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**Working Paper**

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CITYPERC Working Paper, No. 2023-01

**Provided in Cooperation with:**

City Political Economy Research Centre (CITYPERC), City, University of London

*Suggested Citation:* Rikap, Cecilia (2023) : Rethinking monopoly as a power relation: The shift from market to intellectual monopoly, CITYPERC Working Paper, No. 2023-01, City, University of London, City Political Economy Research Centre (CITYPERC), London

This Version is available at:

<https://hdl.handle.net/10419/280827>

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# **Rethinking Monopoly as a Power Relation: The Shift from Market to Intellectual Monopoly**

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CITYPERC Working Paper No. 2023-01

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# Rethinking monopoly as a power relation: the shift from market to intellectual monopoly

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## Abstract

The critical literature on monopolies, from monopoly capital to recent contributions, focuses on the organization that concentrates either market power, capital or property rights. I complement this literature by conceptualizing monopolies as a power relation, which enables me to integrate different ways in which the term is used, from capitalists' monopoly over the means of production to intellectual monopolization. As I explain here, some firms have developed greater capacities to systematically monopolize intangibles that are essential for organizing labour beyond their owned assets and for controlling demand. Coupled with institutional, political and technological changes, larger absorptive and management capacities to produce and capture knowledge and information resulted in firms' technological differentiation. The systematic winners of the innovation race hold persistent intellectual monopolies while other firms become subordinate due to their lack of technical autonomy. From this perspective, (intellectual) monopoly power is essential for understanding the distribution of value in capitalism.

**JEL:** L12, O34

**Keywords:** monopoly capital; power relation; intellectual monopoly; subordinate firms; value capture.

## 1. Introduction

Big businesses are, once again, becoming topical within economics and political economy. The consolidation of research on Global Value Chains (GVC) and global production networks led by powerful multinational corporations (Ponte et al., 2019), the hype on studying colossal digital platform companies (see for instance Cusumano et al., 2019; Durand, 2020; Langley and Leyshon, 2017; Rikap and Lundvall, 2021; Srnicek, 2017; Zuboff, 2019), and even mainstream approaches like the superstar firm (Autor et al., 2017; Tambe et al., 2020) evidence a revived interest in studying big corporations. Among recent studies, many build on the monopoly capital approach, including a special issue on the topic published by the Cambridge Journal of Economics (Brancaccio et al., 2018; Coveri et al., 2022; Lambert, 2019a, 2019b; Pitelis, 2022; Sawyer, 2022; Vasudevan, 2022). Likewise, scholars and regulators have been increasingly concerned about potential market-power abuses coupled with claims on the inadequacy of antitrust law to limit them, using big tech companies as the case in point (Christophers, 2016; European Commission, 2022a; Glick, 2019; Khan, 2017; US Congress. Subcommittee on antitrust, commercial and administrative law, 2020).

Yet, as this paper argues, an established narrow definition of big businesses, associated with monopolies or oligopolies as market typologies, limits the understanding of this persistent phenomenon within capitalism. In his reconstruction of the history of economic analysis, Schumpeter (2006) observed that ever since Aristotle's definition of a monopoly as a market of a single seller this

has been monopoly's accepted definition. This narrow definition of a monopoly as a market structure has led more recent contributions to go back to Marxists' understandings of capital concentration as the outcome of capitalist competition (Palermo, 2017; Vasudevan, 2022), while Christopher (2016) conceptualized monopolies and competition as co-evolving with an unstable balance maintained primarily by the law.

A common feature of all these studies is that they focus on what is being monopolized (the market, capital, etc.), thus ultimately in the firm that holds a monopoly. This paper contributes to this literature by not only elaborating on the contemporary prevalence of a particular form of monopolization, the intellectual monopoly, but also by conceptualizing monopolies as a power relation that comprises both those holding monopolies and subordinate actors. This enables me to identify the common dimension of two different phenomena: inter-class monopoly and intra-class monopoly relations.

In a nutshell, a general form of this power relation is capitalists' monopoly over the means of production (inter-class monopoly). Yet, since means of production are heterogeneous, different monopoly-relations can take place, not only between capital and labour but also among different firms. For instance, monopolizing a resource that others will need to mobilize for production engenders a monopoly relation. This is the case of firms monopolizing oil extraction and those that depend on it for their businesses. Another case of monopolization, not restricted to certain industries, is the monopolization of knowledge and information. This paper provides a conceptual and historical account of the spread of this nowadays prevalent form of monopolization. Building on an emerging literature on intellectual monopolies, I argue that intellectual monopolization is a process of firms' technological differentiation where firms lacking technical autonomy subordinate to those holding intellectual monopolies over the knowledge and information that they need to organize production (including distribution) processes. At the system level, this results in a sustained transfer of value from subordinate firms to those holding such intellectual monopolies. Hence, monopoly power is crucial for explaining the distribution of value in global capitalism.

The rest of this article is organized as follows. Section 2 sums up the monopoly debate within Marxist economics. Next, section 3 reframes this debate by rethinking monopolies as a power relation. Firms' technological differentiation is introduced in section 4. This section distinguishes (and refers to the interaction) between intellectual monopolies and different types of subordinate firms. Final remarks and unanswered questions are discussed in section 5.

## **2. Monopoly theory and competition**

Monopolies have been a neglected topic within economics. A quick search on the Web of Science for papers published in Economics journals with at least one word starting with "monopol" in their title shows that since the 1980s while interest in competition has increased over time, research on monopolies has remained flat (see Figure 1 in appendix).

Monopoly capital is among the exceptions of research focused on monopolies. By text mining the content of keywords, titles and abstracts of the sample of scientific publications with "monopol" in their title, I found that "monopoly capital" appears as the most popular heterodox economics approach to monopolies, since it is the third most frequent term in that publications' sample (see Table 1 in appendix). Hence, in this section I summarize the monopoly capital theory and present some insights on how recent investigations have conceptualized monopolies. The aim of the section is to show that all these contributions focus on the firm holding the monopoly, neglecting a conceptualization of monopolies as an (unequal) social relation.

## 2.1. *Monopoly capital*<sup>1</sup>

Monopoly capitalism was defined as a new stage in capitalism in which giant corporations have sufficient market power to set their own prices; they are price-makers (Baran and Sweezy, 1966, p. 53). In this context, the term monopoly is used to refer to firms with a market power high enough to influence prices and output while limiting entry (Foster et al., 2011a, p. 2).

Monopolies, for Baran and Sweezy (1966), were conglomerates that concentrated and centralized (tangible) capital. Monopoly capital authors, from Baran and Sweezy's (1966) analysis of giant corporations in the US in the 1960s to more recent studies that analysed the effects of contemporary monopoly capital in the same country (Davis and Orhangazi, 2021; Lambert, 2019b, 2019a) have extensively documented and described the operations of concentrated capital. Further evidence was provided by other scholars beyond this framework like Chandler (1977) and Galbraith (1952). The internationalization of monopoly capital was also early on documented by original monopoly capital authors (Cowling and Sugden, 1987; Magdoff and Sweezy, 1971) as well as by more recent contributions (Foster et al., 2011b, 2011a; Sawyer, 2022).

Authors within this approach consider monopoly capital typically arising from tangible barriers and/or political decisions. Examples of the former are economies of scale, high minimum efficient scale (like in the steel industry), or control of a key non-reproductive resource like oil. Baran and Sweezy (1966) also considered that monopolies could be further reinforced by sales efforts and branding. Hence, while for them tangible concentration explains the emergence of monopoly capital, they recognize that monopoly capitals also tend to concentrate intangibles. Indeed, along the lines of Schumpeter (1942), Baran and Sweezy (1966) also argued that big corporations are better equipped to introduce new science and technology developments than competitive firms. Overall, it is the big corporation that decides the rhythm of adoption of new technologies. Their impression is that this pace is slower than under competition, albeit the incentives of the big corporation to find new cost-saving techniques. In other words, even if big corporations have greater means to create new knowledge via systematic research and development (R&D), they may not have the incentives to use that capacity, particularly when that innovation risks eroding their existing market power. Business literature has dubbed this trade-off the innovator's dilemma (Christensen, 2013).

Under this framework, a system-wide average rate of profit is pointless because, as synthesized by Sweezy (1981, pp. 65–66), monopoly capitalism is characterized by “a hierarchy of profit rates, highest in the industries that approach most closely to a monopoly status and lowest in those in which small-scale competitive enterprise continues to predominate.” Surplus value, continues the author, is transferred from the latter to the former.<sup>2</sup> This intuition will be picked up in section 4. In this context, the law of value that states that commodities tend to be exchanged on their prices of production doesn't work because market prices do not orbit around prices of production. Market prices, as we mentioned before, are set by big corporations.

## 2.2. *Monopolization is not opposed to competition*

Although it could be argued from the previous section that monopolization is opposed to competition, some recent authors have provided alternative explanations that attempt to overcome this potential

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<sup>1</sup> See Foster et al. (2011a) and Sawyer (2022) for a reconstruction of monopoly capital and related approaches that have influenced it.

<sup>2</sup> For Lenin (1916), monopolies were the norm in core countries and they appropriated value from the rest of the world.

contradiction. Among them, Palermo (2017) reconstruct the process of capital concentration and centralization described by Marx (1894) as the expected outcome of capitalist competition, thus competition leads to monopolization to the point where it “supersede(s) the competitive market form” (Palermo, 2017, p. 1563). More recently, Vasudevan (2022) built on this aspect of Marx’s (1894) theory to emphasize that monopolies, from a classical and Marxist understanding, indicate capital concentration, thus production and proprietary matters. Vasudevan (2022) then points to insights within monopoly capital authors that are underpinned by this conception of monopolies as capital concentration and private property.

Palermo (2017) argues that Marx’s concept of competition is the enforcer of both technological change inside each industry and thus explains intra-sectoral profit rate differentials and it is also competition -through free entry and exit- that explains inter-sectoral profit rate uniformity. This process takes place through a concentration of capital due to constant innovations that smaller firms cannot adopt, as well as through mergers and acquisitions.

Christophers (2016) offers another bridge between monopolies -defined as market power and resulting in firms that can influence or control market outcomes, in particular prices- and competition. His main thesis is that monopolies and competition co-evolve with an unstable balance maintained primarily by the law, in particular, by intellectual property (IP) and competition laws. While the latter tilts the scale in favour of competition when monopoly has gone too far, the IP law favours monopoly when facing an excess of competition (thus shrinking profits). Larger profits in the monopolization stage are explained by lower incomes for labour and, vice versa, the excess of competition depresses profit rates expanding labour income.

Hence, unlike Palermo (2017) and Vasudevan (2022), Christophers (2016) replaces Marx’s general economic laws with the interpretation and application of antitrust and IP laws understood as capitalism’s levelers. Moreover, for Palermo (2017) and Vasudevan (2022) there is a somehow linear trend that goes from competition to monopoly, whereas for Christophers (2016) there are waves of competition followed by waves of monopolization.

All in all and regardless of their differences, all the authors overviewed concentrate on the firm holding a monopoly either as a temporary phenomenon that will be eventually tempered by legal changes or as an intrinsic economic outcome. By focusing on the monopoly firm, they neglect the effects of monopolization as a power relation exercised on others. Hence, do not sufficiently explore their effects in terms of value capture or redistribution. To tackle this issue, the following section reframes the discussion on monopolies.

### **3. Monopolies as a power relation**

Monopolization can be conceptualized as a power relation overcoming what Foster et al. (2011b) dubbed *the fetichism of the market*, which excludes corporate power from the analysis. Monopolization, as explained in the rest of this paper, takes place both in the market and production (including innovation) spheres as power exercised not only by firms on workers but also among firms.

Monopolization within capitalism relies on the existence of private property (Marx, 1964; Veblen, 2017). Property rights are not a relationship between a person and a thing but, as defined by Graeber (2012, p. 198), they are “an understanding or arrangement between people concerning things”, which stands even if those in relation to whom such an arrangement is exercised are every other human being or fictive persons, such as firms. In the words of Christophers (2016, p. 9), the monopoly conferred by private property is “the exclusive power to dispose of said property as the owner alone

sees fit". In this respect, the generalization of monopoly relations, not only attaining the relation between individuals but also with fictive or legal persons, companies in particular, has profited from the state enforcement of property and control rights (Pistor, 2019).

The effects of what is monopolized differ depending on how the monopoly power is exercised. For instance, depriving others from consumption is a form of monopoly that can be understood as a power relation. If this exclusive consumption is fulfilled at a market, this is the case of the so-called monopsony. Furthermore, depriving others from access to selling their products, which is the power exercised by a single supplier in a market -as in the early examples of the East India Companies- is another monopoly relation. A novelty between early monopolies like the East India Companies, exercising a trade monopoly, and monopoly power in capitalism is that only the latter is used for value accumulation and value capture. To explain this, this paper delves into how the monopoly relation is exercised in production and innovation processes.

In capitalism, by owning means of production, part of society subordinates (and exploits) the rest. Sweezy (1981, p. 27) defines capitalism as "the formation of a propertyless working-class on the one hand and of a property-owning capitalist class on the other". These are the two sides of a relationship based on the monopoly over the means of production that is used to exploit workers and appropriate part of the value they create. Following Marx (1894, 1867), this asymmetric relationship takes place at the level of society between two social classes: one that creates value and another one that captures part of it.

All the latter said, capitalists own different means of production from which it is possible to derive different forms of monopoly power. A state can grant a firm the exclusive access to non-reproducible or unique resources or means of production, or specific conditions of the industry where a firm operates can create what the economics literature has dubbed a natural monopoly (Sharkey, 1983). The latter includes cases with economies of scale that typically require a large minimum plant size. Beyond firms, another long-lasting monopoly is that of landowners who exercise power on primary producers because they have monopolized a non-reproducible resource: fertile land.<sup>3</sup> These examples depend on specific industrial conditions. As Pagano (2014) explains, the exclusion of access to and use of a tangible good is local and specific. There is, however, a way to expand in time and space the monopoly relation among firms.

### *3.1. Intellectual monopoly power*

Since knowledge and information are non-rival (they can be simultaneously used by many), the exclusion from publicly using an element of knowledge or information is a global exclusion. Unlike the tragedy of the commons, here the tragedy is that the restriction on the use of existing knowledge reduces the potential of learning (thus the production of new knowledge) from its use (Pagano, 2014).

Intellectual monopolization is the prize of the capitalist competition race based on firms' constant quest for introducing new production techniques by applying new knowledge or information to production. The firm that wins this competition can turn that knowledge and/or information into assets. It will thus be able to capture value in the form of a rent dubbed by the academic literature intellectual, knowledge, informational, or techno-scientific rent (Birch, 2019; Durand and Milberg, 2019; Foley, 2013; Pagano, 2014; Rikap, 2018; Teixeira and Rotta, 2012). Following Foley (2013) and

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<sup>3</sup> The economic literature has earlier on observed that the owners of fertile land can use their exclusive access to a non-reproducible resource to capture value from society in the form of a monopoly rent (Marx, 1894; Smith, 1950).

Harvey (2007), rents are not new value but a redistribution of value created elsewhere; a form of value appropriation that relies on exclusive access to productive resources.

The privatization and assetization of intangibles generate, in Veblen's (1908a) words, a right to exclude. Following Veblen (1908b), knowledge is a historical common stock. New knowledge is an accretion to that stock and the more we use it, the more the stock grows. Making a portion of this common stock excludable by transforming it into an intangible asset disposes the community not only of access to that specific contribution, but greatly mutilates that common stock. By doing so, potential developments are also curtailed. Intangible assets exclude others from accessing and mobilizing knowledge for their and others' benefit. Within new knowledge, general purpose technologies generate the greatest number of associated or complementary innovations, setting in motion a positive loop that is crucial for propelling long-term economic growth (Rosenberg and Trajtenberg, 2001). It may thus be expected that the effects of knowledge monopolization will be all the more pervasive if the subject of that monopoly is a general-purpose technology.

Other sources of damage for society that sprang from knowledge and information monopolization include wasted resources and efforts by other organizations attempting to arrive by their own means to monopolized intangibles. Resources are also spent by resulting intellectual monopolies to deter others from attempting to imitate or outpace them, including resources channelled to face claims in courts and to assure that claimed patents are granted, even if no real benefit for society is extracted from them, as in the case of me too drugs in the pharmaceutical industry (Dosi et al., 2021).

As long as a firm has exclusive monopoly over a more efficient means of production, thus operates with an exclusive technique, it will be able to capture more value than that extracted from its workers. In principle, as originally explained by Marx (1894) and Schumpeter (1934), this would be a non-lasting monopoly limited to the diffusion time. However, as an output of the transformations explained below and in the next section, certain firms have managed to perpetuate these intellectual monopolies.

Corporations' ownership of workplace knowledge is a combined legal, economic and social outcome. Until the late-19<sup>th</sup> century, as described in *Das Kapital* as well as in Marx's earlier manuscripts (Marx, 1980, 1973, 1894, 1867), what we now call an innovation and back then was conceptualized as adopting a new production technique was generally understood as the introduction of new machines. These machines enabled the replacement of more qualified labour with simple labour. The new technique, thus, meant a displacement of workplace knowledge from being embodied in the worker to being embedded in the machine.

Since the mid-19<sup>th</sup> century in the US and the United Kingdom, a further separation of knowledge from workers as its producers took place. In this process, among other legal constructs and business practices, trade secret as a corporate right was instrumental (see Fisk, 2000). Two intertwined transformations took place. One was the shift of the employment relationship, which ended up being an explicitly contract-based legal agreement. It was here where trade secret was included as a clause. The other one was the rise of the corporate form in the beginning of the 20<sup>th</sup> century in the US as a new legal entity with the right to legally own knowledge products created by their employees during their working hours (Fisk, 2009).

Another outstanding transformation regards trademarks or trade-names, which were used in the Middle Ages to identify the products of a particular guild. The law of trademarks was sanctioned after businessmen and courts recognized a first form of goodwill that back then referred to customer loyalty (*good will*). It was associated with product quality, hence the utility of trademarks to provide certainty to customers against the risk of poor-quality copies (Fisk, 2009; Palan, 2013). Nowadays, the owners of registered marks prevent others from using similar marks (Fisk, 2009). Although trademarks are crucial in firms' branding strategies, the latter entails more than the former. As



explained by Dutfield (2020, p. 57), “brands are about identity and trademarks aim to signify or represent that identity. Thus, whereas branding strategy is highly dependent on registered trademarks, brands can exist independently”.

These legal devices became widely used by the 1920s. Nonetheless, as explained by Christophers (2016), the administration, application and interpretation of the law have since then relied on multiple agencies with diverse interests. Thus, the practice of the law has led to divergent results for similar cases. Yet, broadly speaking, this epoch of legal changes signals a two-sided transformation. On the one side, the widely studied progressive deskilling of craft workers (see in particular Braverman, 1998). Flipping the coin, knowledge became an asset of the firm. As stated by Pagano (2014), the latter was an overlooked dimension of this process, perhaps because monopolized knowledge was still mostly embedded in tangible assets. This changed in the last four decades and can be considered a second major detachment.

Since the 1980s, a new wave of legal and institutional transformations resulted in a more stringent and extensive IPRs regime in the US (Berman, 2011; Mowery, 2005). This system was internationalized since the mid-1990s with the signature of TRIPS, originally drafted by IBM, Pfizer and Microsoft, and follow-up treaties (Coriat and Orsi, 2002; Dreyfuss and Frankel, 2014). Knowledge used for production became independent appropriable entities, granting intellectual monopolies to those owning, possessing or controlling them.

These legal transformations, as well as other political and institutional changes coupled with new technological developments that modified business practices (see section 4), are indispensable for understanding the differences in scope and extension of intellectual monopolies throughout history. Early forms of intellectual monopoly are described by Lowie (1928) in a series of examples of what he defines as incorporeal property in non-western and non-capitalist cultures. Other examples are provided by Scott (2008, p. 78) when he explains how “the uniformity of codes, identities, statistics, regulations, and measures” eliminated “local monopolies of information” but simultaneously created “new positional advantages for those at the apex who have the knowledge and access to easily decipher the new state-created format”. A more recent example that still predates the second major detachment above-mentioned are US multinational corporations of the first part of the 20<sup>th</sup> century like General Electric. Regular product improvements and science-based research as well as company acquisitions aimed at accessing and controlling both their patents and inventors are considered essential for explaining its success and expansion (Carlson, 2003).<sup>4</sup> Yet, in all these cases, sustained intellectual monopolization remained an exception.

#### **4. An evolutionary theory of (differentiated) firms based on the monopoly over knowledge and information**

When knowledge and information introduced into the economic sphere are turned into intangible assets, they provide a monopoly power to lock out the rest of society from freely accessing that knowledge or information. While the literature has mostly conceived this form of monopoly power as a temporary advantage of the innovator, some recent contributions have argued that intellectual

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<sup>4</sup> General Electric using its intellectual monopoly to organize the lighting supply chain in the US is an early example of how contemporary intellectual monopolies organize (global) value chains. General Electric convinced other firms, American Electric and Illuminating Company, to take the economic risks since it were the latter who invested in new utilities and created a new lighting market (Carlson, 2003).

monopolies became a self-reinforcing, long-lasting and structural phenomenon of contemporary capitalism.

The emergence of firms that systematically hold intellectual monopolies is a dual process. While intellectual monopolies are held by those that concentrate intangible assets, firms deprived from access are subordinate due to their lack of technical autonomy. In a nutshell, since the organization of production relies on knowledge and information, as some firms systematically turn into intangible assets knowledge needed for organizing certain production processes, to remain in business, those whose production depends on that knowledge will be compelled to subordinate to access either that piece of knowledge or information, or commodities based on them. Innovation is the driver of firms' differentiation. I elaborate on this process focusing on what types of firms co-exist and how each type operates and profits in a complex system made of heterogeneous actors in constant interrelation.

#### *4.1. The perpetuation of intellectual monopolies*

"I'm not interested in illegal bullies or government favorites: By "monopoly," I mean the kind of company that is so good at what it does that no other firm can offer a close substitute. Google is a good example of a company that went from 0 to 1: It hasn't competed in search since the early 2000s, when it definitively distanced itself from Microsoft and Yahoo!" (Peter Thiel, PayPal and Palantir co-founder, <https://www.wsj.com/articles/peter-thiel-competition-is-for-losers-1410535536> ).

The specificities of intangibles or broadly knowledge production process, as I explain next, together with the set of legislations summarized in section 3.1 and other historical changes summarized below have resulted in persistent intellectual monopoly relations, technologically differentiating firms. Knowledge is a cumulative activity with dynamic economies of scale (Antonelli, 1999; Dosi, 1988; Johnson and Lundvall, 1994). New knowledge relies on existing knowledge, so even imitation requires a certain minimum level of acquired knowledge. This requirement is more stringent in the case of new-to-the-world innovations (Furman et al., 2002). The firm must have acquired sufficient knowledge to be capable of producing or absorbing frontier knowledge from society. Hence, firms that are already at the knowledge frontier will have a greater absorptive capacity to keep learning and innovating (Cohen and Levinthal, 1990). In other words, the capacity to absorb and produce new knowledge depends on whether the organization is at the knowledge frontier or not. If it is, it will be better prepared to turn new knowledge into innovations. Furthermore, only firms above certain management capabilities thresholds can make the translation from R&D outputs to performance outcomes, so that they benefit from R&D (Coad et al., 2020). Additionally, firms that have successfully innovated will have more financial resources not only to produce but also to acquire knowledge. All else equal, firms that have already innovated are more likely to keep innovating anew before others by relying on their previous successes and capabilities.

These firms' faster and sustained innovation rate enables them to keep concentrating intangible assets and cements their intellectual monopolies which are based on their persistently greater absorptive capacity. Intellectual monopolization springs from intangibles' production and concentration. Interestingly in relation to innovation, monopoly capital as well as real competition authors would agree that the new technique, sooner or later, was adopted by all the firms of a branch. In other words, innovation-generated entry barriers are porous and, thus, the privilege of the innovator is temporary (see: Baran and Sweezy, 1966, chap. 4; Moudud, 2013). In the case of real competition (Duménil and Lévy, 1983; Duménil and Lévy, 1987; Shaikh, 2016, 1980), which was presented as an alternative to monopoly capital, firms that operate as regulating capitals are

constantly changing. Eventually, another firm will innovate anew becoming the new regulating capital.

The emergence of long-lasting and self-reinforcing intellectual monopolies evidence that what was supposed to be a temporary windfall -the privilege of the innovator- has become a permanent advantage. The resulting unequal competition for knowledge entails a cumulative causation effect that contributes to explaining the current concentration of intangible assets by a few (leading) corporations. Altogether, the legislations summarized in section 3.1. provided devices that enabled, justified and enforced winners' intellectual monopolies. Codified knowledge can be legally protected by IPRs, and this can also include legal ownership over big data sets, such as electronic healthcare records owned by the UK National Health Service. Here, the intangible is not merely the individual data point but the whole database and, in order to use it as an intangible asset, what UNCTAD (2019) calls digital intelligence, big data needs to be processed (Nuccio and Guerzoni, 2019).

Yet, in some industries, intellectual monopolies' self-reinforcing mechanism may not even depend on IPRs. Holding a monopoly over tacit knowledge achieved inside a firm, such as the Toyota System as well as the knowledge held by leading corporations on how to organize and control Global Value Chains are often at least partly tacit (Durand and Milberg, 2020; Rikap, 2021). Also, as explained by Lemley and Feldman (2016, p. 188), "in fast-moving industries, such as information technology, the technology described in the patent may be obsolete by the time anyone could read it". Here, the speed of the innovation process underpins the perpetuation of intellectual monopolization. Big Tech companies' constant processing of big data with deep learning algorithms that self-improve as they process that data is a case in point (Rikap and Lundvall, 2021).

Digital technologies also provide illustrative examples of the centrality of secrecy. Harvested big data -from loyalty cards' data from customers to Big Tech companies' colossal datasets- are kept secret and, once processed, they are used to inform businesses and foster innovation. Furthermore, artificial intelligence algorithms are often kept secret, with only 15% of the scientific publications in this field disclosing the used code (Benaich and Hogarth, 2020). In these cases, intellectual monopolies depend on the ownership of essential means of information appropriation from society, such as Big Tech search engines or social media which are based on secretly kept and constantly evolving algorithms.

Intellectual monopolies have also benefited from technological advances that made it easier to access knowledge from around the world. Since the Cold War, several industries became more science and technology driven and the information and telecommunication technologies revolution has accelerated the circulation of public knowledge, which can be more easily appropriated by companies with the highest absorptive capacities. More recently, the processing of big data with deep learning algorithms is a technology that by itself represents a new method of invention that accelerates innovation, thus contributing to self-reinforce intellectual monopolization by digital innovation leaders, i.e., big tech companies (Rikap and Lundvall, 2021).

These technological advancements could not have been accomplished without the US hidden industry policy aimed, among others, at sustaining the US geopolitical hegemony (Weiss, 2014) by limiting other countries' catching-up (from the USSR during the Cold War to Japan in the 70s and China nowadays). Such hidden industrial policy particularly favoured intellectual monopolization in pharma and tech industries. Disguised by dominant pro-free-market ideology, it included moon-shot projects funded by public agencies responsible, among others, for the creation of the internet and GPS (Block, 2008; Mazzucato, 2015; Wade, 2017). By 2021, 1,338 companies from health and tech sectors concentrated 56% of global business expenditure on R&D (BERD) (European Commission, 2022b).

It is equally impossible to understand the emergence of intellectual monopolies from China without looking at the protectionist role of the Chinese state. This also included massive public investment in

R&D and the setting of frontier research universities in close collaboration with Chinese corporations (Lundvall and Rikap, 2022; Rikap, 2022a).

Other policies that since the late 1970s favoured intellectual monopolization include the weakening of antitrust controls (Glick, 2019) and the development of complex forms of corporate arbitrage (Palan and Phillips, 2022; Phillips et al., 2021). The latter includes profit shifting and the relocation of property titles' registration which are easier for intangible intensive companies (Bryan et al., 2017; Palan and Phillips, 2022). Additional profits are not only channelled to shareholder payments but also to expand R&D investments and exclusively access technology through company acquisitions (Bourreau and de Streel, 2020; Montalban and Sakinç, 2013; Rikap, 2019; WIPO, 2014).

Summing up, all the mentioned economic, technological, institutional and political factors can be considered a network where nodes shape and reinforce each other. As a collective outcome, they have perpetuated (global) intellectual monopolies. Creative successes are self-reinforced or lead to a virtuous circle for firms monopolizing knowledge and turning it into intangible assets at the expense of the rest of the system (Rikap, 2021, chap. 2). Certain firms not only hold but have become intellectual monopolies in the sense that their monopoly is a self-reinforcing means of exercising power on those that depend on their assetized knowledge.

#### *4.2. Types of subordinated firms: Control and planning beyond ownership*

The other side of a scenario described by the same relatively small group of firms systematically winning the innovation race<sup>5</sup> is a myriad of firms that become technologically dependent. They subordinate to intellectual monopolies to operate. Firms with intellectual monopolies control (and plan) subordinate firms by exclusively accessing essential intangibles for organizing these firms' production processes, including the production of new knowledge (see Table 2 in appendix for a summary of the three proposed types of subordinated firms). Therefore, intellectual monopolies control and plan production (including distribution and innovation) beyond their legally owned assets. In other words, some firms own the means of production only *de jure* but not *de facto* and these firms are *de jure* independent but *de facto* subordinate firms. Cowling and Sugden (1987) had anticipated that big corporations' boundaries were being defined by control and not ownership and even mentioned the case of subcontracting and the need to consider market transactions that were under these giants' strategic control. Intellectual monopolization is a means to exercise this form of control.

Drawing on the conceptualization of monopolies as a power relation between *those that have and those that want or need but have not and cannot independently overcome that lack*, intellectual monopolies can be defined as a power relation between firms that have monopolized knowledge and information and firms that need access to those intangibles (or to products based on those intangibles) to operate. Subordinate firms do not pre-exist firms holding intellectual monopolies as much as the latter do not predate the former. They are mutually constituted in and by their relation, which is a planned and hierarchical relationship. An early form of this form of power relationship as the constitution of lead and subordinate firms is the outsourcing of production steps by core countries' multinational corporations since the late 1970s (Milberg and Winkler, 2013). Leading corporations from resulting global value chains hold intellectual monopolies, among others, concentrating the exclusive knowledge on how to reintegrate the chain (Durand and Milberg, 2020).

Rentiership and accumulation take place simultaneously as intellectual monopolies set prices both when they sell and buy. It may be argued that Baran and Sweezy (1966, p. 65) anticipated this type

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<sup>5</sup> An additional relevant fact is that 60% of total IP5 patents between 2014 and 2016 are owned by only 2000 companies (Dernis et al., 2019).

of relationship when they indicated that the giant corporations' "extra large profits are gained not only at the expense of consumers but also of other capitalists". Yet, at their time, this was not as extended, which may explain why this intuition was not further developed.

Setting prices does not mean freely define prices. At the system level, intellectual monopolies cannot appropriate more than the total value produced. Furthermore, intellectual monopolies typically use their knowledge on other companies' production processes to assure that set prices leave subordinate companies in a still economically viable situation. Ultimately, and to some extent in line with Callon's (2021) empirical observations, price formulation is a permanent process. Through it, firms with intellectual monopolies capture value from subordinate companies. Firms' subordination, and thus their chances to weighting up intellectual monopolies' pressure, depends on their degree of workplace knowledge heteronomy, which I conceptualize by proposing different ideal types of subordinated firms.

A first type is the early adopter of new techniques relying on intellectual monopolies' intangible assets. Its production process is structured by and responds to techniques controlled (and eventually owned) by intellectual monopolies. In this overarching sense early adopters lack technical autonomy even if they also innovate because early adopting intellectual monopolies' innovations requires fast learning and innovation skills for adopting through adapting. Early adoption of intellectual monopolies' requirements (in terms of quality, standards, delivery times, etc.) allows them to be privileged among other subordinated companies. Although early adopters have a close relationship with intellectual monopolies and the latter rely on the former, value capture and planning are unidirectional.

Early adopters are usually suppliers or complementors that are intensive in tangible assets to be at the technical frontier required by intellectual monopolies.<sup>6</sup> Paradigmatic examples include Foxconn, the leading electronics contract manufacturers and an innovator in rapid prototyping and machine tooling for manufacturing Apple's devices, and global automobile suppliers (Dedrick and Kraemer, 2017; Frigant and Jullien, 2014; Starosta, 2010). UPS and FedEx occupy this subordinate position in their relationship with Amazon. The former are forced to charge the latter privileged fees and make deliveries at a pace defined by Amazon (Rikap, 2020). Data-driven intellectual monopolies like Amazon and the other big tech companies organizing platforms rely on their intangible assets (both data and artificial intelligence algorithms) to subordinate firms that pay to get access to (or be advertised in) those platforms. They accept the conditions set by platform owners regarding how to promote their products, the information about the product that must be provided, etc. (Dolata, 2020; Rikap and Lundvall, 2021).

IKEA introduces around 2000 new products per year designed by the company but manufactured by around 1000 home furnishing suppliers from around the world.<sup>7</sup> An investigation conducted by an IKEA employee and two academics on IKEA's central planning strategy to control the whole *IKEA universe*, including franchisees and suppliers, concluded that "from a planning perspective, IKEA can treat the supply chain as being vertically integrated, which gives it the power to determine the rules and procedures for supply chain planning" (Jonsson et al., 2013, p. 345). IKEA harvests data from the whole supply chain, including demand data, and uses it to adjust plans. "The suppliers tell IKEA their capacity limit, and IKEA sometimes commits to provide a supplier with a guaranteed volume. IKEA decides whether to increase or decrease the suppliers' volumes and when necessary to adjust supplier matrices." (Jonsson et al., 2013, p. 343). Planning is fully informed by data analysis based on

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<sup>6</sup> This doesn't mean that intellectual monopolies will not own and further accumulate tangible assets. Amazon, Microsoft and Google systematically concentrate digital infrastructure required to transport, store and process data (Rikap and Lundvall, 2021, chap. 4).

<sup>7</sup> <https://about.ikea.com/en/work-with-us/for-suppliers>

artificial intelligence, which has been widely embedded in every dimension of IKEA's business according to its Chief Digital Office.<sup>8</sup>

Another example is Apple Hospitality; a real estate investment trust that runs 119 Hilton and 94 Marriott hotels in the USA. As explained by Schwartz (2022), Hilton and Marriott own the intangible assets (mainly brands and trademarks) and have created a franchising model where Apple Hospitality is a franchisee that concentrates tangible capital investment. As well as McDonald's, Pizza Hut and other major franchisors, Hilton and Marriott define their franchisees' production techniques by forcing them to buy or lease certain equipment, pay IPRs and adopt business practices. Franchisors usually take a percentage of gross revenues instead of profits thus sparing themselves from economic risks (Schwartz, 2022).

As long as these subordinate firms systematically adopt the techniques required by intellectual monopolies and sustain product quality, we should expect them to have a rate of profit persistently above the interest rate, which can be considered as a minimum threshold to remain operative. These subordinate companies' profit-seeking poses limits to intellectual monopolies' predatory activity.

Unlike early adopters, other subordinated companies operate as laggards that systematically fail or not even try to adopt new techniques. Dosi (2022) eloquently describes that a firm producing with an outdated technique does not adopt more advanced one simply "because it does not know how to do it." Provided that they can be profitable by other means, such as paying lower salaries or obtaining transfers from other sectors by state action, there will be no pressing need to overcome technological laggardness (Águila and Graña, 2022).

When they participate in production systems controlled or planned by intellectual monopolies, such as global value chains or platforms, they use outdated techniques, thus perform simple labour-intensive tasks. They remain in business while they offer at the lowest price which results in comparatively the lowest profit rates and salaries. Working conditions can be expected to be the most precarious and flexible compensating for what would otherwise be higher production costs (Graña, 2014). In these cases, as well as in general for subordinate companies, intellectual monopolies' value capture is partly offset by the worsening of labour conditions and salaries paid by from subordinate firms (on how subordinate firms compensate value captured by leading corporations see for instance Carballa Smichowski et al., 2020; Rikap, 2021, chap. 10; Selwyn, 2019).

Firms that repair damaged tech devices, such as iSmash, are an illustrative example of a laggard company. In the hotel industry, human resources providers such as Adecco operate as laggard companies. They remain in business because their service is cheaper and outsourcing non-core activities to them reduces risks for both intellectual monopolies and early adopters.

The third ideal type of firm that subordinates, produces intangibles for the intellectual monopoly. Intellectual monopolies' intangible assets are not only, nor mainly, produced in-house but at the level of corporate innovation systems or networks integrated by other organizations. Thus, the intellectual monopoly outsources innovation steps and associated risks. Some firms, typically start-up companies, produce innovation steps or modules but most of the resulting knowledge is turned into intangible assets by intellectual monopolies (Rikap, 2020, 2019; Rikap and Lundvall, 2020). Intellectual monopolies define the overall R&D orientation, set priorities and concentrate most of the intellectual rents associated with successful results, while hundreds and even thousands of organizations participate in the innovation process.

Rikap and Lundvall (2020) compared the share of selected big tech companies' co-authorships with their share of patent co-ownerships with other organizations and found that while most of these

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<sup>8</sup> <https://www.computerweekly.com/news/252491151/Ikea-on-how-Google-Cloud-has-helped-it-cope-with-Covid-induced-shifts-in-customer-demand>

companies' scientific publications are co-authored with organizations (firms, universities and public research organizations), they mostly patent alone. Further evidence had been provided by Rikap (2019) for large pharmaceutical companies and Rikap (2022a) made a similar analysis for State Grid Corporation of China. These comparisons, together with an analysis of the content of patents and publications to verify that published knowledge was turned into patented results almost exclusively by intellectual monopolies, provided strong evidence of knowledge predation.

This research has also provided further evidence on the relevance of public funds for conducting R&D that results in higher intangible assets for intellectual monopolies, contributing to the literature that showed that major R&D endeavours conducted and funded by core states served as fundamental basis for leading corporations innovations (Mazzucato, 2015). Extreme examples, such as Covid-19 vaccines, whose research was mostly funded by core states but still resulted in patented products owned by a few big pharmaceutical companies are not the exception but the rule. The most frequent external funding sources these companies' scientific publications are core states (Rikap, 2021, chap. 6). The co-ownership networks also shed light on the size of acquired patent portfolios through firms' acquisitions.

An extreme case of innovating firms is that of independent developers or small developing firms that collaborate in open-source software environments like Github developing projects that had been put in open source by big tech companies. The latter integrate those developments into larger projects whose key pieces are kept secret (O'Neil et al., 2021; Rikap and Lundvall, 2021, chap. 3).

Baran and Sweezy (1966, p. 49) had already pointed out that leading corporations tend to leave the riskiest R&D in the hands of other firms. R&D outsourcing of either steps or even full innovations is part of a larger strategy to reinforce intellectual monopolies by reducing the costs of innovation while still profiting from its successes. Intellectual monopolies can minimize potential failures by assigning each knowledge module to those better prepared to succeed. In other cases, the intellectual monopoly may decide to arrive late and copy successful innovations. Big tech and large pharmaceutical companies foster start-ups to take the riskiest endeavours, sometimes even partially funding them, while still profiting from successful results. Intellectual monopolies save R&D investment -imitation is cheaper (Cappelli et al., 2014)- and still maximizes profits by maximizing their innovation chances, reinforcing firms' technological differentiation.

Speaking to managers, Levitt (1966) praises imitation even more than innovation. Imitation is a self-reinforcing strategy of established intellectual monopolies. While the literature often claims that digital platforms enjoy first-mover advantages, MySpace or the German StudiVZ are social networks that predate Facebook and Yahoo and Altavista are examples of search engines born way before Google. Companies that successfully imitate one-time innovators and, on that basis, keep on concentrating intangible assets (such as constantly improving algorithms and big data in the case of big tech companies), will not only outpace that first mover but also eventually become intellectual monopolies.

Intellectual monopolies are also capable of imitating innovations that complement their ongoing advantages at the expense of those innovating companies. It has been widely documented that Amazon frequently operates like this in its e-commerce marketplace (Khan, 2017; US Congress. Subcommittee on antitrust, commercial and administrative law, 2020). Less known is that the same practice takes place at its cloud services business. Elastic offered its products Elasticsearch and Kibana through Amazon Web Services (AWS). As their popularity grew, AWS started offering its own version of these services, displacing Elastic from the market.<sup>9</sup>

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<sup>9</sup> [https://www.theregister.com/2021/01/22/aws\\_elastic\\_fork/](https://www.theregister.com/2021/01/22/aws_elastic_fork/)

Companies that are mostly dedicated to knowledge production have the highest rate of failure within all the above-mentioned types of subordinate firms because they take the innovation risks. When they succeed, it makes sense to expect that their profit rates will be higher than those of other subordinate firms. Since these are knowledge producers that usually do not manufacture commodities or do so as a secondary business, intellectual rents would be their main form of profits. Start-ups and other smaller companies tend to privilege licensing over exploiting knowledge internally (on this dynamic in the smartphone industry see Dedrick and Kraemer, 2017; on the different ways of private gathering of rents according to firms' type see Rikap and Flacher, 2020). Even if intellectual monopolies profit the most from successful innovation conducted together with these firms or acquire or appropriate their successful results, innovating companies survive by profiting from their existing intangible assets and due to seed-money and venture capital that bets on their future intangible assets.

Overall, successful innovating firms have three most likely destinies: 1) be cornered by intellectual monopolies, 2) be acquired<sup>10</sup> or 3) stay as a legally detached company that produces knowledge steps within intellectual monopolies' corporate innovation systems, thus controlled and at the expense of sustained knowledge predation by the latter. A fourth, least likely scenario, is to keep on innovating at a sufficiently sustained pace to become intellectual monopolies.

#### *4.3. Dynamics of the intellectual monopoly relation*

All types of firms considered, it can be said that firms' differentiation follows Dockès (2000) understanding of the dual nature of subordination. An agent accepts to be subordinated by its superior not only because it occupies an inferior position but also because, by integrating a hierarchical order, it will be allowed to subordinate those below. At the very bottom, there are always workers super-exploited to compensate for the value captured by intellectual monopolies. In the above-mentioned case of UPS and FedEx integrated into Amazon's accumulation system, to compensate for the value captured by Amazon at least partially, UPS and FedEx increased fees for other customers. In the case of IKEA's rattan supply chain in Indonesia, sub-suppliers can be considered laggard firms and IKEA's main direct suppliers in Indonesia as early adopters. Most of the former are totally dependent on the latter. Where their products will be sold and consumer prices are unknown for almost half of them and most of them recognized rising costs, low profits due to low piece rate payment and inability to bargain with IKEA direct suppliers as their most serious problems (Lim, 2015).

As far as subordinate companies remain profitable -or survive with external funding from state transfers for laggards to venture capital for innovating firms, under the promise of better-performing in the future-, their best choice will be to subordinate by accepting intellectual monopolies' conditions (Rikap, 2022b, 2021, chap. 2). For instance, Blanke and Pybus (2020) results for Google and Facebook support the idea that even if big tech companies appropriate part of the value produced in the firms that participate in their platforms, they still enable the expansion of profits for the whole network or system of firms they coordinate.

This evolving hierarchy of power, where systematically leading the innovation race is crucial for remaining at the top, is distinct from Galbraith's (1952) idea of countervailing power where there is

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<sup>10</sup> Intellectual monopolies and their acquisitions alter the start-up landscape. Lambert (2019b) found empirical evidence that supports the claim of monopoly capital stifling entrepreneurship in the US. In the specific case of tech, Kamepalli et al. (2020) found that when Google and Facebook acquire start-ups, venture capitals reduce their investments (in number of deals and invested amounts) in competing companies or companies in close markets.



a neutralization of one position of power with another. The latter is typically either buyers or sellers reacting to the stronger market position of the former. Intellectual monopolies integrate subordinate companies into their accumulation subsystems profiting from them, while subordinate firms still profit albeit at a lower rate than intellectual monopolies.

Relationships across intellectual monopolies organizing different accumulation systems could have been forms of countervailing power. However, they seem to operate in the opposite way. Among big pharmaceutical companies' most frequent co-authors are other big pharmaceuticals (Rikap, 2019) and the same happens among big tech (Lundvall and Rikap, 2022). Firms holding intellectual monopolies also establish cross-licensing agreements between them.<sup>11</sup> Intellectual monopolies both cooperate and compete for technology, reinforcing their intellectual monopolies, either because technological competition pushes them to keep capturing more intangible assets, or because new knowledge is developed jointly with other technological leaders. It may be argued that price competition is secondary for intellectual monopolies because product differentiation driven by intangibles assetization secures sales. Here again, it is worth reminding that intellectual monopolization may not coincide with a market monopoly. The intellectual monopoly power relation does not primarily work as the power to limit other from entering a market but from freely accessing knowledge and information essential for organizing production (including distribution and the production of new knowledge).

A source of countervailing power could be the expansion of big tech companies into other sectors with established intellectual monopolies. Recent evidence shows that Siemens became technologically dependent on US big tech companies, something that seriously concerns the German leader (Fernández Franco et al., 2022). More than countervailing powers, this depicts a scenario of conquering power as some intellectual monopolies perpetuate by expanding into new sectors.

All in all, some firms' permanent and expanding monopoly over portions of society's intangibles transformed into assets reduces the technological autonomy of other firms working as a power relation both when mobilizing those intangibles for producing commodities as well as when they are mobilized for producing new knowledge at the level of corporate innovation systems. The intellectual monopoly does not precede the relationship with the other actors and, by organizing accumulation systems integrated by multiple hierarchical structures (from global value chains, franchisees and platforms to corporate innovation systems), innovation as a process and as a product works as a power relation that underpins structurally different firms in terms of cost structures and profit rates.

## **5. Final remarks**

In this paper, I provided an understanding of monopolies as a power relation that is differently unfolded depending on what is being monopolized and considering the context in which this monopolization takes place. The power relation between capital and labour is cemented on the monopolization of the means of production by capitalists. In terms of power relations among firms, while monopolizing tangible means of production or land results in a circumscribed power relation limited to the specificities of each industry, monopolizing intangible assets can have a global reach. When knowledge and information required for production are turned into intangible assets, they provide a monopoly power to lock out the rest of society from freely accessing that knowledge or information, granting an intellectual monopoly. A main contribution of this paper was to explain how this monopoly power resulted in firms' technological differentiation. As certain firms have become self-reinforcing intellectual monopolies, the rest of the firms became technologically dependent. In

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<sup>11</sup> For instance, Microsoft discloses a list of its IP agreements, including cross-licensing agreements with Apple and Amazon (see <https://news.microsoft.com/ip-agreements/>).

other words, in this article I focused on the mutual reshaping and constitution of intellectual monopolies and subordinated companies.

Capitalism is a constantly evolving system driven by innovation. Yet, as I explained in this paper, those successfully owning and controlling knowledge and information turned into intangible assets have greater chances to keep innovating, thus of perpetuating their technological advantage while the rest of the firms lack technical autonomy, thus, subordinate to the former. The paper also analytically distinguished between types of subordinate firms according to whether they are early adopters of techniques required by intellectual monopolies or systematic laggards that remain operational due to the super-exploitation of their workers. A third type of subordinate firm, as introduced in this paper, is the producer of knowledge to be integrated into intellectual monopolies' larger innovation projects.

This paper argues that this technological differentiation of firms, where the intellectual monopoly systematically captures the benefits of innovating, relies on economic, political, technological and legal features that were shaped and created through their mutual historical interaction. Even if we can analytically distinguish between them, it is only by considering them altogether in their mutual interplay that it is possible to make sense of intellectual monopolization. For instance, TRIPS agreement, which as I mentioned was drafted by IBM, Pfizer, and Microsoft (Drahoš, 1995), can be seen as both an outcome and an engine of intellectual monopolization.

Considering these paper's results, it is possible to conceive monopolies as a relationship between *those that have and those that want or need but have not since they cannot independently overcome that lack*. This unequal access enables the former to benefit from the latter. In the case of capitalists and workers, this benefit is value produced by the latter and captured by the former. Value is also captured in the inter-firms' monopoly relations. Intellectual monopolies capture value as intellectual rents gathered when others want to either access that piece of knowledge or what is produced by mobilizing it.

Rethinking monopolies in this way should lead regulators to expand their sight from market monopolies to systemic inter-firm dynamics. By focusing on a market at a time, regulators risk considering a very limited portion of the impact of monopolization because intellectual monopolies organize (transnational) production and innovation systems beyond their legally owned assets. While global value chains are an early example, big tech companies provide an even more challenging scenario because they cross-fertilize their respective businesses and expand to multiple industries operating in an interconnected way all their businesses, both inside the company and including thousands of other organizations participating in their platforms.

Making single markets the focus of regulation also risks disregarding the underlying causes of monopolization and their effects. By analysing the plurality of unequal social relations that each form of monopolization engenders, regulators could grasp a more comprehensive picture of the effects of monopolization including but not limited to intellectual monopolization. For measuring the latter, new indicators should be developed. Among them, my future research will deal with proposing indicators for knowledge and data concentration at the firm level.

In terms of future research, open questions concern the reconceptualization of capital and labour dynamics in a setting structured by technologically heterogeneous and hierarchically related firms. Another open avenue for future research entails the interplay of core states and intellectual monopolies and how they constitute and shape each other and affect the rest of the world (a preliminary attempt for the case of the US, China and tech giants can be found in Lundvall and Rikap, 2022). Further research should also explore the effects of intellectual monopolization on economic growth, especially in relation to the monopolization of artificial intelligence and big data as a general-purpose technology. As explained in this paper, the largest effect on economic growth after the

development of a general-purpose technology comes from complementary innovations. Under intellectual monopolization, this is expected to be curtailed, thus limiting economic growth. Moreover, special attention should be paid to how intellectual monopolization fosters polarization at multiple levels. As Rotta (2022) shows for the US economy, despite contributing to labour productivity, intellectual rents have an overall negative effect on growth and are determinant to explaining the rise in income inequality.

To conclude, although I have presented a very pessimistic picture, its evolutionary nature provides spaces for hope. The future is still to be created, as evidenced by the emergence of open source and open science communities that attempt to restrict private firms' control over successful outcomes as well as university struggles against knowledge privatization. An interesting example to further explore and build upon, pointed out by Ugo Pagano and picked up by Dosi (2021), is the development of anti-flu vaccines. Unlike Covid-19 vaccines, anti-flu vaccines have been usually developed as a commons. Fostering and exploring such networks, while at the same time limiting the private (ab)use of achieved results, could open avenues for alternative futures. The pandemic has highlighted, once again, the centrality of knowledge for human reproduction (and survival). It is crucial, therefore, to always think in terms of what knowledge is produced and for whom when elaborating alternatives.

## 6. References

- Águila, N., Graña, J.M., 2022. Not all zombies are created equal. A Marxist-Minskyan taxonomy of firms: United States, 1950-2019. *International Review of Applied Economics* 1–20.
- Antonelli, C., 1999. The evolution of the industrial organisation of the production of knowledge. *Cambridge journal of economics* 23, 243–260.
- Autor, D., Dorn, D., Katz, L.F., Patterson, C., Van Reenen, J., 2017. The Fall of the Labor Share and the Rise of Superstar Firms. Centre for Economic Performance, LSE.
- Baran, P.A., Sweezy, P.M., 1966. *Monopoly capital*. NYU Press, United States.
- Benaich, N., Hogarth, I., 2020. *State of AI Report*. London.
- Berman, E.P., 2011. *Creating the market university: How academic science became an economic engine*. Princeton University Press.
- Birch, K., 2019. Technoscience rent: toward a theory of rentiership for technoscientific capitalism. *Science, Technology, & Human Values* 45, 3–33.
- Blanke, T., Pybus, J., 2020. The material conditions of platforms: Monopolization through decentralization. *Social Media+ Society* 6, 2056305120971632.
- Block, F., 2008. Swimming against the current: The rise of a hidden developmental state in the United States. *Politics & society* 36, 169–206.
- Bourreau, M., de Streel, A., 2020. *Big Tech Acquisitions*. Centre on Regulation in Europe.
- Brancaccio, E., Giammetti, R., Lopreite, M., Puliga, M., 2018. Centralization of capital and financial crisis: A global network analysis of corporate control. *Structural Change and Economic Dynamics* 45, 94–104.
- Braverman, H., 1998. *Labor and monopoly capital: The degradation of work in the twentieth century*. NYU Press.
- Bryan, D., Rafferty, M., Wigan, D., 2017. Capital unchained: finance, intangible assets and the double life of capital in the offshore world. *Review of International Political Economy* 24, 56–86.
- Callon, M., 2021. *Markets in the making: Rethinking competition, goods, and innovation*. Princeton University Press.
- Cappelli, R., Czarnitzki, D., Kraft, K., 2014. Sources of spillovers for imitation and innovation. *Research Policy* 43, 115–120.
- Carballa Smichowski, B., Durand, C., Knauss, S., 2020. Participation in global value chains and varieties of development patterns. *Cambridge Journal of Economics*. <https://doi.org/10.1093/cje/beaa046>
- Carlson, W.B., 2003. *Innovation as a social process: Elihu Thomson and the rise of General Electric*. Cambridge University Press.
- Chandler Jr, A.D., 1977. *The visible hand*. Harvard University Press.
- Christensen, C.M., 2013. *The innovator's dilemma: when new technologies cause great firms to fail*. Harvard Business Review Press.
- Christophers, B., 2016. The great leveler, in: *The Great Leveler*. Harvard University Press.

- Coad, A., Mathew, N., Pugliese, E., 2020. What's good for the goose ain't good for the gander: heterogeneous innovation capabilities and the performance effects of R&D. *Industrial and Corporate Change* 29, 621–644.
- Cohen, W.M., Levinthal, D.A., 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly* 35, 128–152.
- Coriat, B., Orsi, F., 2002. Establishing a new intellectual property rights regime in the United States: Origins, content and problems. *Research policy* 31, 1491–1507.
- Coveri, A., Cozza, C., Guarascio, D., 2022. Monopoly Capital in the time of digital platforms: a radical approach to the Amazon case. *Cambridge Journal of Economics* beac044. <https://doi.org/10.1093/cje/beac044>
- Cowling, K., Sugden, R., 1987. *Transnational monopoly capitalism*. Wheatsheaf Books; St. Martin's Press.
- Cusumano, M.A., Gawer, A., Yoffie, D.B., 2019. *The business of platforms: Strategy in the age of digital competition, innovation, and power*. HarperCollins Publishers, New York.
- Davis, L., Orhangazi, Ö., 2021. Competition and monopoly in the US economy: What do the industrial concentration data show? *Competition & change* 25, 3–30.
- Dedrick, J., Kraemer, K.L., 2017. *Intangible assets and value capture in global value chains: The smartphone industry*. WIPO, Geneva.
- Dernis, H., Gkotsis, P., Grassano, N., Nakazato, S., Squicciarini, M., van Beuzekom, B., Vezzani, A., 2019. *World Corporate Top R&D investors: Shaping the Future of Technologies and of AI* (No. EUR 29831). Joint Research Centre and OECD report, Luxembourg.
- Dockès, P., 2000. Pouvoir, autorité et convention d'obéissance. *journal of world-systems research* 6, 920–945.
- Dolata, U., 2020. Platform-regulation. Coordination of markets and curation of sociality on the Internet (SOI Discussion Paper). *Stuttgarter Beiträge zur Organisations-und Innovationsforschung*, Stuttgart.
- Dosi, G., 2022. *The Foundations of Complex Evolving Economies. Volume I. INNOVATION, ORGANIZATION AND INDUSTRIAL DYNAMICS*. Manuscript submitted for publication.
- Dosi, G., 2021. Some policy lessons from medical/therapeutic responses to the COVID-19 Crisis: A rich research system for knowledge generation and dysfunctional institutions for its exploitation. *LEM Working Paper Series*.
- Dosi, G., 1988. Sources, procedures, and microeconomic effects of innovation. *Journal of economic literature* 26, 1120–1171.
- Dosi, G., Marengo, L., Staccioli, J., Virgillito, M.E., 2021. Big pharma and monopoly capitalism: A long-term view. *LEM Working Paper Series*.
- Drahoš, P., 1995. Global property rights in information: the story of TRIPS at the GATT. *Prometheus* 13, 6–19.
- Dreyfuss, R., Frankel, S., 2014. From incentive to commodity to asset: how international law is reconceptualizing intellectual property. *Michigan Journal of International Law* 36, 557–602.
- Duménil, G., Lévy, D., 1987. The Dynamics of competition: a restoration of the classical analysis. *CJE* 11, 133–164.

- Duménil, G., Levy, D., 1983. *La concurrence capitaliste: un processus dynamique*. OFCE, Paris.
- Durand, C., 2020. *Technoféodalisme: Critique de l'économie numérique*. Zones.
- Durand, C., Milberg, W., 2020. Intellectual monopoly in global value chains. *Review of International Political Economy* 27, 404–429. <https://doi.org/10.1080/09692290.2019.1660703>
- Durand, C., Milberg, W., 2019. Intellectual monopoly in global value chains. *Review of International Political Economy* 27, 404–429. <https://doi.org/10.1080/09692290.2019.1660703>
- Dutfield, G., 2020. *THAT HIGH DESIGN OF PUREST GOLD: A Critical History of the Pharmaceutical Industry 1880–2020*. World Scientific.
- European Commission, 2022a. Digital Markets Act.
- European Commission, 2022b. The 2021 EU Industrial R&D Investment Scoreboard. European Commission, Sevilla.
- Fernández Franco, S., Graña, J.M., Flacher, D., Rikap, C., 2022. Producing and using artificial intelligence: What can Europe learn from Siemens's experience? *Competition & Change* 10245294221097066.
- Fisk, C.L., 2009. Working knowledge: employee innovation and the rise of corporate intellectual property, 1800-1930. Univ of North Carolina Press.
- Fisk, C.L., 2000. Working knowledge: Trade secrets, restrictive covenants in employment, and the rise of corporate intellectual property, 1800-1920. *Hastings LJ* 52, 441–535.
- Foley, D.K., 2013. Rethinking financial capitalism and the “information” economy. *Review of Radical Political Economics* 45, 257–268.
- Foster, J.B., McChesney, R.W., Jonna, R.J., 2011a. Monopoly and competition in twenty-first century capitalism. *Monthly Review* 62, 1.
- Foster, J.B., McChesney, R.W., Jonna, R.J., 2011b. The internationalization of monopoly capital. *Monthly Review* 63, 1.
- Frigant, V., Jullien, B., 2014. Comment la production modulaire transforme l'industrie automobile. *Revue d'économie industrielle* 11–44.
- Furman, J.L., Porter, M.E., Stern, S., 2002. The determinants of national innovative capacity. *Research policy* 31, 899–933.
- Galbraith, J.K., 1952. *American capitalism: The concept of countervailing power*. Routledge.
- Glick, M., 2019. Antitrust and Economic History: The Historic Failure of the Chicago School of Antitrust. *The Antitrust Bulletin* 64, 295–340.
- Graeber, D., 2012. *Debt: The first 5000 years*. Penguin UK.
- Graña, J.M., 2014. El proceso de heterogeneización y segmentación laboral como resultado del rezago productivo. *Razón y Revolución*.
- Harvey, D., 2007. *A brief history of neoliberalism*. Oxford University Press, USA.
- Johnson, B., Lundvall, B.-Å., 1994. The learning economy. *Journal of industry studies* 1, 23–42.
- Jonsson, P., Rudberg, M., Holmberg, S., 2013. Centralised supply chain planning at IKEA. *Supply Chain Management: An International Journal*.
- Kamepalli, S.K., Rajan, R., Zingales, L., 2020. *Kill Zone*. National Bureau of Economic Research, Cambridge.

- Khan, L., 2017. Amazon's Antitrust Paradox. *The Yale Law Journal* 126, 710–805.
- Lambert, T.E., 2019a. Monopoly capital and innovation: an exploratory assessment of R&D effectiveness. *International Review of Applied Economics* 1–14.
- Lambert, T.E., 2019b. Monopoly capital and entrepreneurship: whither small business? *Cambridge Journal of Economics* 43, 1577–1595.
- Langley, P., Leyshon, A., 2017. Platform capitalism: the intermediation and capitalization of digital economic circulation. *Finance and society*. 3, 11–31.
- Lemley, M.A., Feldman, R., 2016. Patent licensing, technology transfer, and innovation. *American Economic Review* 106, 188–92.
- Lenin, V.I., 1916. *Imperialism: The highest stage of capitalism*. Resistance Books.
- Levitt, T., 1966. Innovative imitation. *Harvard business review* 44, 63–70.
- Lim, L.L., 2015. Employment Relationships and Working Conditions in an IKEA Rattan Supply Chain. Indonesia. International Labour Office, Jakarta.
- Lowie, R.H., 1928. Incorporeal Property in Primitive Society. *The Yale Law Journal* 37, 551–563.
- Lundvall, B.-Å., Rikap, C., 2022. China's catching-up in artificial intelligence seen as a co-evolution of corporate and national innovation systems. *Research Policy* 51, 104395.
- Magdoff, H., Sweezy, P., 1971. Notes on the multinational corporation. *Readings in imperialism*, Boston: Porter Sargent 93–115.
- Marx, K., 1980. Capital y Tecnología. Manuscritos inéditos (1861-1863). Terraova, Mexico.
- Marx, K., 1973. *Grundrisse: Foundation of the critique of political economy*. Trans. Martin Nicolaus. Harmondsworth: New York, Penguin Books.
- Marx, K., 1964. Economic and philosophic manuscripts of 1844.
- Marx, K., 1894. *Capital: volume III*. Penguin UK.
- Marx, K., 1867. *Capital volume 1*. Penguin, United Kingdom.
- Mazzucato, M., 2015. *The entrepreneurial state: Debunking public vs. private sector myths*. Anthem Press, New York and London.
- Milberg, W., Winkler, D., 2013. *Outsourcing economics: global value chains in capitalist development*. Cambridge University Press.
- Montalban, M., Sakinç, M.E., 2013. Financialization and productive models in the pharmaceutical industry. *Industrial and Corporate Change* 22, 981–1030.
- Moudud, J.K., 2013. The hidden history of competition and its implications, in: Moudud, J.K., Bina, C., Mason, P.L. (Eds.), *Alternative Theories of Competition: Challenges to the Orthodoxy*. Routledge, United States and Canada, pp. 27–54.
- Mowery, D., 2005. The Bayh-Dole Act and high-technology entrepreneurship in US universities: Chicken, Egg, or something else?, in: Libecap, G. (Ed.), *University Entrepreneurship and Technology Transfer: Process, Design, and Intellectual Property*. Elsevier, United Kingdom, pp. 39–68.
- Nuccio, M., Guerzoni, M., 2019. Big data: Hell or heaven? Digital platforms and market power in the data-driven economy. *Competition & Change* 23, 312–328. <https://doi.org/10.1177/1024529418816525>

- O'Neil, M., Cai, X., Muselli, L., Pailler, F., Zacchiroli, S., 2021. The coproduction of open source software by volunteers and big tech firms.
- Pagano, U., 2014. The crisis of intellectual monopoly capitalism. *Cambridge Journal of Economics* 38, 1409–1429.
- Palan, R., 2013. The financial crisis and intangible value. *Capital & Class* 37, 65–77.
- Palan, R., Phillips, R., 2022. Arbitrage power and the disappearing financialized firm. *Finance and Society* 8, 22–41.
- Palermo, G., 2017. Competition: a Marxist view. *Cambridge Journal of Economics* 1559–1585.
- Phillips, R., Petersen, H., Palan, R., 2021. Group subsidiaries, tax minimization and offshore financial centres: Mapping organizational structures to establish the 'in-between' advantage. *Journal of International Business Policy* 4, 286–307.
- Pistor, K., 2019. *The Code of Capital: How the Law Creates Wealth and Inequality*. Princeton University Press.
- Pitelis, C., 2022. Big tech and platform-enabled multinational corporate capital (ism): the socialisation of capital, and the private appropriation of social value. *Cambridge Journal of Economics*.
- Ponte, S., Gereffi, G., Raj-Reichert, G., 2019. Introduction to the handbook on global value chains, in: *Handbook on Global Value Chains*. Edward Elgar Publishing.
- Rikap, C., 2022a. Becoming an intellectual monopoly by relying on the national innovation system: the State Grid Corporation of China's experience. *Research Policy* 51. <https://doi.org/10.1016/j.respol.2021.104472>
- Rikap, C., 2022b. From global value chains to corporate production and innovation systems: exploring the rise of intellectual monopoly capitalism. *Area Development and Policy* 1–15.
- Rikap, C., 2021. *Capitalism, Power and Innovation. Intellectual Monopoly Capitalism uncovered*. Routledge, Abingdon, United Kingdom.
- Rikap, C., 2020. Amazon: A story of accumulation through intellectual rentiership and predation. *Competition & Change* 26, 436–466. <https://doi.org/10.1177/1024529420932418>
- Rikap, C., 2019. Asymmetric Power of the Core: Technological Cooperation and Technological Competition in the Transnational Innovation Networks of Big Pharma. *Review of International Political Economy* 26, 987–1021. <https://doi.org/10.1080/09692290.2019.1620309>
- Rikap, C., 2018. Innovation as Economic Power in Global Value Chains. *Revue d'Économie Industrielle* 35–75.
- Rikap, C., Flacher, D., 2020. Who collects intellectual rents from knowledge and innovation hubs? Questioning the sustainability of the Singapore model. *Structural Change and Economic Dynamics*.
- Rikap, C., Lundvall, B.-Å., 2021. *The Digital Innovation Race: Conceptualizing the Emerging New World Order*. Palgrave Macmillan, Switzerland.
- Rikap, C., Lundvall, B.-Å., 2020. Big Tech, knowledge predation and the implications for development. *Innovation and Development* 1–28. <https://doi.org/10.1080/2157930X.2020.1855825>



- Rosenberg, N., Trajtenberg, M., 2001. A General purpose technology at work: the Corliss steam engine in the late 19th Century US.
- Rotta, T.N., 2022. Information rents, economic growth and inequality: an empirical study of the United States. *Cambridge Journal of Economics* 46, 341–370.
- Sawyer, M., 2022. Monopoly capitalism in the past four decades. *Cambridge Journal of Economics*.
- Schumpeter, J.A., 2006. History of economic analysis. Routledge.
- Schumpeter, J.A., 1942. Capitalism, socialism and democracy. Routledge, London ; New York.
- Schumpeter, J.A., 1934. The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle. Transaction publishers, New Jersey.
- Schwartz, H.M., 2022. Intellectual property, technorents and the labour share of production. *Competition & Change* 26, 415–435.
- Scott, J.C., 2008. Seeing like a state, in: *Seeing Like a State*. yale university Press.
- Selwyn, B., 2019. Poverty chains and global capitalism. *Competition & Change* 23, 71–97.
- Shaikh, A., 2016. Capitalism: Competition, conflict, crises. Oxford University Press.
- Shaikh, A., 1980. Marxian competition versus perfect competition: further comments on the so-called choice of technique. *Cambridge Journal of Economics* 4, 75–83.
- Sharkey, W.W., 1983. The theory of natural monopoly. Cambridge University Press, Cambridge.
- Smith, A., 1950. An Inquiry into the Nature and Causes of the Wealth of Nations. Methuen.
- Srnicek, N., 2017. Platform capitalism. John Wiley & Sons, New Jersey.
- Starosta, G., 2010. The outsourcing of manufacturing and the rise of giant global contractors: A Marxian approach to some recent transformations of global value chains. *New Political Economy* 15, 543–563.
- Sweezy, P.M., 1981. Four lectures on Marxism. NYU Press.
- Tambe, P., Hitt, L., Rock, D., Brynjolfsson, E., 2020. Digital capital and superstar firms. National Bureau of Economic Research.
- Teixeira, R.A., Rotta, T.N., 2012. Valueless knowledge-commodities and financialization: productive and financial dimensions of capital autonomization. *Review of Radical Political Economics* 44, 448–467.
- UNCTAD, 2019. Digital Economy Report 2019: Value creation and capture–Implications for developing countries. United Nations, New York.
- US Congress. Subcommittee on antitrust, commercial and administrative law, 2020. Investigation of Competition in Digital Markets. US Congress, Washington DC.
- Vasudevan, R., 2022. Digital platforms: monopoly capital through a classical-marxian lens. *Cambridge Journal of Economics* beac045. <https://doi.org/10.1093/cje/beac045>
- Veblen, T., 2017. The theory of the leisure class. Routledge, Oxfordshire.
- Veblen, T., 1908a. On the nature of capital: Investment, intangible assets, and the pecuniary magnate. *The Quarterly Journal of Economics* 23, 104–136.
- Veblen, T., 1908b. On the nature of capital. *The Quarterly Journal of Economics* 22, 517–542.

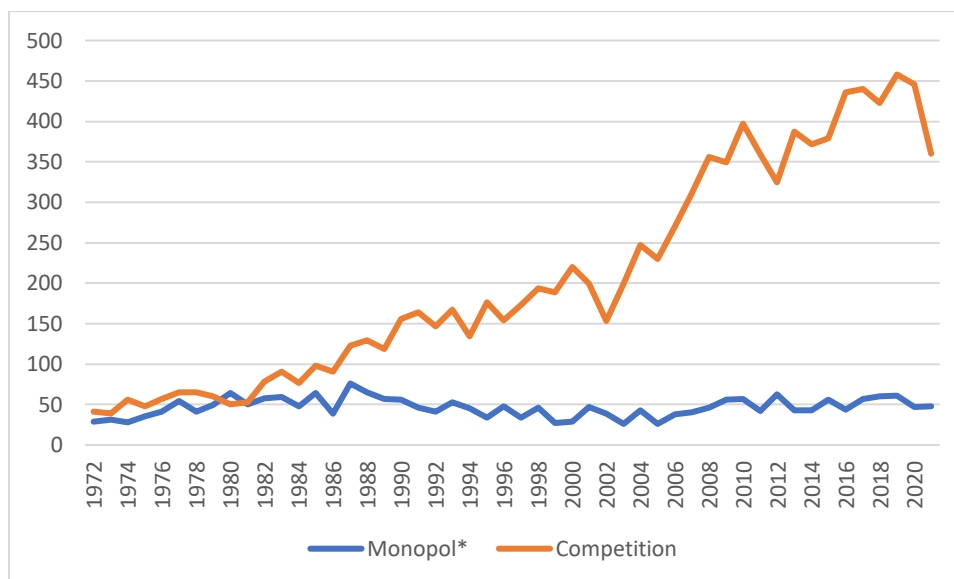
- Wade, R.H., 2017. The American paradox: ideology of free markets and the hidden practice of directional thrust. *Cambridge journal of economics* 41, 859–880.
- Weiss, L., 2014. *America Inc.?: innovation and enterprise in the national security state*. Cornell University Press.
- WIPO, 2014. THE IMPACT OF THE ACQUISITION AND USE OF PATENTS ON THE SMARTPHONE INDUSTRY. WIPO and Center on Law and Information Policy at the Fordham University School of Law, New York.
- Zuboff, S., 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power: Barack Obama’s Books of 2019*. Profile Books.

## 7. Acknowledgements

I am greatly thankful to Nicolás Águila, Joseph Baines, Fausto Gernone, Joel Rabinovich and Alan Shipman for their stimulating and enriching comments to earlier versions of this paper.

## 8. Appendix

Figure 1. Scientific publications in economics with Monopol or Competition in their title (1970-2021)



Source: Author’s analysis based on data extracted from the Web of Science

Table 1. Top 20 terms in scientific publications in economics with Monopol in the title (1970-2021)

<b>multi-term</b>	<b>frequency only econ and monopol* in title</b>
monopolistic competition	315
natural monopoly	135
<b>monopoly capitalism</b>	<b>133</b>
monopoly law	91
model of monopolistic competition	73
monopoly regulation	70
marginal cost	67
state monopoly	66
price discrimination	50
social welfare	47
durable goods	44
product differentiation	43
scale economies	39
general equilibrium	39
increasing returns	37
monopoly markets	37
united states	36
regulation of natural monopoly	36
administrative monopolies	32
monopoly rent	30

Source: Author's analysis based on data extracted from the Web of Science

Table 2.

<i>Type of enterprise</i>	<i>Early adopter</i>	<i>Laggard</i>	<i>Innovating</i>
Participates in accumulation systems?	Yes	Yes	No
Technical autonomy?	No	No	-
Participates in Innovation systems/ networks?	No	No	Yes
Examples	Foxconn (Apple) / FedEx and UPS (Amazon) Apple Hospitality (Hilton & Marriott) IKEA direct suppliers	iSmash (Apple) Sweatshops (Fashion multinational corporations such as Inditex) IKEA indirect-suppliers subcontracted by IKEA's main suppliers	High-tech (Big Tech) and biotechnology (Big Pharma) start ups App developers (Big Tech) Universities and public research organizations

Source: Author's analysis based on a previous typology proposed by Author (2021).