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The interplays of US, China and their intellectual monopolies.

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Abstract

Beyond the US-China watershed and supposedly polar state ideologies (liberal and pro-free-market in the US and dominated by state planning in China), this article delves into the shared traits of these powerful states. The US -at least since the Second World War- and China since 1978 share a systematic and highly oriented industrial policy directed to spur innovation in chosen sectors. In both cases, policies have been entangled with corporate interests and contribute to explaining the emergence of intellectual monopolies, precisely dominating each state's privileged industries and technologies. Furthermore, each state's geopolitical power relies on its respective intellectual monopolies. However, besides the support of each state, intellectual monopolies control global production and innovation networks constituting their own *republics*, which formally overlap with portions of different states. Intellectual monopolies also minimize their paid taxes while increasing wealth concentration. Contemporary capitalism is always on the brink of a global collapse as core states and intellectual monopolies are simultaneously friends and foes. We end this contribution with a preliminary analysis of these complexities.

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The interplays of US, China and their intellectual monopolies.

1. Introduction

In the XXI century, the most profitable corporations base their power on intellectual rentiership and predation. By accumulating intangible assets, they have become intellectual monopolies that limit access to different types and forms of knowledge. As explained by Rikap (2019, 2020), intellectual monopolies like tech giants and big pharmaceuticals subordinate other organizations. These corporations organize transnational innovation networks from which they garner intellectual rents establishing predatory relationships with other network participants. They also organize production processes by using global value chains and platforms extracting value produced by workers in subordinate firms. Intellectual monopolies coordinate and plan the lion's share of global capitalism.

Nevertheless, intellectual monopoly capitalism -as initially dubbed by Pagano (2014)-, as much as it is a global transformation, is also highly territorialized. Core states build and reinforce their geopolitical power based on the promotion and success of their intellectual monopolies, which further expand these companies' concentration of intangibles while attempting to regulate intellectual monopolies from foreign states. Here, we elaborate on how core states remain central players of global capitalism in juxtaposition with global leader corporations acting as intellectual monopolies.

We address the interplay between two core states -the US and the People's Republic of China, hereon China- and their respective intellectual monopolies. Altogether, these are the most powerful actors of intellectual monopoly capitalism whose intertwined rivalries are at the heart of global geopolitics. In the spirit of Babic et al. (2017), who elaborated on Strange (1993), our starting point is the juxtaposition of powerful actors in capitalism, and we will work on a preliminary unfolding of this premise. Our conceptualization will not attempt to produce a hierarchy of powerful actors. We will neither conclude that core states subordinate intellectual monopolies nor that the latter dominates the former. Both types of powerful actors retain spheres of influence, even if they sometimes overlap, resulting in conflicts whose outcomes cannot always be anticipated.

To some extent, intellectual monopoly capitalism relies on the US and Chinese states' policies. Simultaneously, these countries' hegemony has been reinforced by their respective intellectual monopolies. However, on top of what seems like a mutually beneficial relationship, it should be noted that intellectual monopolies do not recognize nationality when it comes to maximizing profit rates. Their planning scope and accumulation strategy are global as well as their assets' allocation, minimizing corporate taxes, capital expenditures, and overall risks. This may result, as we also present in this article, in clashes of power with their respective home states. Moreover, we briefly reflect on how intellectual monopolies have replaced state functions as policymakers.

All in all, we unpack the complex and multifaceted relationship between core states and (global) intellectual monopolies. The following section examines the US and China's industrial and innovation policies, highlighting their contribution to the emergence of intellectual monopoly capitalism. Next, section 3 elaborates on the flip side of this relation: how intellectual

monopolies contribute to strengthening their respective state's hegemony. Section 4 deals with intellectual monopolies' own agenda, including their policymaking skills. While that agenda is often aligned to their home states' priorities, they are sometimes in conflict resulting in a tangled turf war. Section 5 concludes.

2. The contribution of the US and China states to the emergence of intellectual monopolies

In this section, we overview the US and China's industrial and innovation policies, including references to antitrust and corporate taxing systems for the former. It must be noted that the interpenetrations of state and civil society (later dubbed "the economy" or more narrowly "the market") go beyond the effects of policy. They include concrete effects of the interplay between states and big corporations that will not be centrally addressed here, such as lobbying, which anyway played a part in orienting the policies we will overview (Wade, 2017; Zingales, 2017). General conceptualizations of these spheres of activity also identify a multiplicity of states (Cox, 1981), for instance the distinction between centre and periphery, which will not be addressed here.

In this section, we focus on how core states fostered their global intellectual monopoly. To elaborate on this claim, we have chosen two states that, at first sight, could be considered as polar cases: liberal and pro-free-market in the US and dominated by state planning in China. Regardless of this polar appearance, we show that the same underlying strategy prevailed: strengthening the state's hegemony through spurring the formation of global intellectual monopolies.

2.1. A marriage of convenience: the US and big corporations since the Second World War.

It is not possible to understand intellectual monopoly capitalism without considering the turns of the US policy since the aftermaths of the Second World War. Perhaps the most evident tie is related to the tightening and spread of intellectual property rights (IPRs) both for the US and from the US to the world. On top of this policy, the role of military research as a mission-oriented policy was crucial in the emergence of big pharma and tech giants like Apple (Mazzucato, 2015; Ruttan, 2006). Fostering technology transfer from universities and public research organisations to private companies further contributed to set the ground for intellectual predation (Rikap & Harari-Kermadec, 2019). Overall, a disguised industrial policy in the US was indispensable for allowing and spurring the monetization of public science by private firms. Additionally, these firms grew under the shelter of a favourable antitrust policy and (known) loopholes in the taxing system (Clausing, 2020; Glick, 2019; Glick & Ruetschlin, 2019).

Given the US global hegemon position, its bundle of policies spread -sometimes with no delay- around the world, either by imitator states or by the US influence in international organisations. Intellectual monopoly capitalism was born not as a local or national but as a global transformation.

2.1.1. *US industrial cum Science & Technology policy since the Second World War*

Disguised by dominant pro-free-market ideology, the US technological supremacy lays on its industrial policy, crucial for stimulating innovation in the private sector (Block, 2008; Wade, 2017). Its science and technology (S&T) strategy fulfilled multiple aims. It was crucial to guarantee military superiority, defend and increase the power of US multinational corporations, and limit other countries' catching-up (from the USSR during the Cold War to Japan in the 70s and China nowadays); thus to sustain the US geopolitical hegemony (Weiss, 2014).

The transmission belt that went from science to growth became known as the linear model of innovation that spread between the 1920s and 1960s in the US (Godin, 2006). Public policies shifted in line with science's integration into the economic realm. As illustrated in Vannevar Bush's "Science: The Endless Frontier" report for President Roosevelt after the Second World War, a new imaginary prevailed where basic science needed to be mostly funded by the public sector, assuming that the private sector would not have sufficient incentives to invest in science (Bush, 1945).

Since then, the US federal government took a development network state (DNS) commitment (Block, 2008; Wade, 2017). Block (2008, p. 172) explains that US firms already had strong innovation incentives. Therefore, policies aimed at incentivizing them would not spur innovation further. Thus, the US state assumed a "hands on" role; it worked "closely with firms to identify and support the most promising avenues for innovation". Given that a strong and developed higher education and S&T domains were also fulfilled preconditions, the state industrial policy concentrated on: targeted resourcing, opening windows, brokering, and facilitation.

During the Cold War, a specific office of the Pentagon, the Advanced Research Projects Agency created in 1958, dubbed DARPA (adding the word Defense at the beginning of the acronym), worked with relative autonomy and in close connection with the NASA and the US Atomic Energy Commission. DARPA set a research agenda beyond basic science by granting targeted funds for moonshot projects in computer S&T, including the provision of funds to create computer science departments in US leading universities. The rest of this story is quite known. DARPA also pioneered as an institution connecting researchers from different public and private organizations, building an S&T network for computing science, including the origin of the Internet.

DARPA and other agencies (such as the National Institutes of Health and the CIA), conformed a cluster of federal agencies collaborating closely with the private sector as a national technology enterprise with the leadership of the US president and supported by the Office of Science and Technology Policy of the Oval Office (Weiss, 2014). Its initial aim was to innovate for the assurance of the US military supremacy. Nevertheless, mainly since the 1980s, technology commercialization became an equally relevant goal. The Stevenson–Wylder Technology Innovation Act of 1980 mandated federal research laboratories to establish technology transfer offices. Since then, innovation policies included patenting and licensing, technology transfer agreements between federal laboratories and the private sector, public procurement, collaborative innovation projects, and the creation of new venture capital schemes. Public venture capital, a practice started by the CIA in 1999 through its venture capital arm In-Q-Tel, expanded during the 2000s to the US Army, the Department of Energy, the NASA, and the Department of Defense. They all run their venture capitals, taking equity positions in chosen innovating companies (Wade, 2017; Weiss, 2014).¹

Besides policies implemented by federal laboratories and agencies, S&T policies also targetted academic research. Technological applications and university-industry collaborations were encouraged since the 1970s (Berman, 2011; Block, 2008; Dasgupta & David, 1994; Marginson, 2014; Muscio et al., 2013; Pestre, 2003). Yet, it was only in the 1990s that university technology transfer became an expanded activity (Noh & Lee, 2019), even if the relationship between selected universities, the federal government, and the private sector in the US had been

¹ The US state not only acts as venture capital itself but has also inspired the creation of venture capitalism. The first venture capital firm, American Research and Development, dates from 1946. It was created by General Georges Doriot, a former manager of procurement and head of R&D in the US Military Planning Division during the Second World War who recognized that his past experience had been instrumental in the creation of its venture capital firm (Weiss, 2014).

institutionalized at the beginning of the Cold War (Bethell et al., 2009). Among the specific policies that further contributed to intellectual monopoly capitalism, there was a turning point since the Bayh Dole Act and the birth of the biotechnology industry as a group of university spin-offs that eventually failed or were acquired by big pharmaceuticals (Berman, 2011; Rose & Rose, 2014).

To contribute to US corporations' profitable businesses abroad, thus strengthening the US global hegemony, the state pushed for a stringent international IPRs regime. This formally began in 1995 with the "Trade Related Aspects of Intellectual Property Rights" (TRIPS) agreement. TRIPS is the result of US multinationals lobbying and complaining that third-world countries were copying their innovations. The active role of corporations like IBM, Pfizer, and Microsoft drafting first versions of this agreement is just one among many examples of how the US big corporations were directly involved in policymaking (Drahos, 1995).

By extending national regulations beyond its territory, the US exercised a form of infrastructural power on the rest of the world (Schwartz, 2019). In a transnational innovation context, dominant countries' regulations have international implications and eventually become the global benchmark, such as the United States Food and Drug Administration (USFDA) (Lane, 2007). In line with Farrell and Newman's (2010) analysis, the US managed to use a domestic institution to externalize its national rules on a global scale. Furthermore, the USFDA works in close technological cooperation with big pharmaceuticals providing another apparent example of the interpenetrations between core states and intellectual monopolies (Rikap, 2019).

2.1.2. A friendly antitrust policy and taxing system.

Changes in antitrust policy further facilitated the inception of intellectual monopolies. A new antitrust regime was born from the "Antitrust Project" of the Chicago School. It opposed to the more stringent policies of the New Deal period, even questioning the capacity of any single firm to exercise monopoly power. The Chicago School's overall recommendation was to reduce antitrust policy to a minimum, only aimed at guaranteeing "consumer welfare", which meant to prevent price increases due to excessive market power. The US courts adopted this antitrust program since the crisis of the 1970s (Glick, 2019).

Since the 1980s, the different versions of the Horizontal Merger Guidelines of the US Department of Justice and the Federal Trade Commission require increasingly higher proofs of an anticompetitive scenario to stop mergers and acquisitions (M&A). Furthermore, even if an anticompetitive M&A is proven, the deal could still be authorized if it lacks significant entry barriers to the corresponding market, or if the M&A can lead to efficiency gains (Glick, 2019).

Permissive antitrust policy arrived at a climax during Trump's presidency, with fewer criminal antitrust cases brought to courts than any administration since the 1970s (Shubber, 2019). Such record low levels fuelled the appalling evidence of increasing concentration and mark-ups in the US since the 1990s. M&As have contributed to expanding knowledge monopolies, especially in pharmaceutical and big tech sectors (Glick & Ruetschlin, 2019; Lopez Giron & Vialle, 2017; Montalban & Sakinç, 2013). Thus, changes in antitrust policy contributed to the emergence of global intellectual monopolies, which became a pillar of the US global hegemonic power (Schwartz, 2019).

Changes in antitrust policies were part of a broader system favouring big business in the US. By facilitating their artificial deferral of taxes, the US corporate tax system played a central role in the recovery of US multinationals' profit rates and accumulation pace since the 1970s. Since then, given that corporate taxes in the US are supposed to be paid at the place of incorporation, US multinationals have incorporated subsidiaries in tax havens. These subsidiaries operate and are managed in the US but do not pay corporate taxes.

The US Controlled Foreign Corporation (CFC) regime introduced in 1968 was supposed to prevent profit shifting to subsidiaries. However, two loopholes reduced its effectiveness. The manufacturing exception was meant to encourage multinationals to create significant value in its subsidiaries. Since 2008, criteria for qualifying for such exception were relaxed, and almost any activity performed in the subsidiary could fulfill the new requirements. The other loophole is the check-the-box regime established in 1997. By stating that a subsidiary is only a path-through company or hybrid-entity, intragroup transactions became non-existent (Ting, 2014). Overall, Hage and Baines (2020) results evidence that since the mid-1980s there is a regressive corporate tax structure where the top 10% of US listed corporations (defined as those with the highest ratio of net profit to sales) pay a lower worldwide effective income tax rate than the rest of the US listed corporations. And this result holds when distinguishing between jurisdictions (US and foreign).

It was argued by Ting (2014) that the US Government is aware of profit shifting mechanisms but looks away as indirect support to improve the competitiveness of US businesses. Indeed, both this mechanism and the more complex "Double Irish and Dutch Sandwich" are too popular to go unnoticed. The 2017 tax and jobs act (Public Law 115-97) pretended to reduce incentives for profit shifting. However, as noted by Clausen (2020), as of 2019 third quarter, there was no evidence of such a reduction. In fact, this act has also been considered an act that benefited M&As.

All things considered, it seems that antitrust policy and corporate taxing are aligned to a deliberate policy aimed at sustaining the US global hegemony by fostering US intellectual monopolies. Still, Chinese firms' successful R&D results in ICT and digital, as well as biological and clean energy technologies, are a major threat to the US. We explore next how the Chinese state policies fostered the emergence of Chinese intellectual monopolies.

2.2 China's innovation and industrial policies

In 1978, when China started its "reform and opening-up" process led by Deng Xiaoping, S&T was defined as one of its four (to be accomplished) modernizations. Until the end of the XX century, policies consisted of gradually making economic planning schemes more flexible in favour of market mechanisms and firms' autonomy. The reforms gave greater weight to provincial authorities in economic planning. However, it was always the national state that decided on the country's overall economic orientation (Bustelo Gómez & Fernández Lommen, 1996; Girado, 2017), and this general perspective remains today.

Among its early reforms, the World Bank recognizes that the creation of Special Economic Zones (SEZ) was strategic. They became poles of attraction for Foreign Direct Investment (FDI) and outsourcing (Zeng, 2010). China's government used foreign multinational firms' desire to access to its domestic market and low real wages² as the basis for negotiating access to their knowledge. Overall, innovation policy until the end of the XX century was based on imitation and adaptation through technology transfer and reverse engineering (Delgado-Ramos, 2007). Often this took the form of joint ventures where the foreign firms were required to partner with Chinese ones. This enhanced the technological capabilities of domestic (state-owned and private) corporations (Durand & Milberg, 2019).

² China's household registration (hukou) system played a central role in sustaining low wages in China. This system links access to social services and benefits to the place of birth, distinguishing between agricultural and non-agricultural residency status. In several cases, large corporations' workforce installed in SEZs are migrant workers from rural areas who, given their hukou, accept extremely precarious working conditions. This system persists and contributes significantly to the heterogeneity among workers (Chan & Pun, 2010).

A flexible implementation of TRIPS agreements and other protectionist policies underpinned the Chinese state in its confrontations with existing intellectual monopolies from core countries, in particular from the ICT industry. A special chapter refers to China's protectionist measures limiting the penetration of US data-driven intellectual monopolies. China's 'Great Fire Wall', introduced in 1997, limits access for foreign companies to internet-based business (including cloud services), favouring local companies in particular Baidu, Alibaba and Tencent (BAT) (Mueller, 2011; Wu & Gereffi, 2018).

Summing up, during this first period of transformations, China's place in the New International Division of Labour as simultaneously a huge market, and a cheap and under-regulated labour factory attracted outsourcing and offshoring, triggering a skyrocketing economic growth (Milberg & Winkler, 2013). This provided an unprecedented economic and geopolitical strength that was used to spur China's innovation system, which included industrial policies focused on chosen sectors and corporate leaders.

Since the 2000s, China's transformation went even further. Lower wages are no longer its main advantage but high labour productivity. Firms operating in China are increasingly involved in more complex production processes. National Science Board data shows that China's share of high R&D intensive industries grew from 6% in 2003 to 21% by 2020, second after the US, whose share fell from 38 to 32% (National Science Foundation, 2020). Moreover, for decades the state has been massively investing in research and higher education which, according to Arocena (2018), has been determinant for the success of China's national innovation system. As it is the case of the US, research institutions and state dependencies directly contributed to transforming private and state-owned enterprises into global intellectual monopolies, such as State Grid Corporation of China.

SEZ evolved and became high-tech industrial clusters with special tax exemptions. Shenzhen's SEZ has been particularly relevant for the emergence of China's intellectual monopolies. Among others, it is the home of Huawei, Tencent, the drone leader DJI and BYD, specialized in rechargeable batteries and electric vehicles (Chen & Ogan, 2017).

It was also at the beginning of the XXI century that China launched its "go out policy" to increase its global presence. According to World Bank data, from the 33rd position in net FDI outflows by 2000, in 2019 it ranked fourth. The global expansion of China's intellectual monopolies is significantly dependent on China's state active policy of financing development and infrastructure through new financial institutions mainly driven by China, such as the Asian Infrastructure Investment Bank (AIIB), the New Development Bank (NDB) and the Silk Road Fund.

FDI outflows are oriented towards sectors defined as strategic by China's economic planning authorities. They included the acquisition of firms that own patents or have highly trained personnel or have a significant market share in some high-tech manufacturing (Svampa & Slipak, 2018). BAT are globalizing and sourcing knowledge from abroad through acquisitions³ and collaborations with academic research institutions from other countries. Additionally, Huawei has R&D centres in Germany, Sweden, the US, France, Italy, Russia, and India with institutionalized collaborations with institutions from these countries and 40% of its profits correspond to its foreign operations.

Within the "go out policy", China's Belt and Road Initiative (BRI), launched in 2013 must be highlighted. The BRI illustrates how China positions itself as a geopolitical power. It leverages on its economic capacities while it strengthens partnership with global leader corporations for technological catching-up (such as Siemens partnership with Sinomach), aiming to become

³ Retrieved from: <https://www.reuters.com/article/amazon-cloud-idUSN1E7A727Q20111109> last access February 27, 2019.

itself the world's laboratory (Slipak & Ghiotto, 2019). Becoming an innovation-driven country was one of China's 13th Five-Year-Plan (2016-2020) key goals.

Chinese firms are moving beyond an imitation-driven and towards an innovation-driven stage (Gu et al., 2016), catching-up in patents and trademarks (Godinho & Ferreira, 2012). Hitherto, there has been an explosive rise in Chinese patents (15.3% average annual growth of its published patent applications). After decades of foreign companies leading patent applications, in the last decade, Chinese companies reversed this trend. From 2013 onwards, more than 80% of patent applications at the Chinese Patent Office corresponded to Chinese enterprises reaching almost 90% in 2017. Nevertheless, Chinese organizations remain less successful than foreign ones in granted to applied patents' ratio and still mostly apply for patents only inside China (China Clarivate Analytics, 2018).

China had initially developed a strong and mostly closed innovation system as the state explicitly sought to develop global innovation leaders (Lee et al., 2016; Nolan, 2012; Wen, 2017; Wu & Gereffi, 2018). A sign of the accomplishment of this goal has been its increasing move toward a more open strategy supporting negotiations on the liberalization of trade precisely in sectors where it had caught-up (Girado, 2017; Weinhardt & ten Brink, 2020). China joined the WTO in 2001 and gradually signed various international conventions related to intellectual property protection.

All in all, in the words of Arocena (2018), China's NIS is globalization's main winner. It is a NIS led by the state in close partnership with China's global intellectual monopolies.

3. How intellectual monopolies contribute to reinforce Core States hegemony

Not only the US and Chinese states have contributed to the emergence of intellectual monopoly capitalism, but their intellectual monopolies became a pillar of each of these countries' global dominance, embodiments of their home countries' S&T supremacy. As Babic et al. (2017, p. 3) argued, states and corporations "use each other to increase their respective power positions".

Intellectual monopoly capitalism is a new form of imperialism characterized by the extraction of knowledge and data from around the world, monetized by a few companies mainly from the US, but also other core countries. Another novelty is that China has joined the core of imperial countries. Under intellectual monopoly capitalism, technological frontiers expand from the results of these corporations' planned innovation networks. At the same time, as argued by Schwartz (2019), setting the technological frontier explains part of core economies' dominance, as it is particularly the case of the US.

Starrs (2013) argued that under globalization, economic power is based on global corporations' positions and profits. Through the lenses of its global corporations, the US still dominates by afar most economic sectors, including all those associated with new technologies (ICT hardware and software and biotechnology and pharma) (Schwartz, 2019; Starrs, 2013). By December 31, 2019, most of the global top 100 companies in market capitalization came for the US (55 companies or 60% of the top 100 market capitalization). In 2009, the US had 42 companies representing 45% of the top 100 corporations' market value (PWC, 2020). US corporations are also absolute leaders in Business Expenditure in R&D (BERD). The US accumulated 38% of the top 2,500 corporations' BERD in 2018/19 (European Commission, 2019).⁴

Schwartz (2019) shows that US productive power lays in the hands of those US firms that lead commodity chains capturing a disproportionate share of global profits given the US share of the global economy. This is all the more true, continues the author, for those corporations holding

⁴ In the last year year the US growth in the 100 global innovators ranking mirrored the fall of Japan (Clarivate Analytics, 2020).

the largest IPRs portfolios. Similarly, Starrs (2013) had found that US corporate dominance is greater in sectors characterized by advanced technology and knowledge. For instance, the US concentrates more than two-thirds of the market capitalization value of the world's 70 largest digital platforms (UNCTAD, 2019). Furthermore, on top of contributing, like other US intellectual monopolies, to sustain and expand the US S&T supremacy and geopolitical power, Google, Apple, Facebook and other US internet companies have provided data access to the US National Security Agency (NSA) for global surveillance.⁵

Even if US global leader corporations offshore retained earnings, they still represent a transfer of resources to the US, in particular to their shareholders and asset managers (Braun, 2020; Schwartz, 2019). US investors are also predominant owners of top European corporations (Starrs, 2013). In particular, the dubbed Big Three or "New Permanent Universal Owners" (BlackRock, Vanguard and State Street) are not only the largest owners of over 90% of S&P 500 companies but also "the largest shareholders in 60 percent of British FTSE 100, 40 percent of the German DAX, 25 percent of the Dutch AEX and 20 percent of the French CAC 40. In the Japanese Topix 100 they are the largest owner for 30 percent of the firms." (Fichtner & Heemskerk, 2018, p. 24). The Big Three close the cycle by assuring that not only distributed corporate profits from US leader corporations are channelled back to the US but also part of the distributed profits of major corporations from other core countries.

Authors highlighting that the US geopolitical power has not declined -and that it has even increased- with globalization driven by its leader corporations recognize only a minor place to China as a still not severe threat to the US global hegemony (Babic et al., 2017; Schwartz, 2019; Starrs, 2013). It is here where we disagree with them. Using their same methodology (each country's share of profits at Forbes Global 2000), 2020 profit data shows that while the US accumulates 38.4% of "Forbes Global 2000" profits, China follows with 16.6%. The third country is Japan, with a meagre 6.7%. Indeed, leading US corporations accumulate most of the profits, but the US had 46% of the top 500 corporations of this ranking in 2012 and, by 2020, it had 33% (167 corporations). In 2012 Japan followed the US in terms of the number of firms in the top 500. China was third with 5.9% of the top 500 firms. By 2020, China was second with 11.2% of the firms. Overall, Chinese 266 corporations in Forbes Global 2000 (56 of which are in the top 500) should not be downplayed. Underestimating China's corporate and state power as the US main foreign contestant is a risk as serious as neglecting the still global hegemony of the US.

Most business and S&T indicators show that the US is followed -even if sometimes from afar- by China. China became a global centre of economic and geopolitical power in part at the expense of the US world power. For instance, since 2012, the US (and also Europe and Japan) has been losing positions to China at the top 1% of BERD corporations (Veugelers, 2018).

In the specific case of digital platforms, China follows the US, with 22% of the value of the world's 70 largest companies (UNCTAD, 2019). China is also the world leader in artificial intelligence adoption and data. In contrast, the US arrives first in terms of talent, research, development, and hardware, metrics defined by a recent report of the Center for Data Innovation (Castro et al., 2019). China also seconds the US in the top 100 unicorns by value. While the US had half of the companies and value on the list, China's 26 unicorns in the top 100 represented 35% of the top 100 unicorns' value by March 2020 (PWC, 2020).

China's corporate profit share in the digital economy is higher than what Forbes Global 2000 shows because it excludes Huawei, which remains a private entity. Huawei's technological leadership in 5G technologies is an apparent example of how a firm's technological leadership contributes to strengthening its home country's power. The underlying fear of Western

⁵ <https://www.theguardian.com/world/2013/jun/06/us-tech-giants-nsa-data>

economies regarding Huawei as the only company mastering 5G technologies is the reinforcement of China's geopolitical and economic leadership.⁶

Furthermore, China's high-tech intellectual monopolies have overall good relationships with the Chinese state and have exercised a strong influence on Chinese digital policy (Azmeah et al., 2019; de Graaff, 2020). Baidu and Tencent have a seat in China's national political advisory body, the founders and CEO of Huawei and Alibaba are affiliated to China's Communist Party. An overall result of the consolidation of China's national innovation system has been the strengthening of its military⁷ and economic power in close partnership with China's intellectual monopolies, in particular Huawei and ZTE (Tejeda Canobbio, 2011), a story that looks much similar to the US one.

Chinese corporate leaders have had a clear strategy of expanding by acquiring technologically advanced businesses of western global leaders, thus contributing to China's state "go out policy". Lenovo acquired IBM computers' business in 2005 and Motorola's business (previously acquired by Google) in 2014. Chinese companies have also been actively acquiring German innovative firms, such as Kuka and KraussMaffei. In 2017, the Zhengzhou Group and Renaissance Capital Investment acquired the engine division of Bosch (Slipak, 2018). Besides acquiring full businesses, purchasing equity stakes in technologically advanced companies is also frequent among China's intellectual monopolies. It has been Alibaba and Tencent's main globalization strategy (Jia et al., 2018). Moreover, these tech giants and Baidu cooperate with Audi and the joint venture between FAW Group Corporation and Volkswagen in data analysis, internet-vehicle platform building, and intelligent urban transport.⁸

However, to this point, China is still far from the US in most technologies. Indeed, China's second place in terms of corporate profit share in Forbes Global 2000 is mostly driven by two sectors: digital and finance. In terms of top corporations in market capitalization, by December 31, 2019 China ranked 3rd after Europe with 14 companies (in 2009, China had 11 companies in this ranking) (PWC, 2020). What gives further proof of the still undisputed US S&T supremacy -which of course stands with exceptions like 5G- is that China had only three global innovators in the 2020 edition of Derwent Top 100 global innovators, while the US had 39 (Clarivate Analytics, 2020).

Anyway, and regardless of its enduring leadership, the US trade war with China that became visible in 2018 can be understood as a technological war. The US aims to constrain China's technological catching-up, precisely targeting the digital industries, where China has advanced the most. The US is once again proactive in defending its global technological leadership and political hegemony from its most serious technological contender (Ciuriak, 2019; Ernst, 2020; García-Herrero, 2019). According to a Deutsche Bank report, we are in the midst of a global tech cold war with its own (tech) wall: two parallel tech regimes (Walia, 2020). However, the difference with the previous Cold War is the high level of co-dependence between the US and China's led tech regimes. The report presents a China/US tech geopolitical capacity ratio over time. Until 2018 China narrowed its technological distance with the US at a rate that -if maintained- would have led to tech parity at some point between 2025 and 2030. However, in 2019, the ratio sets back, probably as a result of the US state strategy to slowdown China's catching-up.

Clearly, each country's intellectual monopolies are critical players in this conflict since they are major sources of technological leadership. Notwithstanding the deal achieved by the end of 2019, there are certain possibilities of global value chains' decoupling, some of them organized

⁶ <https://www.ft.com/content/24b01f0e-441e-11ea-a43a-c4b328d9061c>

⁷ China has the second largest defence budget, accounting for 13.1% of the global total (SIPRI, 2018).

⁸ <https://www.audi-mediacycenter.com/en/press-releases/audi-strengthens-partnerships-with-chinese-tech-giants-6711>

around the US and others around China.⁹ This speculation has gained ground since the CoVid-19 pandemic.

4. Clashes of power between states and intellectual monopolies

As Strange (1996) anticipated, the decline of the state's power vis-à-vis corporations can be partly explained by the acceleration of technological change, which tilts the scale in favour of the latter. As identified by Feenberg (2010, p. 5) "political democracy is largely overshadowed by the enormous power wielded by the masters of technical systems". Indeed, we should consider that powerful intellectual monopolies pass over their home states in specific contexts or respects.¹⁰ With this in mind we reconceived core states as one of capitalism's multiple powerful actors.

Beyond explicit confrontations, since intellectual monopolies organize and plan production and innovation networks taking place in different countries, they generate an overlap of political realms with sometimes contradictory rules and norms. Who oversees production and innovation inside the networks organized by intellectual monopolies? The latter or the different states where they take place? To whom subordinate companies and organizations are accountable for their actions? Their state or the intellectual monopoly coordinating the network? The simple answer is to both. The complicated part is to identify what happens when they are in contradiction, and what are the consequences of this complex set of power structures for workers and subordinated organizations.

Intellectual monopolies have replaced state functions as policymakers. An extreme example recently disclosed is Eric Schmidt, executive chair of Alphabet and representative of Silicon Valley's will, advising the US federal government. The government's threat over China is -at least to some extent- driven by US data-driven intellectual monopolies' concern over Chinese rivals like Alibaba, Tencent, and Huawei as the CEOs Google, Amazon, Facebook and Apple evidenced in their testimonies in 2020 US Congress Hearing. As a remedy, Schmidt pushed for more public investment in research related to artificial intelligence and tech-enabling infrastructure (such as 5G) (Klein, 2020). Furthermore, these data-driven intellectual monopolies make their own rules and norms for their *digital republics* and, to some degree, replace the role of states. Facebook's founder and chief executive, Mark Zuckerberg, states it clearly

Every day, platforms like Facebook have to make trade-offs on important social values — between free expression and safety, privacy and law enforcement, and between creating open systems and locking down data. (<https://www.ft.com/content/602ec7ec-4f18-11ea-95a0-43d18ec715f5?segmentId=b0d7e653-3467-12ab-c0f0-77e4424cdb4c>)

And immediately afterwards he claims for more public regulations and informs that Facebook is working together with different governments to that end. A similar claim was raised by Sundar Pichai, arguing that artificial intelligence needs to be regulated.¹¹

However, the division of power is not clear, given that corporate power and planning capacities go beyond national frontiers and beyond the capital they own. Overall, there is a legal vacuum in the reach of each state's power and where the power of the intellectual monopoly controlling a portion of global production and innovation begins. This vacuum allows intellectual monopolies to expand their power and profits.

⁹ <https://www.ft.com/content/f23d8854-11fa-11ea-a225-db2f231cfeae>

¹⁰ An illustration of this point is that among the 30 biggest revenues combining companies and governments in 2015, there are 10 companies (Zingales, 2017).

¹¹ <https://www.ft.com/content/3467659a-386d-11ea-ac3c-f68c10993b04?segmentId=b0d7e653-3467-12ab-c0f0-77e4424cdb4c>

Another source of conflict between intellectual monopolies and core states concerns the absence of the usual benefits of being home to big corporations: job generation and tax payments. Considering their earnings, global leader corporations do not generate in their home countries expected employment due to outsourcing and offshoring (of production and innovation), which is particularly the case of US and also European intellectual monopolies. This has contributed to the rise in inequalities in these countries. The consequent social distress pressed on stringent regulations. In the US, we referred in section 2.1 to the 2017 tax and jobs act (Public Law 115-97), but changes have not been significant.

US intellectual monopolies are masters of tax evasion. Operations leading to lower tax bills and financialized profits are easier for companies with higher shares of intangible over tangible assets. Offshoring IPRs to countries where corporations are not required to pay taxes for their intellectual property is a mechanism frequently used to divert profits to tax havens (Bryan et al., 2017). By the end of 2016, the top ten companies in terms of offshored savings were all intellectual monopolies: Apple, Microsoft, Cisco, Oracle, Alphabet, Johnson & Johnson, Pfizer, Qualcomm, Amgen and Merck (Pozsar, 2018).

In China, whose global intellectual monopolies sprang from the sustained stimulus and protection of its state, the latter's central planning capacity is starting to find limits vis-à-vis new intellectual monopolies. These corporations were not born as the chosen ones by the state, but still enjoyed the benefits of China's protectionism. The recent case of Bytedance provides a good example. The company was spending its Chinese profits to expand its still unprofitable business in the US when the US government threatened to ban its blockbuster TikTok app. Bytedance was not among Beijing's favoured companies, among others, because of the difficulties in controlling the videos uploaded to TikTok (Yang, 2020). Regardless of the end of the story between TikTok, the US and Chinese governments and Microsoft as a potential buyer for part of TikTok's business, what the case puts forward is a possible surge of clashes between emerging Chinese (data-driven) intellectual monopolies and their state.

Meanwhile, Europe remained focused on increasing regulations on foreign data-driven intellectual monopolies, including different accusations of excessive market power and unfair competition. Unlike previous stages in capitalism, Europe risks playing in the subordinate side, where the peripheries have historically been and generally remain. Germany's fear of falling behind the US and China's tech giants should also be read as a broader European concern to lag (far) behind those core economies.¹² Overall, Europe and Japan are latecomers of the digital economy, and this space is being filled primarily by China, emerging as a digital technological power (UNCTAD, 2019). Moreover, with a drop of 8 companies between March 2009 and December 2019, Europe's share of global top 100 corporations in market capitalization fell from 27% to 15%. This drop was taken over by the US (PWC, 2020). Regulating the digital economy could thus be seen as Europe's geopolitical rebalancing move.¹³

5. Final remarks

In this contribution, we argued that core states and certain corporations edified a mutually beneficial relationship. We identified US and Chinese policies that contributed to the emergence and spread of global intellectual monopolies. Likewise, we elaborated on how these corporate leaders sustain and expand their respective countries' geopolitical power. Nevertheless, we also addressed states' concerns and the overall tensions of the juxtaposition of power between core states and intellectual monopolies.

¹² <https://www.ft.com/content/6f69433a-40f0-11ea-a047-eae9bd51ceba>

¹³ By 2019, Europe had 3.6 of the market capitalization value of the world's 70 largest digital platforms (UNCTAD, 2019).

The US state cannot afford to lose its intellectual monopolies since its global hegemon power significantly depends on those companies. Likewise, it cannot afford to keep its intellectual monopolies given their consequences for income and wealth concentration resulting in increasing social unrest. From the US state perspective, the technological war with China is necessary to remain as the only superpower. Nevertheless, this conflict is also a powerful device to redirect public attention and blame -as it has always been the case of the US- an "other" of the internal consequences of home (and global) capitalism.

Neither can China's state afford to lose its alliance with its intellectual monopolies. China's national innovation system and geopolitical power are based on a strong partnership -although not without tensions- between China's state and intellectual monopolies, the only ones who, so far, have overshadowed the US and its intellectual monopolies.

All in all, the US and Chinese states have benefited from their respective intellectual monopolies to build and reinforce their geopolitical power. Meanwhile, in the rest of the world, knowledge and data extractivisms are further expanding inequalities, diminishing social wellbeing, and curtailing development opportunities. The resulting world scenario is complicated.

A missing piece in this puzzle that will be addressed in future research concerns integrating international organizations to our analysis, seeking to understand how intellectual monopolies influence them and their role as arenas of core states' contest for global hegemony. Let us just point out that each time the US withdraws from international coordination, China moves forward. Remarkably, the US is withdrawing from international treaties and organizations, putting into question its historical openness. A possible interpretation could be that the hegemon fosters an open world economy but as far as it benefits from it.

To conclude, beyond the focus on the US and China, we have also made self-evident that unfolding the interplay between state and corporate power is always context-dependent. While in some contexts the state rules over global leader corporations, the latter overcome even core states' power in other contexts. As capitalism develops through the interplay of its powerful actors, it is not possible to anticipate concrete outcomes of such a multifaceted relationship. Neither can we anticipate the counter-hegemonic tendencies that, as Cox (1981) emphasized, generally emerge to oppose the state and world order structures of capitalism. The institutions that will lead the counter-offensive to intellectual monopoly capitalism are still to be seen.

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