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Big Tech: Four Emerging Forms of Digital Rentiership

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KEYWORDS Big Tech; digital rentiership; economic rents; digital ecosystem; data enclaves; monopoly

Introduction

In late 2020, the US government initiated legal suits against two Big Tech firms. In October, the US Department of Justice (DoJ) and 11 State Attorneys General filed a lawsuit against Google for ‘violating antitrust laws,’ including the alleged pursuit of anticompetitive strategies to undermine competition in online search and online advertising markets.¹ Two months later, the US Federal Trade Commission (FTC) charged Facebook with ‘illegal monopolization,’ again alleging that Facebook pursued anticompetitive strategies to create and cement its social network monopoly.² The DoJ and FTC suits followed the conclusion of a nearly-two-year long investigation by the House Subcommittee on Antitrust, Commercial, and Administrative Law into monopoly and digital markets (US House of Representatives, 2020).

These two suits are far from the only actions being taken by policymakers against Big Tech firms in recent years. In fact, there is an increasing emphasis on the development of specific and targeted legislation to curb the techno-economic power of these firms. Recently, for example, the Australian Competition and Consumer Commission has implementing regulations to require firms like Google and Facebook to pay for news media content accessed through their ‘ecosystems’; the Canadian Federal Government introduced a *Digital Charter Implementation Act* designed to extend data protection and privacy rights; and the European Commission (EC) has proposed a two-pronged *Digital Services Act* and *Digital Market Act* to address growing concerns with Big Tech and the impacts of digital technologies. These policy and governance actions confronting Big Tech are being undertaken by administrations and/or by politicians and political parties across the political spectrum.

Big Tech is not a monolith with one set of techno-economic practices; its members can have different strategic objectives that clash. For example, Apple and Facebook are currently engaging in a publicity war about plans by

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Apple to introduce new privacy features in its operating system in Spring 2021 (Morrison, 2021). These features would threaten Facebook's business model, which is almost wholly dependent on the collection and use of personal data in online advertising markets (US House of Representatives, 2020). Facebook is even threatening to sue Apple. Despite this heterogeneity, however, there is still a shared conception of Big Tech held by a diverse array of publics, policy-makers, businesses, academics, journalists, and others, which has spotlighted Big Tech's actions.

So, what has led to these growing concerns about Big Tech? And what might science and technology studies (STS) contribute to these debates?

The primary answer to the first question seems to pertain to techno-economic power. Today, the five of the largest corporations in the world are digital technology firms – Apple, Amazon, Microsoft, Google/Alphabet, and Facebook. These firms control access to the digital products, services, and infrastructures that we increasingly rely on in our everyday lives, whether digital search, social networks, smartphones, online markets, online advertising, and more.

In this paper, we deliberately use the term 'ecosystem' – rather than 'platform' (Srnicek, 2016; Langley and Leyshon, 2017) – to represent this range of activities and practices as a specific conceptual recognition that Big Tech firms are not just, or even primarily, digital platforms. Ecosystems are heterogeneous assemblages of technical devices, platforms, users, developers, payment systems, etc. as well as legal contracts, rights, claims, standards, etc. (Doctorow, 2020; Pistor, 2020). In other words, they are techno-economic in character, co-constructed with socio-legal orders (Pistor, 2019). For example, Facebook's ecosystem is both a digital platform and the rules for that platform, as well as the users and the metrics used to measure and value their actions (e.g. likes, messages, comments, views, etc.), and a growing array of other integrated products (e.g. WhatsApp, Oculus). The term ecosystem also reflects the way that Big Tech firms understand their own operations, as illustrated by statements in their financial reports and in earnings calls with investors (Birch *et al.*, 2021). Using this terminology has important implications for an STS analysis of Big Tech.

We argue that Big Tech ecosystems are important techno-economic sites of new and emerging forms of *digital rentiership* (Birch *et al.*, 2020), reflecting debates in STS and cognate fields about the importance of unpacking economic rents as a form of social practice (e.g. Birch 2020a; Birch and Muniesa, 2020). A growing literature on 'technoscience rent' has highlighted the practical diversity in techno-economic rentiership that often goes beyond discussions of economic rents in other disciplines and fields (e.g. Cooper and Waldby, 2014; McGoey, 2017; Fuller, 2019; Artyushina, 2020; Birch *et al.*, 2020; Komljenovic, 2020; Levidow, 2020; Sadowski, 2020; Pinel, 2021).

What brings this STS and associated literature together is the emphasis on the construction of economic rents – how they are made – rather than treating

rents as the distortion of a naturalized competitive market or labour process. In this paper, we outline four emerging forms of digital rentiership in Big Tech ecosystems reflecting the similarities and diversities in Big Tech firms themselves: (1) ‘enclave rents’ created through the control of ecosystems; (2) ‘expected monopoly rents’ created through the performative fulfilment of future narratives; (3) ‘engagement rents’ constituted via rankings and metrics that differentiate users by their engagement with digital services and products; and (4) ‘reflexivity rents’ obtained by exploiting ecosystem rules and norms. Above all, our aim is to illustrate how economic rents can be made from the control of many different things. Before we get to these emerging forms of rentiership, however, we briefly outline the rise of Big Tech.

The Rise of Big Tech

Our definition of Big Tech emphasizes the ‘big.’ Amazon, Apple, Alphabet/Google, Facebook, and Microsoft are the five largest firms in the USA by market capitalization, together comprising about 25% of the S&P500 in the United States. They dwarf even other undeniably large and powerful firms; for example, Facebook, the smallest of the five, is more than three times bigger than Exxon, Nike, and Coca-Cola, some of the most iconic American corporations. Apple is larger than the bottom 167 companies on the S&P500 combined.

Beyond their extreme differential size, the members of Big Tech have risen to dominance in a remarkably short timespan. In the post-war era, only during the dot-com bubble of 1999–2000 did a top five rise more quickly, although it then fell quickly. [Figure 1](#) shows the market capitalization of Big Tech and the average capitalization of the 200 largest publicly-traded US firms, defined as ‘dominant capital’ by Nitzan and Bichler (2009). Setting aside Microsoft’s early rise through the 1990s and 2000s, the first member of Big Tech to grow rapidly in size was Apple. It overtook Microsoft in 2010 and then grew at an annualized 18% per year through 2019. Facebook, Google, and Microsoft began their rise in 2013, growing at 37%, 22%, and 27%, respectively. Amazon’s climb began in 2015, and it has grown at an annual rate of 45%. The average for the top 200 US firms, meanwhile, is 10% per year. It is important to remember that this growth expresses the differential assessment by investors of each company’s future prospects.

Despite their differences, Big Tech firms have more techno-economic similarity than previous iterations of the top five. For example, in 1999, at the height of the dot-com bubble, the five biggest companies were three tech firms – Microsoft, Oracle, and Cisco Systems – as well as a manufacturing conglomerate – General Electric – and retail giant Wal-Mart. Importantly, no previous incarnation of ‘Big’ capital – e.g. Big Oil, Big Pharma, Big Banks – has held all five positions at the top of the corporate hierarchy.

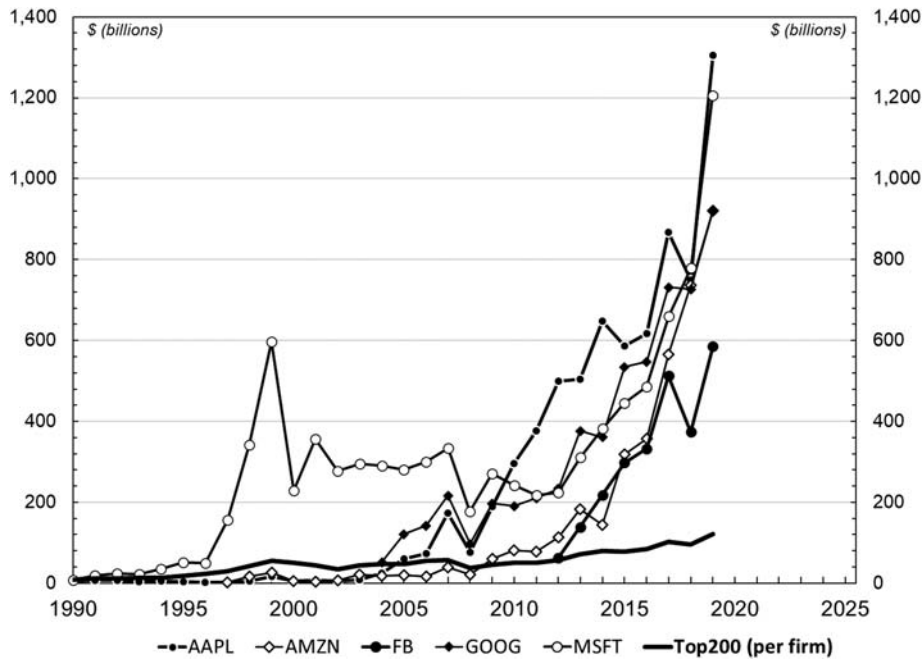


Figure 1. The rise of Big Tech, market capitalization, 1990–2019.

Note: compiled by the authors with data from Compustat via Wharton Research Data Service; AAPL = Apple, AMZN = Amazon, FB = Facebook, GOOG = Alphabet, MSFT = Microsoft.

There are several fruitful analytical perspectives on the rise of Big Tech. In the remainder of this paper, we focus on the different forms of *digital rentiership* that we consider to be operative aspects of Big Tech’s power. The five largest members of Big Tech are the pinnacle of digital rentiership, hence the popular application of the label ‘Big Tech’ to a variety of firms like Netflix, Uber, Spotify, Zynga, and PayPal (Galloway, 2018). There are also reasons to consider techno-economic features of Big Tech to be present, or developing, among more traditional companies (Langley and Leyshon, 2017). Although we identify techno-economic features of Big Tech with a specific set of firms, they operate beyond those firms. Our identification of different forms of rentiership could be useful for identifying what Hendrikse *et al.* (2021) call ‘Big Techification’ within capitalism more generally.

Four Emerging Forms of Digital Rentiership

Scholars are writing about rentiership in the digital economy across several fields, including STS (e.g. Srnicek, 2016; Langley and Leyshon, 2017; Birch, 2020a, 2020b; Birch *et al.*, 2020; Komljenovic, 2020, 2021; Rikap, 2020; Sadowski, 2020; Schwartz, 2020). Much of the earlier research focuses on digital platforms as the key site for conceptual development; we expand the analytical focus to digital ecosystems, which are heterogenous assemblages of diverse techno-

economic components including devices, platforms, users, developers, legal rights, contractual agreements, standards, and so on. We build on previous perspectives to argue that Big Tech can be understood through an analytical lens centred on treating rentiership as both ‘technical-economic phenomena’ and ‘a juridical relationship’ (Haila, 1990, p. 277). We argue that Big Tech is characterized by the emergence of new and specifically digital forms of rentiership, defined as the construction *and* extraction of value through the techno-economic extension of ownership and/or control over assets, often resulting from some artificial or natural scarcity, quality, or productivity (Birch, 2017, 2020a). Before we outline those emerging forms of *digital rentiership*, we want to stress two things.

First, Big Tech represents a distinct analytical and empirical case of rentiership, significantly different from earlier discussions and examples of economic rents – which have often focused on land or natural resources – largely because the features of digital technologies, and their deployment, enact a new set of practices for the construction *and* extraction of future revenues from specifically digital assets (Prainsack, 2019; Birch *et al.*, 2020; Beauvisage and Mellet, 2020). We use the term *digital rentiership* to reflect this distinctiveness. An example of Big Tech’s novelty is the insertion of digital platforms as an intermediary between existing products/services and users (e.g. Uber), creating a new multi-sided ecosystem of exchange from which the digital intermediary can demand both a toll and masses of data (Nieborg and Poell, 2018; Fourcade and Kluttz, 2020; Komljenovic, 2020; Pistor, 2020).

Second, economic rents need to be understood as a techno-economic concept configured by an analytical commitment to the idea that there are, or can be, competitive markets. Acknowledging that definitional commitments are always performative (Muniesa *et al.*, 2017), we emphasize that rents are an outcome or effect of political-economic claims, practices, and processes – hence why we emphasize that rentiership is an active social practice. In other words, rents are never simply extracted, they are necessarily also constructed. Consequently, our analytical goal is to articulate the forms of digital rents emerging within contemporary, technoscientific capitalism.

Enclave Rents

We first consider *enclave rents*. These are the revenues Big Tech collects by controlling (1) an ecosystem of devices, apps, platforms, and other products; (2) the data that users generate through participation in the ecosystem; (3) the rules they set for users, developers, and others; and (4) enforcement of the standards in the ecosystems. For example, new users of Oculus VR headsets must now have a Facebook account to access the Oculus platform; the data gathered via Oculus then gets added to other data collected by Facebook in order to

monetize users. The enclaving of users is not always so stark; for example, using Spotify is deliberately more arduous than Apple Music within the Apple ecosystem. Interoperability restrictions between enclaves can be strengthened by promising an enhanced user experience made possible only within the controlled ecosystem (Doctorow, 2020). Firms collect data from users by promising a better experience within the ecosystem. The users themselves are an important source of revenue, such as when Big Tech sells access to advertisers, app developers, and others.

Analysis of nine years of earnings calls shows that the language of ‘ecosystems’ is used to greater and lesser degrees by all the members of Big Tech. Google led in using ecosystem when talking to investors, with Amazon’s usage more limited. As of 2020, Apple makes the most references to ecosystems. The companies refer to ecosystems in relation to their products (e.g. Android ecosystem), processes (e.g. build ecosystems), product categories (e.g. mobile ecosystems), and relations (e.g. customer ecosystems). There is a degree of competition among the ecosystems, as each enclave constrains the mobility of users. In Facebook’s 2020Q4 earnings call, for example, executives identified Apple as one of its ‘biggest competitors’ because ‘iMessage is a key linchpin of their ecosystem.’ It is not simply that iMessage and Facebook Messenger are competing products; rather, these services are components of the ecosystems each company controls that bring users into the respective enclaves where they can be monetized.

Access to the enclave is valuable to outsiders like advertisers, software developers, and hardware manufacturers. Both the concentration of users and the collection of their data make access a near-necessity for the operations of other digital technology firms. Simultaneously, Big Tech firms augment their ecosystems through integrating these outsiders.

Initially, the ecosystem was something that Big Tech firms participated in. Eventually, they constructed ecosystems as a more profitable business and innovation strategy. Consequently, ecosystems have become enveloped and controlled by Big Tech, reflecting a three-pronged approach to generating enclave rents. First, through controlling access to the data collected from their ecosystems, thereby creating and exploiting the concentration of user data that other digital firms need access to in order to innovate (Zuboff, 2019). Second, through locking-in users to their ecosystems, both legally (e.g. contractual agreements) and technically (e.g. interoperability restrictions) (Cohen, 2019). And finally, through self-preferencing when it comes to directing users to new products and services; for example, the US Congressional investigation of Big Tech concluded that ‘Apple leverages its control of iOS and the App Store to create and enforce barriers to competition and discriminate against and exclude rivals while preferencing its own offering’ (US House of Representatives, 2020, p. 17).

Expected Monopoly Rents

We turn now to *expected monopoly rents*. As Schwartz (2016, p. 238) puts it, ‘Firms with [IPR] monopolies have a large *expected* cash flow and thus a large market capitalization relative to asset base’ (our emphasis). These ‘expected cash flows’ are performative in a dual sense: first, they are expressed through higher market valuations of the monopolistic firms; and second, they enable monopolistic firms to leverage their valuations to borrow more cheaply (Galloway, 2018). Lower borrowing costs enable them to acquire competitors, thereby creating a self-fulfilling outcome (e.g. higher expected cash flows, competitive dominance). It is not that these firms are necessarily monopolies – or even will become monopolies; rather, their *expected* control over existing and developing assets provides the rationale for investors to *expect* higher future returns, which translates into higher capitalization (Durand and Milberg, 2020). This cycle of higher capitalization, lower borrowing, and acquisitions lead to lower discount rates as competitive risks are reduced, even if greater control does not translate into greater future revenues (Schwartz, 2020).

The main Big Tech example of this is Amazon (Galloway, 2018), although Uber and Lyft represent other examples within a broader definition of Big Tech. Such firms are often characterized as future monopoly plays (e.g. Sadowski, 2020; van Doorn and Badger, 2020). Investors *expect* them to become monopolies providing monopoly rents, and therefore investors provide them with the resources to performatively achieve those expectations.

Unlike the usual monopoly rents (Haila, 2016), neither high asset prices nor constrained demand explains the emergence of these *expected* monopoly rents; rather, it is expectations about future monopoly control and the leverage this provides to performatively achieve this expectation that matters – either by buying up competitors, discouraging investors from supporting competitors, or lobbying governments and publics to support particular regulations. For example, the Californian vote on Proposition 22 in November 2020 to continue to regulate rideshare drivers as independent contractors, rather than employees, led directly to billion dollar increases in the share value of Uber and Lyft (Mohamed, 2020), on the back of expected future revenues. This is why we define this form of digital rentiership as underpinned by *expected* monopoly rents.

The notion of expected monopoly rents reflects ongoing debates in the sociology of technological expectations (STE), which has become a fruitful avenue of STS analysis in recent years (e.g. Borup *et al.*, 2006; Birch *et al.*, 2014; Tutton, 2017), as well as broader approaches to understanding the role of the future in other social sciences (e.g. Beckert, 2013). The STE perspective examines how visions of the future enrol social groups and social resources in the pursuit of specific technoscientific projects. As Brown and Michael (2003, p. 13) point out, ‘expectations are capable of generating enormous near-term share value

... , but without any necessary requirement for entrepreneurs to fulfil their longer-term promises.’

Expected monopoly rents also entail knowledge claims about monopoly, premised on a set of analytical assumptions in economics about what constitutes a market, or gets performed as such in STS parlance (Callon, 1998; MacKenzie, 2009). As such, ‘monopoly’ relies on the notion that economic activity is – and can be – delineated into bounded markets (e.g. online search) and substitutable transactions (e.g. we can buy this smartphone or that one) with a set of ratios (e.g. Concentration Ratio, or Herfindahl-Hirschman Index) that perform whether or not a market is distorted by the concentration of economic activity. Thus a monopoly is not only a juridical and techno-economic effect (Haila, 1990), it is also an epistemic effect of economic theory; it is a construction resulting from a set of epistemic expectations about competition, prices as outcomes of exchange, etc.

Engagement Rents

Our third example is *engagement rents*, which are centred on the differential qualities of user data and engagement. As others have noted (e.g. Fourcade and Healy, 2017; Kear, 2021), the mass accumulation of personal data has led to a reworking of social status on the basis of datafied rankings. Fourcade and Healy (2017) argue that firms are trying to make ‘good matches’ between their products or services and relevant users; this means matching the quality of the goods or services with the quality of the user, thereby relying upon a resurgence of status as a qualifier in market exchange. Individuals are differentially dis/advantaged by this mass data collection and datafied rankings. For example, some individuals will receive more advantageous offers – not just better targeted advertising but better offers through that advertising – than others, depending upon a set of algorithmic choices about their perceived social worth (e.g. they are wealthier, they use their devices more).

Kear (2021) argues that algorithmic decision-making of this kind has enabled firms to sort and rank people more efficiently but has also led those disadvantaged by the process to attempt to resist or repair the assignment of disadvantageous digital status (e.g. low credit scores). A strong example would be the Chinese Social Credit system that assigns a score on the basis of ‘good’ or ‘bad’ behaviours and thereby affecting the individual’s capacity to travel by train, or rent accommodation, or find work (Veliz, 2020). A weaker example might be the ‘social graph’ underpinning Facebook’s network that connects people through their interests, activities, likes, comments, etc. and thereby determines a person’s social worth for advertising purposes (Cohen, 2019).

Big Tech firms collect personal data, use it inferentially to rank and segment individuals, and then sell those inferences to others or use them to develop new products and service. This constitutes a new form of ‘differential rent.’ In the

nineteenth century, David Ricardo defined a differential rent as the payment to the owner of land in light of the land's productivity. The 'rent' is determined by the lowest productive piece of land, which sets the base for all other land. As Birch (2020a, p. 9) outlines, in STS differential rent can be related to the productivity of affective, cognitive, and immaterial labour, which 'can be monetized and capitalized with the deployment of specific technoeconomic arrangements, leading to the capture of differential rents depending on their qualities.' Here, the differential productivity reflects the characteristics of segmented individuals.

Thinking about differential rent in relation to personal data raises the possibility that certain users are *more productive* for Big Tech firms than others; this *productivity* is determined by both the level and type of user engagement within digital ecosystems. Hence, a user who engages regularly, unconsciously, and predictably are most valuable to Big Tech firms. The productivity of the user is the *engagement rent* in this framing, meaning that individual users become very valuable as assets. For example, Nieborg (2015) discusses how game app developers (e.g. *Candy Crush*) standardize users through metrics like 'cost per acquisition,' which enable them to turn users into what he calls 'player commodities,' but which are more appropriately understood as 'player assets.' These assets generate revenue and can be repeatedly bought and sold. Here, the most valuable player assets are the users most inclined to spend money on in-app purchases, which is a metric that can be individually tracked and used to target users with advertising applications run by Facebook, or other online advertising firms.

Reflexivity Rents

The final rent we discuss is *reflexivity rent*, expressing a notion of deliberate rule-bending. There is a long history of regulatory arbitrage, as well as discussion of rent-seeking behaviour distorting markets through the lobbying of governments to create 'artificial' monopolies (e.g. Tullock, 1993). Much of this discussion is defined by analytical commitments to notions of perfect markets and free market competition. Our perspective is different; we take the Polanyian position that markets are instituted, they and the rules on which they depend are made – just as rents are made – and that this may entail forms of government fiat, or private governance (Birch, 2020a). So, for example, intellectual property rights are a clear example of the former (Schwartz, 2020), while the private contractual arrangements (e.g. terms and conditions agreements, privacy policies, etc.) underpinning a lot of personal data collection, use, and exploitation are an example of privately-made regulation (Cohen, 2019; Pistor, 2020).

As digital ecosystems are constituted by both technical operations and quasi-regulatory functions, they represent a new site for gaming the rules of the

capitalism. Big Tech firms have extended the theatre in which social actors seek to game political-economic rules and regulations, although this time they are gaming private forms of regulation (e.g. app store rules) and algorithmic decision-making systems. This is different from conventional, economic notions of rent-seeking since the search for reflexivity rents does not (necessarily) entail lobbying public institutions. Indeed, some reflexivity rents can be considered a sort of digital backlash against Big Tech.

In the current paper, we define the deliberate exploitation of algorithmic decision-making as *reflexivity rents*. This happens on a spectrum from less to more morally and legally problematic, as well as on a spectrum of less to more regulated by Big Tech or other digital technology firms. Most egregious, and potentially illegal, are the allegations against Big Tech, itself; for example, Facebook overestimated both the ‘potential reach’ of its ecosystem to advertisers (e.g. *DZ Reserve v. Facebook, Inc.* 2021, 3:18-cv-04978) and overstated the video viewership figures on its ecosystem to advertisers (West, 2019). Ziewitz (2019) illustrates some of the ambiguities with deliberate exploitation of algorithmic decision-making, focusing on search engine optimization, which has become a legitimate concern for many online businesses, especially in light of the anticompetitive strategies allegedly used by Big Tech (US House of Representatives, 2020). The survival of many small digital firms depends on their ability to understand and respond to algorithmic processes, which can be changed by Big Tech firms with little notice and with dramatic impacts.

Many businesses seek ways to push themselves higher in search rankings by trying to identify what affects the search algorithms; others simply pay for better placement. One example that sits between rule-bending and – breaking is the development of so-called ‘click farms’ or ‘content farms’ as viable businesses; these firms are paid to perform as if they are users engaging with online content by hiring employees to click on links, like posts, comment on content, etc. The most pernicious form of reflexivity rents are those Big Tech firms arrogate to themselves by resetting rules within their ecosystems to reduce costs or increase their ‘take rate’ on products or services that users supply via the ecosystem – see Roseblat and Stark (2016) on Uber’s corporate strategies, or the US House of Representatives (2020) report on Apple and Amazon stores.

Conclusion

In this paper, we argued that new forms of specifically digital rentiership are emerging as the result of Big Tech. The ecosystems that Big Tech create and control represent a heterogenous assemblage of technical devices and platforms, as well as users and developers, legal contracts and rights, collective standards, etc. These digital ecosystems enable Big Tech to make economic rents in new ways that reinforce their techno-economic power, while undermining the political, social, and economic capacity of others to shape the future.

We identified four emerging forms of digital rentiership. First, enclave rents are derived from the construction and control of digital ecosystems, locking in users, developers, competitors, governments, etc. into a particular techno-economic arrangement. Second, expected monopoly rents come from leveraging present expectations of the future that performatively maintain expectations or achieve the monopolistic outcome. Third, engagement rents are constituted by the segmentation and differentiation of ecosystem users, where users who engage more (e.g. like, click, link, view, etc.) are more valuable because they can be monetized most readily. And finally, reflexivity rents reflect the value extracted on the basis of exploiting the rules of the game.

Actual practices cut across the four forms of digital rentiership. Most obvious is the capacity of Big Tech firms to change the rules – reflexivity rents – within their ecosystems – enclave rents. Enclave rents also intersect with expected monopoly rents for emergent ecosystems; for example, WeWork briefly achieved a valuation above US\$40 billion based partially on its rhetoric that it was offering not just a workspace, but an entire lifestyle. We also find engagement rents crossing over, and potentially conflicting, with reflexivity rents when a high value user is able to exploit and monetize that position; for example, selling user accounts in the computer game Fortnite. An engaged user will access various temporarily available in-game products, which can then be sold as a package. However, this has incentivized the selling of hacked accounts. We will undoubtedly see continual innovation – desirable and not – within the digital landscape that cross-pollinate these four forms of digital rentiership with yet others.

We are also seeing what Hendrikse *et al.* (2021) call ‘Big Techification’ across the political-economic landscape as established firms adopt digital rentiership; for example, Visa is increasingly monetizing user data on a ‘platform.’ Brick-and-mortar retail giant Walmart is developing an ecosystem, including fulfilment services for third-party sellers, and membership services for customers. Part of the value of the latter is the data that can be sold to the former. While markets never operate in the naturalized manner conceptualized by economists, Big Tech’s rise has inspired mimicry by firms in other industries. Consequently, there is much work still to be done mapping the extension of digital rentiership.

In answer to our questions in the introduction, we argue that these new or emerging forms of digital rentiership are key contributors to the growing public and policy concern with Big Tech; the ‘techlash’ described by Foroohar (2019) and others is not simply a growing distrust with these firms presaged by the revelations from the 2018 Cambridge Analytica scandal, or other events. Rather, the growing control of Big Tech is increasingly evident in the emerging forms of digital rentiership in our everyday lives, from our almost total lack of control over our personal data through the negative impacts of digital firms like Uber or Lyft on labour markets, public transit, or regulatory norms. STS

provides a useful set of tools to analyze these changing techno-economic dynamics and assemblages, especially as a way to explore the inter-relation between the technical, legal, and political-economic components of the digital ecosystems that increasingly dominate our lives.

Much of the public and policy discourse has centred on issues of antitrust and competition policy (e.g. US House of Representatives, 2020) – which is important – but has done less to challenge a range of other aspects of Big Tech, including their use and dominance of private regulatory mechanisms, like standards and contract law. Competition regulation does not solve the problem of Big Tech, especially not the issues with the mass collection and monetization of our personal data. Attempts to stop the continuing entrenchment of personal data monopolies by Big Tech necessarily entail new forms of policy action that address the private rule afforded by contract law. Such contractual governance and social ordering is techno-economic, including a combination of elements designed specifically to underpin a particular form of techno-economic understanding of the world that makes it measurable, legible, and valuable to Big Tech. As such, even though personal data monopolies are entangled with the growing concentration of Big Tech, addressing the latter will not inherently or automatically address the harms associated with the former.

Notes

1. <https://www.justice.gov/opa/pr/justice-department-sues-monopolist-google-violating-antitrust-laws>
2. <https://www.ftc.gov/news-events/press-releases/2020/12/ftc-sues-facebook-illegal-monopolization>

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