise”.

⁷⁵ Ausloos, J., Toh, J. & Giannopoulou, A. (2022). *The case for collective action against the harms of data-driven technologies: to what extent are the GDPR's data rights an effective tool for enabling collective action?*

⁷⁶ See Nagy, C. I. (2019). *Collective Actions in Europe. A Comparative Study, Economic and Transsystemic Analysis*, 78.

⁷⁷ Ausloos, J. et al (2022). *The case for collective action against the harms of data-driven technologies and* Ausloos, J. et al (2022). *How the GDPR can exacerbate power asymmetries and collective data harms: Exploring how power asymmetries operate across the law and collective harms*.

⁷⁸ Ibidem.

⁷⁹ Mahieu, & Ausloos, J. (2020). *Recognizing and Enabling the Collective Dimension of the GDPR and the Right of Access*. On the topic see the report of the Irish Council for Civil Liberties ICCL (2021). *Europe's enforcement paralysis*.

resources of civil society, this effectively places on individuals, collectivized or not, the burden to go to court, as the GDPR's architecture of empowerment fails to do its job⁸⁰.

Privacy scholars have therefore concluded that the GDPR's goal of empowering citizens can only be fully realized when the collective dimensions of data subject rights are acknowledged and supported through proper enforcement⁸¹.

Hence, here I want to make some analogies with environmental law, a field that has been dealing with the problem of collective interests from early on. As a premise, we have to say that the difficulties to intervene on this topic largely depended on the transitional character as well as on the differences of national legal systems, and from the fact that collective interests do not find a place in the dichotomy between private and public law. To date, in fact, only seventeen member states of the EU have adopted instruments for collective redress⁸². At a legislative level, the relevant norms here are art. 19 TUE (which establishes the right to an effective remedy) and art. and art. 47 of the European Charter of Fundamental Rights. Art. 19, in explaining the composition and the functions of the Court of Justice of the European Union, is divided into two distinct but functionally linked provisions. The first reserves to the competence of the Member States the power to establish the judicial organization and to provide for the appropriate judicial remedies for the protection of the rights deriving from the supranational order. The second introduces a limitation on the exclusive exercise jurisdiction, citing a specification of the obligation to cooperate, by virtue of which such remedies must comply with the principle of effective protection. The Court of Justice has used the second part of this provision as a tool to verify the compliance of the judicial organization with the principles of the rule of law and to examine the effectiveness of the procedural remedies provided by national legal systems to the requirements of European Union law⁸³.

The matter also depends on an international convention from 1998, the Aarhus Convention⁸⁴, which deals with access to justice in environmental matters. The Aarhus Convention consists of

⁸⁰ Ausloos, J. et al (2022, 9 November). *How the GDPR can exacerbate power asymmetries and collective data harms: Exploring how power asymmetries operate across the law and collective harms*.

⁸¹ Mahieu, R. L. & Ausloos, J. (2020). *Harnessing the collective potential of GDPR access rights: towards an ecology of transparency*. See also the report submitted to the EU commission: Mahieu, R. L. & Ausloos, J. (2019). *Recognising and Enabling the Collective Dimension of the GDPR and the Right of Access: A call to support the governance structure of checks and balances for informational power asymmetries*.

⁸² Contaldi, G. (2020). *La tutela degli interessi collettivi nel diritto dell'Unione europea*.

⁸³ Contaldi, G. (2020). *La tutela degli interessi collettivi nel diritto dell'Unione europea*, 13-14 for case law.

⁸⁴ 'Convention On Access To Information, Public Participation In Decision-Making And Access To Justice In Environmental Matters', where one can read at art. 1: "In order to contribute to the protection of the right of every person of present and future generations to live in an environment adequate to his or her health and well-being, each Party shall guarantee the rights of access to information, public participation in

three functionally related parts: the first concerns access to information on environmental matters; the second concerns the participation of the community in the administrative procedures that allow for the achievement the adoption of relevant decisions; finally, the third concerns the appeal of the measures (or omissions) by public authorities⁸⁵. The text of the convention obliges states to introduce judicial remedies for each part. As shown by Contaldi, if the first two were implemented quickly, recognizing *locus standi* both to private citizens and associations that include among their purposes the protection of the environment, the third part – namely the possibility of bringing an appeal against a decision of public authorities – did not achieve the same standards. It is here necessary to distinguish between the situation in which the contested environmental measures are adopted by the European institutions from where they are issued by national authorities.

When it is about European institutions, one stumble upon the limitations of art. 263 TFEU, namely the absolute need to have a direct and individual concern to proceed against an act of the European institutions⁸⁶. Here the European Court of Justice reiterates that the Aarhus convention cannot be applied directly and have direct effects. Regarding national acts to be contested, the Court of Justice has a similar position, negating access to justice unless the national legislation itself attributes a real subjective right to the local community⁸⁷. The resulting scenario is one in which it is not possible to challenge the normative measures of the European institutions - even if the plaintiffs are in a given spatial relationship with the sources of pollution – but environmental NGOs may instead challenge measures taken by national authorities (or challenge their omissions) if such legitimacy can be derived from the specific provisions of the source legislation applicable from time to time.

One first, non-intrusive remedy for the legitimation of individuals would be the creation of a sort of Ombudsman for the digital infrastructure⁸⁸, to whom individuals could file complaints. Furthermore, in analogical terms to environmental matters, one could think of a similar international convention on the design of the digital infrastructure, this time with a specific provision for the legitimation of NGOs for the protection of fundamental rights in the digital

decision-making, and access to justice in environmental matters in accordance with the provisions of this Convention”.

⁸⁵ Contaldi, G. (2020). *La tutela degli interessi collettivi nel diritto dell'Unione europea*, 15.

⁸⁶ The extreme rigor of the case of the Court of Justice means that to date not even NGOs have a legitimation. According to art 263.4, “Any natural or legal person may, under the conditions laid down in the first and second paragraphs, institute proceedings against an act addressed to that person or which is of direct and individual concern to them, and against a regulatory act which is of direct concern to them and does not entail implementing measures”.

⁸⁷ Contaldi, G. (2020). *La tutela degli interessi collettivi nel diritto dell'Unione europea*, 18.

⁸⁸ The figure of Ombudsman is identified by art. 228 of the TFEU. It an inter-institutional body of the European Union that holds the institutions, bodies and agencies of the EU to account, and promotes good administration. Even if it has no direct power to enforce his requests, he can conduct investigations and make a special report to the European Parliament.

domain⁸⁹. Instead of being the generalist judge, here the European Court of Justice could act as the final adjudicator. In the first degree there could be a hybrid legal-political organ that could also take a form similar to a specialized agency such as a European Supervisory Authority. It could be called “European Platform Authority” (EPA). The EPA could be alerted by NGOs to carry out investigations and take precautionary measures in its domain and could act as an adjudicator regarding the legitimacy of the design of the infrastructure⁹⁰. As such, even if I recognize the solutions proposed by art. 41 of the DSA is innovative, the mechanism of European collaboration might prevent it to be effective⁹¹.

⁸⁹ I exclude here to use specialized tribunals as for art. 257 TFEU. The only specialized court to have been set up so far is the Civil Service Tribunal, which dealt with cases involving the EU institutions and its employees between 2005 and 2016. In 2016, this court was however dissolved and its responsibilities transferred back to the General Court as part of the reform of the judicial architecture of the EU.

⁹⁰ A sociological conception of legitimacy cannot be applied directly to the design of the infrastructure. Legitimacy in realist terms is understood as a degree of consensus in the population that allows to not rely on enforcement. Hence, the focus shifts to the processes of legitimation more than legitimacy tout court. [Levi, G. (2016). *Legittimità*, 499 -502]. However, a legal conception of legitimacy like the one discussed in relation to code by Diver, L. (2022). *Code and Law Rebooted* is not a solution either. See also Brownsowrd, R. (2022). *Rethinking Law, Regulation, and Technology*, 90-103. Legitimacy is also a theme in organizational studies, where it is seen by those who interpret organizations as discursive construction as something continuously negotiated and conferred to the organization by social actors, and by others as a potential objective of the organization subjected to Corporate Social Responsibility (CSR) in the creation of shared value. See Plesner, U. & Husted, E. (2020). *Digital organizing: revisiting themes in organization studies*, particularly chapter 8, *Legitimacy and transparency*, 232-233.

⁹¹ New institutional changes have been introduced with the DSA. In particular, each member state will have to identify one Digital Service Coordinator (DSC) “responsible for all matters relating to supervision and enforcement of this Regulation in that Member State” by 17 February 2024. The DSC is an independent and autonomous authority. Pursuant art. 51, the DSC has powers of investigation and enforcement. The need for a “Digital Platform Act” has been proposed also in US context by Feld, H. (2019). *The Case for the Digital Platform Act: Market Structure and Regulation of Digital Platforms*, especially 194 -200.

A renovation of democracy could have as its objective a pluralist management of the whole of the machinic constituents.

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7. Concluding remarks

In the present manuscript, I adopted an interdisciplinary approach to support the thesis that the digital platform as a new organizational form and platformization as a phenomenon pose new politico-legal challenges. Those challenges - similarly to global warming and climate change¹ - are present recursively at all scales: from the neighborhood to the city, from the state to the transnational level. They show that contemporary society is necessarily a “world society”, as Luhmann had it². Following Bratton, I believe that those technologies need to be thought of in *global* terms as a new geopolitics of computing technology: a planetary-scale computation of a that Bernard Stiegler understood as composed of “platforms for the computational synchronization of the masses through the aggregation of their traces”³. However, given the already broad topic under consideration and following a by now established trend of platform research on the regionalization of platform studies, I decided to limit my analysis to the geopolitical space of the European Union⁴. I, therefore, didn’t look at the elephant in the room: non-Western, in particular Chinese, platformization⁵.

After introducing platformization as the ‘organizational consequences of computation’, in the second chapter I tried to show that the platform - similarly to other useful abstractions such as

¹ See Vollmann W. T. (2018). *No Immediate Danger: carbon ideologies vol. 1*; Vollmann W. T. (2018). *No good alternative: carbon ideologies vol. 2*. Moore J. W. (2015). *Capitalism in the web of life: ecology and the accumulation of capital*.

² Luhmann, N. (2012). *Theory of Society*.

³ Stiegler, B. (2017). *Techniques and Time 4: Faculties and Functions of Noesis in the Post-Truth Age*, 295.

⁴ See the introduction for a discussion of the regionalization of platform studies.

⁵ Which is a pity, since it shows the other side of it. The Western debate is often culturally biased, depicting Chinese platformization *only* as an authoritarian world of total surveillance. What is true is that platforms are used to tackle the crisis of trust in Chinese society. On Chinese platformization and social control, see Strittmatter, K. (2022). *Stato di sorveglianza: la vita in Cina ai tempi del controllo di massa*; Zuboff, S. (2019). *The Age of Surveillance Capitalism*, 376 - 398; Pieranni, S. (2020). *Red Mirror*; Pieranni, S. (2021). *La Cina Nuova*; Steinberg, M., Mukherjee, R., & Punathambekar, A. (2022). *Media power in digital Asia: Super apps and megacorps*; Grimes, S. (2018). *Networking China: The digital transformation of the Chinese economy*. Lei, Y.-W. (2021). *Delivering Solidarity: Platform Architecture and Collective Contention in China's Platform Economy*. Plantin, J.C., & de Seta, G. (2019). *WeChat as Infrastructure: The Techno-Nationalist Shaping of Chinese Digital Platforms*; Jia, L., & Winseck, D. (2018). *The Political Economy of Chinese Internet Companies: Financialization, Concentration, and Capitalization*. de Kloet, J., Poell, T., Zeng, G., & Chow, Y.F. (2019). *The Platformization of Chinese Society: Infrastructure, Governance, and Practice*, Davis, M.; Xiao, J. (2021). *De-Westernizing Platform Studies: History and Logics of Chinese and U.S. Platforms*. I also excluded India, for which one can see Athique, A., & Parthasarathi, V. (2020). *Platform Capitalism in India*, and for Latin American countries, for which see the analysis of Reilly, K. (2020). *Platform developmentalism: leveraging platform innovation for national development in Latin America*.

the 'state' and the 'market' - is first of all a concept that, as such, is the result of a process of conceptualization. Hence, I reconstructed the genealogy of platform conceptualization in capitalist and socialist countries by analyzing the recent managerial discourse and by looking at the historical attempts to use computers in government from 1960 onwards. I showed that the platform genealogy is far from being limited to the American companies of the GAFAM, but it includes instead the work of Japanese managers, socialist cyberneticians and European economists. Behind the concept of the platform there is an *emergent* idea of value creation in an ecosystem that is not of linear but of circular nature⁶. Furthermore, I have shown that at a certain moment in the managerial discourse, a separation between the *platform* and the *firm* becomes necessary: platforms are not firms, but firms can organize themselves as platforms. What is at stake is a form of organization that overcomes the centralization and decentralization dichotomy in organization, something in between a market and a government: the platform centralizes data collection and political planning but decentralizes decision-making via a distribution of interfaces⁷.

In the third chapter, I conducted a review of literature reviews of what I identified as the six main fields involved in studying platformization in the last twenty years, each one with its own methodologies, vocabulary, and categories: management, software studies, political economy, infrastructure studies, urban studies, and organizational studies. The first tradition of platform research (3.2), management, was the starting point to understand the problems that managers needed and need to face when building a platform; the economic principles behind platformization; more generally, the roots of the management ideology and way of thinking⁸. I then focused on the software studies tradition of platform research (3.3). This tradition, besides furnishing quantitative analyses and mapping the data flows of digital platforms, provided the technical language for the political discussion of platform governance, with notions such as code, algorithms, reprogrammability, modularity, Application Program Interfaces, and Software Development Kits, among others. The third tradition that I examined is that of the political economy of platforms (3.4). These authors, usually Marxists, have explored the problem of the reconfiguration of labor brought by platformization: is communication labor? Furthermore, they singled out the conditions of exploitation of platform workers as well as of producers of services for the platform and their unprecedented condition of dependency towards it. By focusing on the production of value in the platform, they also hinted at the end of the salary institution and at

⁶ Emergent in the meaning given by complexity theories. See Maturana, H.; Varela, F. (1980). *Autopoiesis and Cognition: The Realization of the Living*; Capra, F., & Luisi, P. L. (2016). *The Systems View of Life*; Byrne D. S. & Callaghan G. (2023). *Complexity theory and the social sciences: the state of the art*.

⁷ See also the considerations of Nunes, R. (2021). *Neither Vertical nor Horizontal: A Theory of Political Organization*, Cp. 6.

⁸ In the sense of Boltanski, L., & Chiapello, E. (2017). *The New Spirit of Capitalism*.

the rise of platform capitalism, with privately owned infrastructural platforms that aim at consolidating their presence in more and more societal sectors. The fourth tradition that I examined (3.5) - infrastructure studies – showed how platforms need to be understood as special kinds of infrastructures. Following the mutual process of infrastructuralization of platforms and platformization of infrastructures⁹, I suggested that when a platform acquires infrastructural properties, it ought to be subjected to the rules for infrastructures, not for private companies. The fifth tradition that I analyzed is a branch of urban studies that now calls itself platform urbanism (3.6). I highlighted the attempts to overcome the corporate discourse around the ‘smart city’, the spatial and geographical dimensions of platforms, and the conflictual and productive relationship between the city and the platform model. Moreover, platform urbanism showed the fundamental architectural function of software in organizing social space. As Bratton wrote, nowadays society asks software what it used to ask architecture - the programmatic organization of social connection and disconnection of populations in space and time¹⁰. The sixth and final tradition that I examined is that of organizational studies (3.7). Starting from an analysis of other organizational forms as markets, hierarchies, and especially internet-enabled ‘networks’, I reviewed the current debate on the specificities of the platform’s form. Here I found that organizational sociologists start to agree on the novelty of the platform, which performs a governmental and managerial function without the existence of a formal delegation of authority¹¹, but not on how the platform works. Here I also described the EU attempt to institutionalize the platform model as a paradox that I have called the ‘paradox of platform institutionalization’. I concluded by reviewing the definitions, metaphors and categories of the digital platform, by describing the notion of platform governance and by proposing my understanding of the platform as a keyword, in line with system theory, as a recursive mechanism for the reduction of the complexity. Finally, I proposed my definition of the platform as a social system, and I highlighted that the notion of platformization could be the most useful conceptual and epistemological tool to carry out a socio-legal analysis of the legal system vis-a-vis computational technologies.

Chapter two and three allowed me to analyze the relationship between platformization and the European legal system from the constructivist perspective of system theory¹². Hence, in the fourth chapter, I focused on what I identified as three challenges for legal theory and practice in relation to platformization: the becoming-computational of the law; the limitations of an *ex-post*

⁹ Plantin, J. C. et al (2018). *Platform studies meet infrastructure studies in the age of Google and Facebook*

¹⁰ Bratton, B. (2015). *The Stack*, 43. And a software (political) *program* “is a set of instructions that a designer gives to computational systems with the intention of coordinating that system's internal and external interfaces in relation to itself, to compatible systems, and to Users”.

¹¹ Stark, D., & Pais, I. (2020). *Algorithmic Management in the Platform Economy*.

¹² Luhmann, N. (2012). *Theory of Society*.

regulatory framework; and the sovereignty of the platform as a regulator. I started to contextualize the shift of the ‘existence’ of the law as a written text to the existence of the law as a computational infrastructure that constitutes, paraphrasing Luhmann, the “catastrophe of computers”¹³ (4.1). Building on the work of Benjamin Bratton – who, in turn, reworked Carl Schmitt’s concept of *nomos* – and looking at authors such as Mireille Hildebrandt and Richard Brownsword, I reconstructed the debate on the ‘politics of artifacts’ to describe the clash between a legal normativity versus a technological or automated form of management where the posing of rules depends increasingly less on the “normative signals” of the law¹⁴. This modality of technological regulation is increasingly used in *governance by platforms*, but it is not recognized as legal communication by the legal system. I concluded by exploring the idea of legal protection by design in relation to the creation of a *legitimate* digital infrastructure. In the second part of the fourth chapter (4.2), I focused on the sub-systems of the law created after the industrial revolution to show what I historically interpret as the ‘cracking of the legal system’: the possibility to avoid and rewrite outdated legal categories meant at regulating corporate behavior that led to the unaccountability of platforms. I put forward the thesis that the legal system, which recognizes communication with its binary code legal/illegal, couldn’t fulfill its function of being the “immune system” of society¹⁵, with the consequences of systematic delusion of the citizens’ expectations¹⁶. Hence, I briefly analyzed fields such as privacy and data protection, antitrust, tax law, and administrative law to show the mutual irritation of these sub-systems: each one of them conclude that only serious reforms in other fields of law – reforms that would require political interventions – could tackle the limitations of their field. I claimed that this unaccountability of platforms needs to be understood historically as a process that further enhanced processes of privatization and globalization that were already ongoing for several decades¹⁷. In the third part of the fourth chapter (4.3), I focused on the *internal* dimension of the platform as an administrative system and proto-legal system that works

¹³ According to Dirk Baecker, Aristotle’s theory of forms can be interpreted as a reaction to the discovery of writing, while Descartes’ theory a reaction to the ‘catastrophe of printing’. The question is then whether Luhmann’s theory of forms could be interpreted as a reaction to the ‘catastrophe of computers’. See Baecker, D. (2006). *Niklas Luhmann in the Society of the Computer*.

¹⁴ Lucy, W. (2022). *The Death of Law: Another Obituary*.

¹⁵ See *supra* for Luhmann’s theory of the legal system.

¹⁶ For Bernard Stiegler, the question of law is the “question of the *regulation of relations between exosomatic organisms*, which I also call *exorganisms*, and which can be either *simple* or *complex*: psychic individuals in Simondon’s sense, citizens in the Greek sense and Users in Bratton’s sense all constitute simple exorganisms, while collective individuals, such as a professional body, a unit of production in Ure’s sense, a city, a nation or a platform, are all examples of complex exorganisms. Law is what governs the relations between simple exorganisms and complex exorganisms, and, secondarily, the relations between two or more complex exorganisms. In the epoch of the planetary exorganisms that platforms tend to form, however, this question is raised in completely new terms, as Bratton highlights”. Stiegler, B. (2018). *The Neganthropocene*, 133.

¹⁷ Piletić, A. (2023). *Continuity or change? Platforms and the hybridization of neoliberal institutional contexts*.

according to Terms of Services and infrastructure design, including digital right management, curation, moderation, regulation and enforcement. I explored the theorizations of this 'platform law' in which the platform is characterized by a quasi-sovereign power that lacks proper checks and balances. In this context, one may be tempted to accept the suggestions coming from legal pluralism, with many legislators and legal orders interacting on the same territory, and a principle-based regulation that is then integrated in real-time as technology evolves¹⁸.

From this notion of checks and balances, I set my analysis of the constitutional dimension of platformization in Europe (cp. 5) and I then proposed a speculative exercise of institutional imagination aimed at operationalizing the constitutionalization of platforms that encompass both the *internal* dimension of the platform as a social system (the platform as an environment for complementors and users) and the *external* one (the platform as a system in its environment). Starting from the findings of global constitutionalism, I investigated the academic attempts to theorize a constitutionalization of platforms under the label of "digital constitutionalism". I pointed out that the digital constitutionalism, similarly to what is auspicated by the advocates of global constitutionalism, suggests the need for a governance of platforms that goes both beyond the state (on a transnational level) and into the private sector (a constitutionalization of private companies)¹⁹. What is new is that the software infrastructure can be the object of a (more or less intentional) design project²⁰. Moreover, I contextualized the normative attempt to react to platformization carried out by the European Union in the forms of a new wave of European regulations: the General Data Protection Regulation, Digital Service Act, the Digital Market Act, the Platform Labor Directive, the Business to Platform Regulation, the Data Act, Data Governance Act and the Artificial Intelligence Act. Even if those regulations tackle urgent matters, they cannot address the structural problems of the platform economy. In particular, the DSA do solve some of the problems of platformization: it stabilizes the expectations of content creators and producers of services, it introduces some due process rules, it regulates out-of-court settlement, and it create stricter rules for very large platforms. Crucially, the DSA create a mechanism of coordination that, together with the observatory on the platform economy, will monitor the evolution of platformization. Nevertheless, those regulations will end up further institutionalizing existing platform models, and they fail to account for the infrastructural role of platforms. They create a paradoxical situation in which paper-based law institutionalizes the very infrastructures that takes its normative force out of the equation.

¹⁸ Berman, P.S. (2017). *The Evolution of Global Legal Pluralism*; Giudice M. (2014). *Global legal pluralism: what's law got to do with it?*; Davies G. T. & Avbelj, M. (Eds) (2018). *Research handbook on legal pluralism and EU law*.

¹⁹ Teubner, G. (2010). *Fragmented Foundations: Societal Constitutionalism beyond the Nation State*.

²⁰ Esterling, K.M. (2021). *Medium design: Knowing how to work on the world*; Latour, B. (2012). *A cautious Prometheus? A few steps toward a philosophy of design*.

7.1 The *nomos* of the Cloud? Platforms infrastructures and the space of fundamental rights

As a final remark I would propose a different understanding platform as infrastructures, one that is not tied to the existing European regulatory framework. I believe that computation and therefore platformization are neither private nor public because they are *more* than private and *more* than public in the sense of the ‘commons’²¹. The platform which has acquired infrastructural properties²², insofar as it coordinates social action, aggregates data of citizens, produces knowledge and turns users into the object of a permanent experiment for value creation should be considered a system for managing the commons, and thus a commons itself²³. Therefore, controlling the platform should not only be the goal of states or the EU institutions, but the platform model could become the very driver of social change²⁴. As Beer noted, we are starting to understand that the institutional system inherited by modernity, “a system originally designed to handle the output of a hundred quill pens”²⁵, could not really handle the shock of computation in time²⁶. The path of the ‘computer utility’ model had been explored by socialist countries like Chile and communist countries like the Soviet Union²⁷, but they had been abandoned²⁸. Those experiments in governance, with a great degree of imagination, asked the right question: now that computers are in place, how can we use them for govern *with* the people? In other terms, the socialist utopias asked the “why?” but not the “how?” for their large

²¹ See Capone, N. (2020). *Lo Spazio e la Norma: per una ecologia politica del diritto*, 110, for a legal contextualization of the commons paradigm beyond private property.

²² Hermes, S., Schreieck, M., & Thatcher, J. (2022). *Essential Platform Infrastructure and the Need for Regulation*. Busch, C. (2021). *Regulation of digital platforms as infrastructures for services of general interest*.

²³ This is the opposite of the “walled garden” and “platform-world” metaphor that I described in chapter two, and which can be understood as a “third enclosure movement”. See Boyle, J. (2003). *The Second Enclosure Movement and the Construction of the Public Domain*; Coccoli, L. (Eds) (2013). *Omnia Sunt Communia: il dibattito internazionale su commons e beni comuni*; Bauwens, M., Kostakis, V., & Pazaitis, A. (2019). *Peer to Peer: The Commons Manifesto*; TecnoPolítca (2020, May 14). *Data Commons Manifesto*. See my interview with Martijn De Waal, “*The Production of Public Values Through Digital Platforms*”, in Cristofari (2023). *The Politics of Platformization*. In a similar sense could point the potentialities of “platform welfare” and “platform cooperativism” that we have analyzed.

²⁴ This paradigm of the ‘civil economy’ is being explored in relation to companies by Zamagni, S., & Bruni, L. (2017). *Civil economy: another idea of the market*. It implies the creation of “benefit corporations” which are now legally recognized in the US and Italy. See Clark, H. W. et al (2013). *White Paper the Need and Rationale for the Benefit Corporation: Why It Is the Legal Form That Best Addresses the Needs of Social Entrepreneurs, Investors, and, Ultimately, the Public*.

²⁵ Beer, S. (1980). *Designing Freedom*. In Vickers, G. (1970). *Freedom in a Rocking Boat*.

²⁶ In this sense the EU initiatives to create the “EU Observatory on the Online Platform Economy” are interesting. See <https://digital-strategy.ec.europa.eu/en/policies/eu-observatory-online-platform-economy>.

²⁷ De Cindio, F. & De Michelis, G. (eds) (1980). *Il progetto Cybersyn: cibernetica per la democrazia*; Zolo, D. (1992). *Democracy and Complexity: A Realist Approach*; Mailland, J. & Driscoll, K. (2017). *Minitel: Welcome to the Internet*. On the Socrate and Iperbole project in Italy see Bory, P. (2020). *The Internet Myth: From the Internet Imaginary to Network Ideologies*.

²⁸ Gerovitch, S. (2002). *From Newspeak to Cyberspeak: A History of Soviet Cybernetics*. Medina, E. (2011). *Cybernetic revolutionaries: Technology and politics in Allende’s Chile*. Peters, B. (2016). *How Not to Network a Nation: The Uneasy History of the Soviet Internet*.

computer network projects, while the Western project of computerization as ARPANET asked the “how?” (packet-switching networks) but not the “why?” of modern networking²⁹. Nowadays, it is not only about coordinating social action via platforms, neither only the regulation of digital technologies, but that of redesigning the institutional system *for* and *with* computation - a very constitutional question. As Bernard Stiegler has put it, the problem is that of *organizing the inorganic*, as now there is a bad articulation between technology, psychic apparatuses (humans) and social apparatuses (social systems).

As for the governance, I have highlighted that the platform is, at the same time, a new organizational form, a new economic model of coordination, and a new form of governance. Those things must come together, in the sense of the embeddedness of ideology in organizational and institutional practices³⁰. Platform urbanists have shown the platform is a way to exercise government at the city level, while Tim O’Reilly has famously proposed to see the activity of the national government as a platform³¹. The project of the state apparatus, in fact, cannot ignore computation, but to a large extent such projects are mimicking the manipulative techniques that lead to the success of corporate platforms³². The ‘platformization of the state’ seems to be the next step. Given the extension of the term platform, it would be not surprising, and it would ignite old debates about the automation of public administration³³. One could say that the state, like the city, ‘has always been a platform’ connecting citizens and institutions while developing metrics to render them legible³⁴ and while providing order; in other words, while organizing. The point is that, on a fundamental level, computation has affected the way governance is exercised today³⁵. Organizing tax payments via an API is qualitatively different from organizing the same thing on paper: citizens need computational devices and data are produced. Those citizens, insofar as they communicate their presence via computational devices, are also users. And a “user” is not a juridical entity, but a *position within a system*: the relations of those users are organized and orchestrated cybernetically via standards and protocols³⁶. Those parameters required planning and need to be designed, and that design is constitutional question because legal and political at once and because it is involved in designing the

²⁹ Peters, B. (2016). *How Not to Network a Nation*, 200.

³⁰ In the sense of Boltanski, L., & Chiapello, E. (2017). *The New Spirit of Capitalism*.

³¹ O’Reilly, T. (2011). *Government as a Platform*. See also Pope, R. (2019). *Playbook: Government as a Platform*.

³² Cristofari, G. (2022). *Bratton and the Double Movement of State Platformization and Platform Institutionalization*.

³³ Losano, M. (1974). *Stato e Automazione. L’esempio del Giappone*. In Losano, M. (2022). *Scritti di informatica e diritto*.

³⁴ Scott, J. C. (1998). *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed*.

³⁵ Rouvroy, A.; Stiegler, B. (2016). *The Digital Regime of Truth: From the Algorithmic Governmentality to a New Rule of Law*; Bratton, B. (2015). *The Stack*.

³⁶ Rachlitz, K. (2023). *Platform Organising and Platform Organisations*.

paradoxical form for counterbalancing powers - the case is that for a legal protection by design³⁷. I have contended that some radical interventions in the legal system might be needed. My proposition (cp. 5) involves going beyond the *Habeas Data* to what I called *Habeas Infrastructura*: as the digital infrastructure becomes the condition of possibility for the exercise of every fundamental right, its protection needs to be explicitly recognized at a level that is both *abstract* and *formal*. Such a *right to a common digital infrastructure*, meant at enabling the collective dimensions of this right³⁸, could be inserted in the Charter of Fundamental Rights of The European Union, which is itself the *infrastructure of rights* at European level. Of course, this is a legal solution that leaves political economists rather unsatisfied. But it is not for nothing, as recognizing such a general right would go even beyond data protection, competition law and the limitations of sectorial regulations. Furthermore, that right could be operationalized by linking it to a general clause of active legitimation for NGOs whose purpose is the protection of digital rights to enable them to contest the *legitimacy* of the digital infrastructure from an evolutionary perspective. In other terms, to create a special channel of contestation to provide civil society with an easier and quicker access to justice, and eventually create a 'European Platform Authority' as the competent institution to assess the legitimacy of certain platform infrastructures upon NGO's request. The problem is also that of the *temporality* of these infrastructures on fire³⁹: a condition in which the law is always late, waiting for the "state of fact"⁴⁰. The question of legal timing is, and always will be, crucial: as the digital infrastructure evolves together with the forms of platform mediation, civil society needs to have a privileged legitimation to contest the legitimacy of yet unforeseeable technological practices. As such, I tried to consider both the *spatial* and *temporal* dimensions of the law.

My conclusion is therefore that beyond its neoliberal path, platformization could be seen non only as threat but also as an opportunity for an experiment of institutional design in the European Union, taking inspiration from even from recent history⁴¹. In order to carry out such project, however, the process of European integration needs to be further developed to achieve a closer political integration. New digital platforms can be designed, and the platform model can be applied in new contexts, as long as that is not left only to the private sector, but, at the very

³⁷ Hildebrandt, M. (2017). *Saved by design? The case of legal protection by design*.

³⁸ Contaldi, G. (2020). *La tutela degli interessi collettivi nel diritto dell'Unione europea*. Marques, T., & Valentini, C. (2022). *Collective Action, Philosophy and Law*.

³⁹ Edwards, P. N. (2021). *Platforms Are Infrastructures on Fire*.

⁴⁰ "The advent of platforms, which form planetary-scale exorganisms, occurs according to a rhythm which is that of 'disruption', which is to say through the unfurling of a digital technical system that outstrips and overtakes social systems. This has established a situation, a *state of fact*, that awaits its state of law. Stiegler, B. (2018). *The Neganthropocene*, 129 -130.

⁴¹ Bareikyte, M. (2022). *The post-socialist Internet: how labor geopolitics and critique produce the internet in Lithuania*.

least, to multi-stakeholder negotiations⁴². In this sense I agree with the Dutch scholars that noted that platformization requires an integral approach rather than just a sectoral one to guarantee the effectiveness of fundamental rights protection⁴³. The legal discourse had a term that can be borrowed for such a moment: an extra-state “constituent process”⁴⁴. We have to remember the first and oldest meaning of the term platform: a political program. In other terms, since because of platformization markets can be centrally organized and planned, this planning ought to be subject to constitutional rules in a negotiation carried out by different stakeholders at European level. As I have tried to argue throughout the manuscript, the sole creation of new rights is not enough for protecting fundamental rights in a platformed environment. On the one side, the processes of contestation in the (re)design of those infrastructures are the critical variable in the protection of fundamental rights; on the other, political planning is more necessary than ever⁴⁵. Nevertheless, it is rather ironic that this imperative to *design* is reiterated precisely after the creation of systems of artifacts by the ‘hoping class’ – the designers, as Peter Sloterdijk calls them⁴⁶ - to nudge, extract value and control. If it is true that what Arendt once observed in the age of *Sputnik* still holds true in the age of smartphones - “our technological capacity exceeds our political will to negotiate the terms of that capacity”⁴⁷ - the goal should still be that of designing freedom⁴⁸, even with the awareness that design itself is only a “simulation of sovereignty”⁴⁹.

⁴² Helberger, N., Pierson, J., & Poell, T. (2018). *Governing online platforms: from contested to cooperative responsibility*. It could also take the form of an Aarhus convention on digital infrastructures. For the Aarhus convention see the *Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters*.

⁴³ Van Dijck, J. et al (2018). *The Platform Society*, 139.

⁴⁴ Wallis, J. (2014). *Constitution Making During State Building*, 40–72; Colón-Ríos, J.I., Hausteiner, E.M., Lokdam, H. et al. (2021). *Constituent power and its institutions*. Fassbender, B. (2007). “We the peoples of the United Nations”: constituent power and constituent form in international law. in Martin Loughlin and Neil Walker (eds). *The Paradox of Constitutionalism: Constituent Power and Constitutional Form*.

⁴⁵ The element of centralization and planning is what makes me prefer the platform model to DAO and fully decentralized organizations.

⁴⁶ Monteiro, M. (2019). *Ruined by design: how designers destroyed the world and what we can do to fix it*; Williams, J. (2018). *Stand Out of Our Light: Freedom and Resistance in the Attention Economy*.

⁴⁷ Peters, B. (2016). *How Not to Network a Nation*, 200.

⁴⁸ Beer, S. (1980). *Designing Freedom*.

⁴⁹ Sloterdijk, P. (2017). *The Aesthetic Imperative: Writings on Art*, ebook, 17%. For the German philosopher design is “when one is capable despite everything”.

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