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CAPITALISM AS USUAL?

Implications of Digital Intellectual Monopolies

What kind of regime of accumulation is taking shape today? The distinguishing features of the contemporary Atlantic economy—prolonged stagnation, globalized production, financialization, upward redistribution, the ongoing digital revolution—have provoked a range of responses. In *Techno-féodalisme*, Cédric Durand argued that a qualitative mutation is occurring at capitalism's digital frontier, whereby profits are accrued by predatory means—politically enabled rents and monopolies—in a manner analogous to feudal relations of expropriation, rather than the economic compulsion to 'accumulate via innovation' that drives capitalist exploitation. Evgeny Morozov has responded with a wide-ranging critique of attempts on right and left to understand contemporary developments, both in the digital sector and beyond, by reference to the feudal era. 'Capitalism', he insists, 'is moving in the same direction it always has been, leveraging whatever resources it can mobilize—the cheaper, the better.' It has always depended to some extent upon extra-economic means of accumulation, so there is no need to reach for novel—or not so novel—concepts to understand its contemporary dynamics.[1] Are we witnessing a shift to non-capitalist forms—a new mode of production? Or is this, as Morozov would have it, just the latest round of capitalism as usual?

This contribution to these debates focuses on a key element of the contemporary landscape: the new relations of production originating in the digital sector, which the Italian economist Ugo Pagano has termed 'intellectual monopoly capitalism'.[2] The giants of the digital economy, both American—Google, Apple, Facebook, Amazon, Microsoft—and

Chinese—Baidu, Alibaba, Tencent, Huawei—are at the forefront of these developments, though similar tendencies are discernible in other industries. Despite the knocks to their shares in late 2022 with the end of quantitative easing, the tech giants remain a dominant feature of the 21st-century scene. Indeed, it is striking that all the firms that did well in 2022—Big Oil and Big Pharma, as well as Big Tech—have one thing in common: they all exercise monopoly power over other firms. Where they differ is in what they control—what they deprive others of—which has important implications: those that systematically monopolize knowledge and data exert a global exclusion which makes them more resilient. What follows will examine the novel nature of Big Tech's monopoly power, the factors that have given rise to it and the mechanisms used to enforce its hold over other firms. I will look in particular at the case of Microsoft, which jostles with Apple and Aramco in the top three corporations by market value. But first, some more general considerations about monopoly power may be in order.

Monopoly as a power relation

Private property is a relationship between those who have and those who do not have—those who are deprived of access, yet still need it. As such, private property is the most general form of monopolization under capitalism. Property rights should thus be understood not simply in terms of the owner and what is owned, but as a social relationship. As David Graeber writes, they are 'an understanding or arrangement between people concerning things'—people in the sense of individuals, but also collectives, classes, firms. In this unequal relationship, one side may constitute the vast majority of society. In this understanding, monopoly as a power relation comprises both those enjoying and those deprived of what has been monopolized. In fact, this was the conception of England's Statute of Monopolies of 1623, which voided monopoly

[1] Cédric Durand, *Techno-féodalisme: Critique de l'économie numérique*, Paris 2020; Evgeny Morozov, 'Critique of Techno-Feudal Reason', NLR 133/134, Jan–April 2022, p. 126; see also Durand's reply, 'Scouting Capital's Frontiers', NLR 136, July–Aug 2022.

[2] Ugo Pagano, 'The Crisis of Intellectual Monopoly Capitalism', *Cambridge Journal of Economics*, vol. 38, no. 6, November 2014, pp. 1409–29; Cecilia Rikap, *Capitalism, Power and Innovation: Intellectual Monopoly Capitalism Uncovered*, Abingdon 2021; Cédric Durand and Cecilia Rikap, 'Intellectual Monopoly Capitalism—Challenge of Our Times', *Social Europe*, 5 October 2021.

grants on the grounds of 'the great Grievance and Inconvenience' they inflicted upon the subjects of James I. These 'grievances' might involve restraining others from buying (known as 'monopsony') as well as from selling (the conventional understanding of 'monopoly'). As James's Attorney General Edward Coke also specified, a monopoly could also govern the making, working or using of a thing.[3]

As recent scholarship has stressed, monopoly power is not merely a market phenomenon; legal regimes play a vital role.[4] But it remains crucial to emphasize the effects of monopolization as a power relation exerted over others. This was central for the 1960s theorists of 'monopoly capital', described as a new stage in capitalist development that was characterized by giant corporations such as General Electric with sufficient market power to set prices. Capitalism, in Paul Sweezy's definition, comes into being through 'the formation of a propertyless working-class on the one hand and of a property-owning capitalist class on the other'.[5] These are the two sides of a relationship based on capitalists' monopoly over the means of production, used to exploit workers and appropriate the value they create.

Means of production are heterogeneous, therefore other relations of monopoly power can overlay the monopoly of capital over labour. The specific conditions of certain industries, such as a minimum plant size and, more generally, economies of scale, can create natural monopolies. Monopolization can occur over a resource, as in the case of companies monopolizing fossil fuel—like Aramco and Exxon Mobil—at the expense of those that depend on it. Modern states can also create forms of monopoly relations, such as those based on intellectual property rights (IPRs). The specificity of this last kind of monopoly—over intellectual property—is two-fold. Knowledge can in principle be utilized simultaneously without detriment to any party—indeed, with multiplying benefits

[3] Edward Coke, *The Third Part of the Institutes of the Laws of England*, London 1628, p. 181.

[4] Giulio Palermo, 'Competition: A Marxist View', *Cambridge Journal of Economics*, vol. 41, no. 6, November 2017; Ramaa Vasudevan, 'Digital Platforms: Monopoly Capital through a Classical-Marxian Lens', *Cambridge Journal of Economics*, vol. 46, no. 6, November 2022; Brett Christophers, *The Great Leveler: Capitalism and Competition in the Court of Law*, Cambridge MA 2016.

[5] Paul Baran and Paul Sweezy, *Monopoly Capital*, New York 1966, p. 53; Paul Sweezy, *Four Lectures on Marxism*, New York 1981, p. 27.

to all, as with universal literacy—and need not be delimited by physical location. Its private ownership can therefore involve a global monopoly over its application. Once this takes place, firms' capacities to absorb and learn from new knowledge will be structurally differentiated, leaving those at the frontier with the best chance of future innovation. Secondly, as knowledge is part of every production process, it can potentially be monopolized in any sector or industry across the economy.

Gaining influence

This conception of monopoly power is fundamental to grasping the workings of intellectual monopoly capitalism today. First though, what are the institutional, legal, political and technological transformations that have led to its development? All else being equal, firms that innovate are in a better position to do so in the future, meaning that creative success can unleash a cycle whereby a successful firm monopolizes knowledge at the expense of the rest of the economy. This self-reinforcing dynamic was progressively strengthened in the United States and the United Kingdom from the mid-19th century, as barriers were constructed around knowledge and information. It began with the disembodiment of workplace knowledge from worker to organization; trade secrets gradually became a corporate right; employment relationships matured into contract-based legal agreements that included a trade secret clause. By the start of the 20th century, the rise of the corporation as a legal entity gave it the right to own knowledge created by its employees during working hours.[6]

The key developments date from the 1980s, when a wave of legal and institutional changes created a more stringent and extensive IPRs regime in the US. Legal protection was extended to include software, which had stopped being integrated into hardware after IBM, a decade earlier, 'unbundled' it to pre-empt a Department of Justice antitrust suit and thereby limit damage claims from competitors.[7] This system was then internationalized from the mid-1990s with the signing of TRIPS (Trade-Related Aspects of Intellectual Property Rights)—originally drafted by

[6] Catherine Fisk, *Working Knowledge: Employee Innovation and the Rise of Corporate Intellectual Property, 1800–1930*, Chapel Hill 2009.

[7] Burton Grad, 'A Personal Recollection: IBM's Unbundling of Software and Services', *IEEE Annals of the History of Computing*, vol. 24, no. 1, January–March 2002, pp. 64–71.

IBM, Pfizer and Microsoft—and follow-up treaties.[8] Aspects of knowledge used for production became independent appropriable entities, granting intellectual monopolies to those owning, possessing or controlling them. IPRs now became widely used and abused in the pharmaceutical and technology sectors—as in the phenomena of patent thickets, where innovation is split into countless patents so as to make imitation more complex, as Apple did with the iPhone.[9] Today's intellectual monopolies are sufficiently powerful to infringe the IPRs of subordinate organizations, such as Apple's violation of Qualcomm patents.

The growth of intellectual monopolies in the technology sector in the 1990s and early 2000s was also enabled by a policy vacuum, ranging from lack of regulation over who could harvest big data and what type of data could be harvested, to trade policies for digital services. We still lack, for instance, standardized measures for calculating the asset value of the data held by a firm like Google. Since the Reagan Administration, intellectual monopolies have benefited from the neoliberal weakening of antitrust regulations, which made 'consumer welfare' their sole focus. This had an immediate positive impact on large pharmaceutical companies because they primarily sell to governments, thus higher prices are not paid directly by consumers. Decades later, this weakness also favours Big Tech, which offers products for free—or, for a price measured in data and attention—or at lower prices than offline alternatives. A permissive regulatory framework has further strengthened their hand: firms are able to offshore their intellectual property and earnings to tax havens, and as their power has grown, they've been able to underpin their position through political power. Apple, Amazon, Google and Facebook for instance spent a total of more than $55 million on lobbying the US federal government last year.[10]

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[8] Benjamin Coriat and Fabienne Orsi, 'Establishing a New Intellectual Property Rights Regime in the United States: Origins, Content and Problems', *Research Policy*, vol. 31, no. 8–9, December 2002, pp. 1491–507; Rochelle Dreyfuss and Susy Frankel, 'From Incentive to Commodity to Asset: How International Law Is Reconceptualizing Intellectual Property', *Michigan Journal of International Law*, vol. 36, no. 4, 2014, pp. 557–602.

[9] See for instance '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, 2014.

[10] Emily Bimbaum, 'Tech Spent Big on Lobbying Last Year', *Politico*, 24 January 2022. On their similar strategy in Europe, see 'Big Tech's Web of Influence in the EU', *Corporate Europe Observatory*, 21 August 2021; Clothilde Goujard, 'Big Tech Accused of Shady Lobbying in EU Parliament', *Politico*, 14 October 2022.

Geopolitics has also been an important factor. Leading US corporations can count the global hegemon among their allies. US state funding of top universities to work with—or, more accurately, *for*—industry has been crucial to advancements in biotech as well as information and communication technologies, just as covert industrial policy during the Cold War had been.[11] The state has played an equally important role in the emergence of intellectual monopolies in Asia, from Samsung in South Korea to TSMC in Taiwan. In China, meanwhile, protectionist policies such as the Great Firewall were complemented with science, technology and innovation initiatives that encouraged universities and other public research organizations to work with industry. The Chinese state also built digital infrastructure in poorer countries—the Digital Silk Road—as part of its Belt and Road Initiative, paving the way for the internationalization of its Big Tech.

Data-driven monopolies

Defending the benefits of monopoly power in the technology sector a few years ago, the PayPal and Palantir co-founder Peter Thiel explained in the *Wall Street Journal*:

> 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.[12]

What makes a firm like Google to 'so good' that 'no other firm can offer a close substitute'? It used to be thought that once a firm introduced a technical innovation—either as a new commodity or a more efficient process of production—it earned additional profits or intellectual rent until it had been imitated or diffused throughout the industry. The fundamental change of our epoch is the proliferation of intellectual monopolies that are instead systematically reinforced and expanded.

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[11] Fred Block, 'Swimming against the Current: The Rise of a Hidden Developmental State in the United States', *Politics & Society*, vol. 36, no. 2, June 2008, pp. 169–206; Linda Weiss, *America Inc.?: Innovation and Enterprise in the National Security State*, Ithaca 2014.

[12] Peter Thiel, 'Competition Is for Losers', *Wall Street Journal*, 12 September 2014.

Critical here is the symbiotic relationship between big data and artificial intelligence. Exclusive access to harvested data grants intellectual monopolies a continuous advantage at the expense of their competitors. This dramatic concentration of digital intelligence represents a near insurmountable barrier to entry for other firms, especially when the tangible assets required to harvest and process data, such as data centres and undersea cables, are increasingly concentrated in fewer hands. This mass of data is not only vast but also diverse, which triggers economies of scale; the opportunities to monetize data increase when different data sources are cross-referenced. It is processed by the most advanced artificial-intelligence algorithms, which are also kept secret from others. These learn and improve by themselves as they crunch more data, further accelerating innovation. This creates a high-speed industry, where patented technologies are obsolete by the time other firms can read them. In economic terms, machine-learning algorithms are self-improving means of production; they appreciate instead of depreciating when used. The result is that they operate as a self-reinforcing monopoly mechanism.[13]

The cloud business—where Amazon, Microsoft and Google control around 65 per cent of the market—illustrates one way in which monopoly power over digital technologies is reinforced. In the cloud, intangible assets that Big Tech at least partly appropriated from others are offered as a service. 'Software as a service' is sold as a black box, meaning that the organizations that pay for it do not have access to the original code, which limits the knowledge they can accrue from it. The marginal costs are close to zero, and when the software uses a deep learning algorithm, the service it provides improves the more data it processes; thus the client both pays to use the product and contributes to its improvement. The intellectual monopoly therefore not only captures value in the form of rents but also uses their privileged access to data and digital technologies to further enclose digital spaces. Amazon, Microsoft and Google (plus Alibaba, which has its own hierarchy based on Chinese Big Tech) sit at the top of this pyramid, followed by multinational corporations from a variety of industries, whose leadership is also based

[13] Iain M. Cockburn, Rebecca Henderson, and Scott Stern, 'The Impact of Artificial Intelligence on Innovation', National Bureau of Economic Research Working Paper 24449, 2018.

on intellectual monopolies exerted over other firms, but that depend on black-box cloud services. In the terms of Pierre Dockès, subordination means that they can dominate those below them.[14]

Recent moves by the tech giants to limit data harvesting and foster open-source environments may appear in conflict with these self-reinforcing dynamics. In 2021 for example, Apple made privacy changes to its iOS operating system that required third-party apps to ask for permission to collect users' data. Microsoft has meanwhile seemingly embraced open-source, acquiring the largest open-source development platform, GitHub, for $7.5 billion in 2018. This is the same company whose former CEO, Steve Ballmer, claimed in 2001 that the open-source operating system Linux was 'a cancer that attaches itself in an intellectual property sense to everything it touches'. Read between the lines and it is clear these manoeuvres are intended to further reinforce Apple and Microsoft's intellectual monopolies by limiting the ability of other companies to catch up.

Apple is not reducing its own data harvesting; it only bounds the data that third parties can harvest from its devices. Microsoft's embrace of open-source environments strengthens their monopoly power in a number of ways. By making open-source software only one piece of larger projects, they can profit from developers' free work without risking their intellectual monopolies. Among GitHub's most popular projects was Microsoft/vscode, a source-code editor for modern web and cloud applications. In 2018, this project's development platform had 19,000 contributors, of whom only 7,700 were registered Microsoft employees. Making development kits and libraries open source can also mean their popularity increases, and some may eventually become standards for coding. This expands the number of developers designing products that run on the monopolist's platforms. Defining norms of how code is written sets production techniques in the industry, ultimately determining what is valid knowledge within the field.

Patents and authors

The appropriation of research is another fundamental aspect of this expanding appropriation of knowledge, as well as the power dynamics

[14] Pierre Dockès, 'Pouvoir, autorité et convention d'obéissance', *Journal of World-Systems Research*, vol. 6, no. 3, November 2000, pp. 920–45.

it enforces. One way to get a sense of this is to compare the authorship of scientific publications with patents. Figure 1 (overleaf) presents a network map of Microsoft's most-frequent co-authors between 2012 and 2021.[15] It shows seven loosely connected R&D clusters, divided into relatively independent subject areas. At its centre is computer science, while there are smaller clusters of work on topics including women's studies, genetics or the application of robotics to surgery.

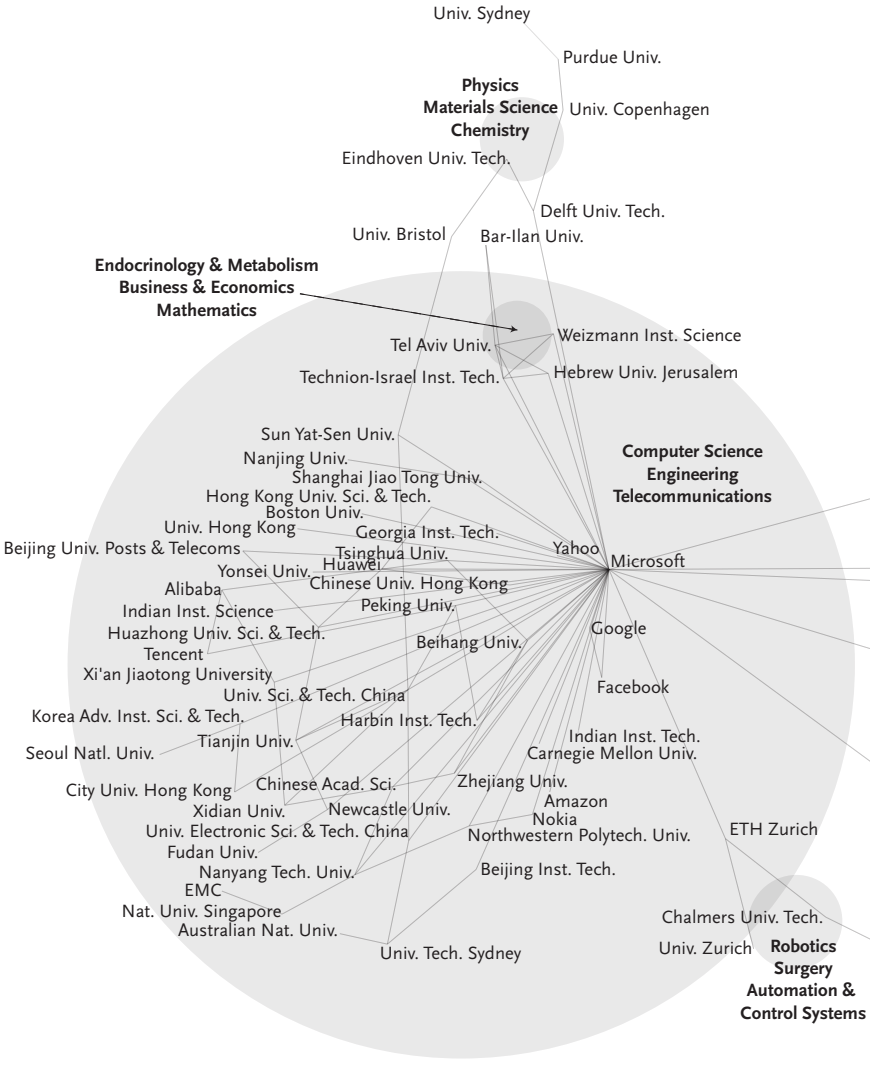
Microsoft was the world leader in AI patents for much of this period (Tencent is now the first). Innovating in AI requires laboratories, great absorptive capacities, processing power and skills to translate and apply AI-models, something that few companies possess. The various clusters are internally international, while nevertheless dominated by institutions from core countries. Notably, co-authors include a wide array of Chinese organizations, including three tech giants: Huawei, Tencent and Alibaba.[16] Microsoft is the only US Big Tech firm that has a good relationship with the Chinese administration. In 2010, it opened its first major R&D campus outside the US, a high-tech industrial park, in Shanghai. Among its R&D links, one that concerned Washington was its AI research with the National University of Defense Technology, an institution controlled by China's Central Military Commission. We also see evidence of technological cooperation with other US giants, Google, Amazon and Meta.

Overall, between 2012 and 2021, Microsoft staff co-authored articles with scientists and scholars from 4,516 other organizations, publishing ten or more times with 473 of them. The resulting texts were presented at the most prestigious conferences, such as the AAAI Conference on Artificial Intelligence, or appeared in important international journals, such as Communications of the ACM (Association for Computing Machinery). Yet as Table I shows, Microsoft barely shared patent ownership with any of these co-authors' institutions. The university sharing most patents is the University of Washington, with only 2 co-owned patents. The top ten

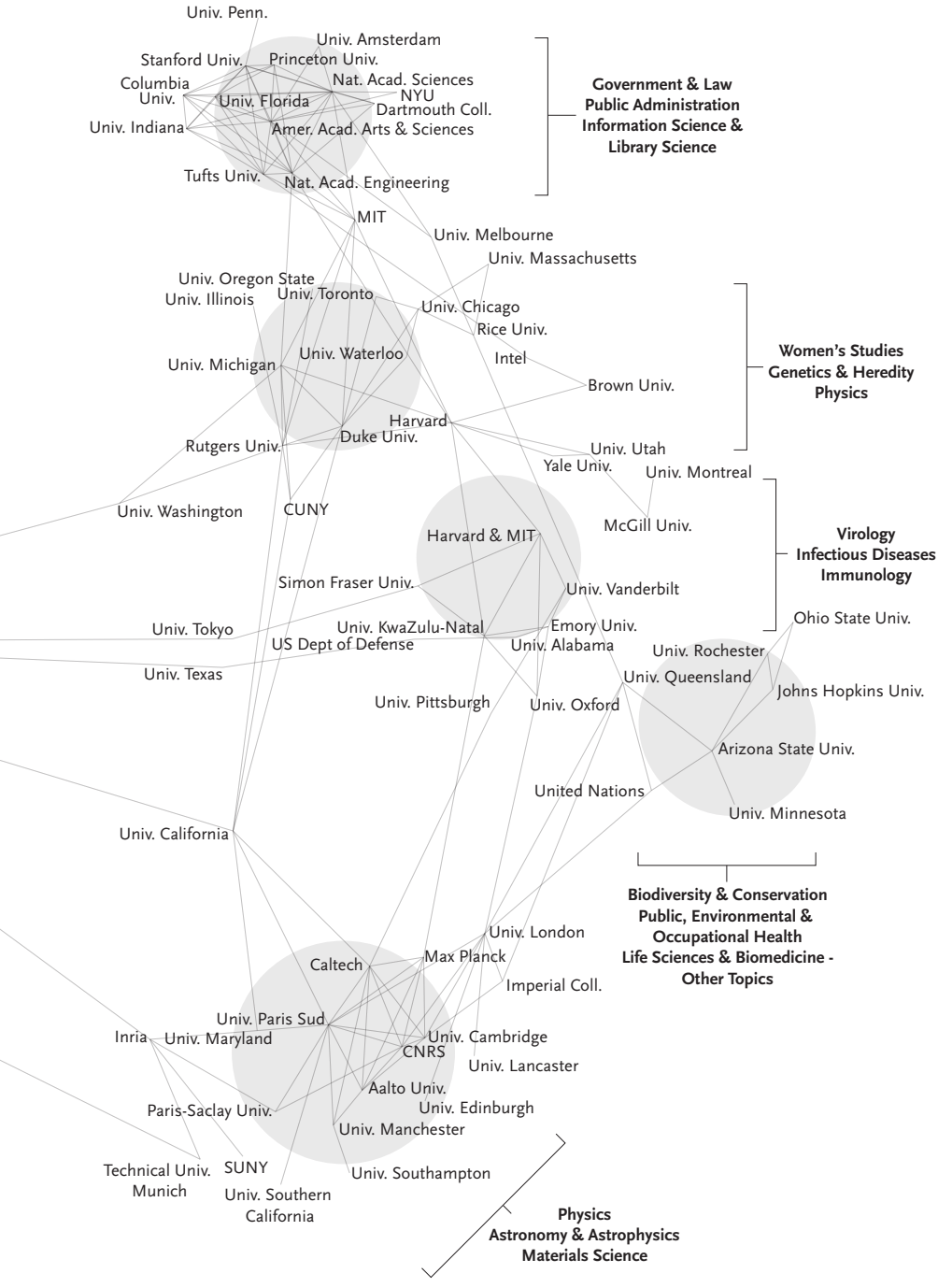
[15] This database includes all the information from 87 patent offices including: USPTO, WIPO, European, Japan, Australian, British, Canadian, French, German, Russian, Korean and Chinese.

[16] Silu Huang et al., 'Efficient Identification of Approximate Best Configuration of Training in Large Datasets', in *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 33, 2019, pp. 3862–69; Xufang Luo et al., 'CoChat: Enabling Bot and Human Collaboration for Task Completion', in *Proceedings of the AAAI Conference on Artificial Intelligence*, vol. 32, 2018.

Figure 1: *Microsoft's Top 150 Co-Authors (2012–2021)*



Source: author's analysis based on data from Web of Science


Univ. Penn.
Univ. Amsterdam
Stanford Univ.
Princeton Univ.
Columbia Univ.
Nat. Acad. Sciences
NYU
Univ. Florida
Dartmouth Coll.
Univ. Indiana
Amer. Acad. Arts & Sciences
Tufts Univ.
Nat. Acad. Engineering
Government & Law
Public Administration
Information Science &
Library Science
MIT
Univ. Melbourne
Univ. Massachusetts
Univ. Oregon State
Univ. Illinois
Univ. Toronto
Univ. Chicago
Rice Univ.
Univ. Waterloo
Intel
Univ. Michigan
Brown Univ.
Harvard
Duke Univ.
Rutgers Univ.
Univ. Utah
Yale Univ.
Women's Studies
Genetics & Heredity
Physics
Univ. Montreal
Univ. Washington
CUNY
McGill Univ.
Harvard & MIT
Virology
Infectious Diseases
Immunology
Simon Fraser Univ.
Univ. Vanderbilt
Ohio State Univ.
Univ. Tokyo
Univ. KwaZulu-Natal
Emory Univ.
US Dept of Defense
Univ. Alabama
Univ. Rochester
Univ. Texas
Univ. Queensland
Johns Hopkins Univ.
Univ. Pittsburgh
Univ. Oxford
Arizona State Univ.
United Nations
Univ. Minnesota
Univ. California
Biodiversity & Conservation
Public, Environmental &
Occupational Health
Life Sciences & Biomedicine -
Other Topics
Univ. London
Caltech
Max Planck
Imperial Coll.
Univ. Paris Sud
Inria
Univ. Maryland
Univ. Cambridge
CNRS
Univ. Lancaster
Aalto Univ.
Univ. Edinburgh
Paris-Saclay Univ.
Univ. Manchester
Technical Univ.
Munich
SUNY
Univ. Southampton
Univ. Southern
California
Physics
Astronomy & Astrophysics
Materials Science

co-owners are all small firms with the exception of Uber (13 co-owned patents) and the aerospace and defence multinational Northrop Grumman (21 co-owned patents). Among these, Veveo, a system for optimizing search engine results, is an interesting case because it is partly owned by Google's parent company, Alphabet. Providing seed money to start-ups is a means of exerting control without the need of an acquisition (another part of their standard practice). In 2019 for instance, Microsoft poured $1 billion into the non-profit OpenAI. Since then, it has gained exclusive licence to some of the company's innovations, including the frontier deep learning AI model 'GPT-3'. At the time of writing, the firm is expected to put an additional $10 billion into the further development of the AI chatbot ChatGPT.

What this analysis ultimately reveals is the extent of Microsoft's predation over knowledge via intellectual property. While relying extensively on the work of scholars and public funding for its research, in 99 per cent of cases they gain exclusive ownership of any innovations. In the hierarchical innovation networks Big Tech has created, specialists produce components of innovation processes controlled by the monopoly, who alone capture the profits from their commercial exploitation. Staggeringly, Microsoft was recently excluded from the US Congress investigation of tech giants' potential market-power abuses, despite being the world's second largest corporation—77.3 per cent of the world's

TABLE 1: *Microsoft's Co-authorships vs Co-ownerships*

Total scientific publications	15,170
Co-authored publications	13,343
Share of co-authored publications	88%
Total Patents	35,233
Co-owned patents	518
Share of co-owned patents	1%
Knowledge appropriation indicator (share of co-authorship over share of co-ownership)	59.83

Source: author's analysis based on data from Web of Science and Derwent Innovation.

desktops run on Windows, while Microsoft Office 365 delivers 48 per cent of the office productivity software.[17] Yet as this data shows, market gatekeeping is only the tip of the iceberg of their monopoly practices.[18]

Exercising hegemony

These mechanisms grant corporations like Microsoft power not just over growing portions of society's knowledge, but also over other firms. Their monopoly enforces a stratification: while the monopoly firm systematically enjoys privileged access to critical knowledge and information, other firms and organizations are deprived of it and compelled into subordination. Firms dependent on accessing intangible assets for producing new knowledge, as is often the case with tech start-ups, thereby become subordinated as innovation contractors. For those that require access to captured information for commodity production, competing is also not an option. Subordination is their best alternative strategy to still accumulate capital, even if this also means accumulating it for the monopolist. Global value chains provide an early example of the resulting relationship, where leading corporations hold exclusive knowledge over how to integrate an international network of production.[19] In the anticipatory words of Samir Amin, writing on the persistence of underdevelopment, 'direct control of the means of production' becomes unnecessary once central capital is in a position to dominate the industries of the Third World through technology, 'and draw substantial profits from them without even having to finance their installation.'[20]

Accumulation by extraction and exploitation here take place simultaneously. The unit of capital accumulation expands beyond the legal property of the monopoly to the whole subsystem that depends on access to its intangible assets. The monopoly wields control not only over the production processes in these subordinate firms and organizations but can use its power to define clauses of exclusivity, commercial

[17] 'Market share of major office productivity software worldwide in 2022', Statista.com.

[18] Cecilia Rikap and Cédric Durand, 'Capitalism in the Age of Intellectual Monopoly', *IT for Change*.

[19] Cédric Durand and William Milberg, 'Intellectual Monopoly in Global Value Chains'.

[20] Samir Amin, *Accumulation on a World Scale: A Critique of the Theory of Underdevelopment*, New York 1974, p. 154.

credit conditions and quality standards, further shaping the market in its favour.[21] In some circumstances it will also exercise direct coordination or control of its subcontractors to ensure that production is taking place according to its specifications. It was recently announced, for example, that the Chinese manufacturer Luxshare Precision will assemble premium iPhones, taking over part of Foxconn's business. To facilitate this, Apple dedicated specific investment to integrate Luxshare into its value chain; as a result it took Luxshare only a few months to begin delivering last-minute orders.[22]

Such firms are independent but control their means of production in a *de jure* but not *de facto* sense. The monopoly sets prices, typically on the basis of its intimate knowledge of the production process. Subordinate firms will often try to compensate for this by superexploiting workers, as in the cases of sweatshops for electronic devices' assemblers (this of course is not only a strategy of subordinate firms, as Amazon's warehouses illustrate). Firms of course also become dependent on intellectual monopolies for consumer access to their product, as when developers rely on Big Tech platforms to sell their apps. The gig economy is populated by lower-tier platforms that depend on Big Tech companies' digital technologies and infrastructure. To make their apps work, platforms like those offering ride hailing and food delivery must subordinate themselves to the tech giants.

Contrary to received wisdom, planning—or the question of *who plans whom*—is actually decisive in contemporary capitalism. In the English Jacobean and Elizabethan periods, granting a patent monopoly not only referred to what we now call IPRs, but also denoted a delegation of governance, of the power to rule others in certain contexts.[23] Intellectual

[21] Jean-Christophe Graz, *The Power of Standards*, Cambridge 2019.
[22] Qianer Liu, 'Foxconn's biggest Chinese rival wins premium iPhone contract', *FT*, 4 January 2023.
[23] Chris Dent, '"Generally Inconvenient": The 1624 Statute of Monopolies as Political Compromise', *Melbourne University Law Review*, vol. 33, no. 2, 2009, pp. 415–53. These original patents required an obligation from the grantee, for instance to create jobs, a benefit used, even in the 20th century, to justify the existence of giant corporations such as those of the automobile industry. The other common justification in the era when Baran and Sweezy were theorizing monopoly capitalism was that giant corporations were indispensable for innovations that would afterwards be diffused leading to economic growth. The spread of intellectual monopolies throws away both promises.

monopolies today have accrued similar powers, becoming planners of global capitalism far beyond their legally owned capital. Unprecedented digital intelligence extends the intellectual monopoly's planning capacities to degrees that could not have been envisioned in the past by any state or corporation. According to James C. Scott, state planning was doomed because it required simplifications that neglected essential local knowledge.[24] By processing individualized data from people and organizations around the globe, Big Tech algorithms continuously learn from the most localized information, enabling planning of vast spheres of society without making abstractions of such localities. Exclusive ownership of the most comprehensive and diverse data sources and machine-learning technology allows these corporations to expand their intellectual monopoly into new fields—from healthcare to renewable energy—not merely as providers of technology, but as actual players. Clashes between Big Tech companies and the states that nurtured them are intertwined with the confrontation between the US and China, as well as rivalry or cooperation among their respective Big Tech monopolies.

Intensifying stagnation

Intellectual monopoly capitalism is therefore defined by a growing appropriation of society's knowledge, which enables the monopoly to exercise power over other firms and organizations. Capital accumulation today is thus to a significant extent driven and sustained by predation and by the assetization of intangibles. Rents of course are intrinsic to actually existing capitalist dynamics. But the effects on accumulation in this case are different because the intellectual monopoly is a proactive rentier. It needs to keep investing in R&D to sustain its lead, which is based on a systematic transformation of the temporary windfall of the innovator into a permanent advantage. The perpetuation of rents also requires securing privileged access to new intangibles, both produced in-house and those captured from others. And this may also entail large-scale capital investments in digital infrastructure in order to collect, transport and store digital intangibles. Microsoft ranks fourth in business expenditure on R&D—after Amazon, Apple and Huawei—and is also heavily investing in digital infrastructure. And it will continue investing both in new intangibles and in the digital infrastructure; otherwise, it risks losing its intellectual monopoly.

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[24] James Scott, *Seeing Like a State*, New Haven 2008.

At the level of global accumulation, intellectual monopoly power has several effects. One is on levels of investment. Microsoft's cash and short-term investments represented 95 per cent of its revenues in 2020 and 78 per cent in 2021, after acquiring the cloud start-up Nuance for $19.7 billion.[25] Excessive liquidity could instead contribute to accumulation. Clearly, Microsoft does not need to make such investments to self-reinforce its intellectual monopoly—after all, it is among the top five private R&D investors anyway. Second, intellectual monopolies interrupt the cycle that goes from innovation to diffusion. Innovations typically lead to economic growth through the diffusion of new techniques, with adoption generating adaptation and complementary innovations, with new knowledge produced based on learning from that innovation. By breaking this cycle, intellectual monopolization hampers economic growth. The long-term dynamics of this form of capitalism are likely to be characterized by financialization, inequality and stagnation.

So, is this capitalism as usual? Certainly not. By saying this, I am not implying a complete departure from the past. The exploitation of labour remains, even if now accumulation is being driven by firms that exercise intellectual monopoly power over others as never before. But today's forms of labour exploitation are one among many areas where an updated analysis is needed. As the case of intellectual monopolies makes clear, knowledge is cumulative: scrutiny of contemporary capitalism cannot neglect past contributions, any more than it can treat them as sacred texts with all the answers.

[25] The company offered a cloud-based system for medical transcription services and was recognized to be at the frontier of speech recognition. The acquisition gave Microsoft access to a portfolio of over 1,000 patents and secretly kept knowledge. See Enrique Dans, 'There's Nothing Nuanced About Microsoft's Plans For Voice Recognition Technology', *Forbes*, 13 April 2021.