

Platforms and Platformization

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INTRODUCTION

Globally operating platform businesses, from Facebook to Uber, and from Amazon to Coursera, are becoming increasingly central to public and private life, transforming key economic sectors and spheres of life, including journalism, transportation, entertainment, education, finance, and health care (Van Dijck et al., 2018). This chapter historicizes and defines the concepts of *platforms* and *platformization* in the context of the digital media economy. Drawing insights from three different scholarly perspectives – critical political economy, business studies, and software and platform studies – it provides a framework that maps the disciplinary trajectories of these concepts. As our focus is on the media industries, our main concern are those platform companies which are currently considered central to cultural production: Facebook, ByteDance, Snap, and Tencent, rather than Airbnb, DiDi, or PayPal. Instead of focusing on media users and usage, we provide an *institutional perspective* on the relationships between platform companies and those media businesses that engage in various forms of for-profit cultural production – think of app developers, social media creators, journalists, or musicians.

The first part of this chapter surveys research that understands platforms first and foremost as markets. It starts by discussing the history of the platform concept, which has seen different uses among scholarly and business communities. We highlight these differences not only to offer conceptual clarity, but also to move towards consensus about the need for an interdisciplinary approach to study platform markets. Such consensus is all the more warranted because of the

discursive work among policy makers, business consultants, and executives for whom the platform metaphor serves as a powerful imaginary (Gillespie, 2010; Van Es and Poell, 2020) and therefore distracts from the accumulation of corporate ownership and control among a small group of corporations. That is, we aim to show how the platform metaphor and platform discourse more generally are employed strategically by different stakeholders to obfuscate power asymmetries among institutional actors.

At the tail end of this chapter, we build on these conceptual and theoretical debates to ask: when studying platforms, *what is our unit of analysis*? Should one focus on tech companies, single platform functionalities, combined platform dynamics, or a combination of the above? In the different platform literatures, companies such as Tencent, Alibaba, Google, and Facebook all tend to be treated equally. Their respective roles and position in the wider media economy, however, diverge significantly (Barwise and Watkins, 2018). Similarly, how each company exerts platform power is far from uniform or unilateral. Therefore, we close the chapter by drawing on insights from the emerging fields of software, platform, and app studies, which includes an infrastructural perspective on platform power. The concept of “platformization” will be introduced, which encompasses an understanding of platforms as both markets and infrastructures (Helmond, 2015; Nieborg and Helmond, 2019; Poell et al., 2019). We will discuss the notion of “platform boundaries” as it allows us to consider how platforms extend beyond their own infrastructural borders (Gawer, 2021). For example, operating a wide range of “infrastructural platform services” (Van Dijck et al., 2019), platform companies are able to exert economic, infrastructural, and governmental influence over end-users as well as cultural producers.

PLATFORMS AS MARKETS

Research on platform economics has seen a significant uptick across social science and humanities disciplines since the 2010s. Publicly traded companies such as Apple, Amazon, and Microsoft rank among the most valuable companies in the world, rekindling conversations among scholars, pundits, and politicians about monopoly power and digital dominance (Klobuchar, 2021; Moore and Tambini, 2018; Teachout, 2020). In many of their respective industry sectors, platform companies have become members of powerful oligopolies – markets that are highly concentrated and are dominated by a handful of businesses (Hindman, 2018; Smyrniotis, 2018). In most countries outside of China, Google and Apple control the market for mobile apps, Google and Facebook dominate the market for digital advertising, and Amazon and Microsoft account for over 50 percent of the market for cloud infrastructure.

In many respects, the current predicament – the unbridled accumulation of capital – is not unique, and recent developments should therefore be put in their

historical context (Srnicek, 2017; Winseck, 2020). The current trends of corporate consolidation and the concentration of ownership among a handful of unfathomably wealthy executives have historical precedents (Hesmondhalgh, 2019; Noam, 2009). Since the early days of the Fordist economy in the early 1900s – the start of industrialized mass production – Western economies have seen select groups of companies controlling industry sectors, and the media industries have been no exception (Bagdikian, 2004). Despite a short reprieve as a result of interventions by antitrust regulators, starting in the 1970s, the “post-Fordist” economy rekindled the trend of consolidation (McChesney, 2015). A new wave of corporate conglomerates emerged in retail (e.g., Walmart), telecommunications (e.g., Comcast), consumer electronics (e.g., Samsung), and the media industries (e.g., Disney). What we can take away from these historical trends is that the media economy is subject to broader trends in the global political economy that include globalization, financialization, and deregulation (Haggart et al., 2019; Mosco, 2009).

What is noteworthy about the decade from 2010 to 2020 is the rapid ascendance of multi-billion-dollar platform companies. Most, if not all of them, were incorporated relatively recently, which suggests that there is something different in the way they operate. To be able to pin down the *unique institutional and organizational characteristics of platform companies*, we analytically distinguish them from two types of media corporations: incumbent *media conglomerates*, such as Disney (est. 1923), and *portals*, such as Netflix (est. 1997). This distinction allows us to draw historical parallels, but also draw attention to transformations in the operation of business models and the engagement with institutional actors in the wider media economy.

Like Time Warner, Bertelsmann, and News Corporation (Fitzgerald, 2012), the Walt Disney Company is a poster child of a transnationally operating *media conglomerate* (Wasko, 2020). And like many other US media businesses (Birkinbine et al., 2017), Disney benefitted from anti-trust regulators stepping aside. Having access to seemingly unlimited finance capital (DeWaard, 2020), Disney steadily expanded its existing business lines, as well as entered new markets. As such, the company is a textbook example of a highly integrated transnational media corporation, almost one without equals (Havens and Lotz, 2017: 33–40). Leveraging economies of scope – the efficiencies derived from product variety – Disney is horizontally integrated as it acquired numerous competitors in various sectors of the media industries – think of the acquisition of Pixar (2006), Marvel Entertainment (2009), and Lucasfilm (2012). Disney is vertically integrated as well; it (re)asserted control over various linkages in the distribution-production-consumption chain. For example, in 2018 it pulled its TV shows and movies from Netflix to launch its own subscription video on-demand (SVOD) service Disney+, thereby providing a self-owned distribution outlet for its vast portfolio of original intellectual property. Because of digitization and globalization, Disney equally benefits from economies of scale; efficiencies derived from an increase in

output. As the company already has the content (e.g., TV shows) and the servers to host and stream content, it is able to roll out new services, such as Disney+. At the same time, Disney is not considered to be a prototypical platform company. It is enormous, powerful, has an international footprint, and is increasingly data-driven, but Disney's corporate structure and its main sources of revenue are different from the corporate structure and business models of platform companies such as Facebook and Google. What, then, are the key institutional differences between integrated media conglomerates, portals, and platform companies?

PORTALS AND NETWORK EFFECTS

Platform companies are not only different from conglomerates, but they also differ from so-called "portals," such as Netflix and HBO Max. While this distinction is seemingly trivial, drawing out the differences in economic operations and orientations among conglomerates, portals, and platforms brings us closer to understanding what constitutes a platform company and the process of platformization.

Surprisingly to some, perhaps, media industry scholars consider the SVOD company Netflix to be a *portal*, not a platform (Lotz, 2017). "Netflix is closed, library-like, professional ...; a walled garden rather than an open marketplace" (Lobato, 2019: 37). Netflix not being a marketplace is important. As Amanda Lotz, Ramon Lobato, and Julian Thomas make clear, "portals" distribute "series produced in accord with professionalized, industrial practices of the television industry" (2018: 36). Like competing portals, such as Hulu (partially owned by Disney) and indeed Disney+, Netflix licenses long-form content from external companies. Or it finances the production of exclusive or "original" series and movies, either produced in-house or by external studios. Why Netflix is considered a portal and not a conglomerate is because it does not (yet) operate multiple business lines (e.g., theme parks, cable television networks, or merchandising, music, and theater divisions).

By operating a portal, Netflix operates a different business model compared to Google's platform subsidiary YouTube (Cunningham and Craig, 2019). The former deals directly with consumers; its main source of revenue is subscription fees, rather than advertising or micro-transactions. From an economic perspective, how Netflix is run as a business is a variation of how media companies have operated for decades (Lotz, 2017). Like its main competitors in the SVOD segment, Netflix deals with media industry incumbents, which have decade-long histories as movie studios or television distributors. This is why Disney, as one of the most powerful incumbents with a content library far outstripping any other, decided to compete directly with Netflix by launching a portal of its own.

Why Netflix is often heaped into the platform category is because it is a data-driven digital media company that has a global reach (Lobato, 2019; Navar-Gill,

2020). Netflix leverages economies of scale because it benefits from global internet connectivity, which, in turn, allows for *network effects*. That is, the portal benefits from an economic principle underlying all digital and physical networks, from the telegraph to the internet. So-called *direct network effects* – or what orthodox economists call “externalities” – dictate that the more users join a network, the more valuable that network becomes (Katz and Shapiro, 1985). For Netflix this means that the more users joining Netflix, the more valuable the portal becomes as it allows the company to acquire more content and enter more regions: “More shows, more watching; more watching, more subs [subscribers]; more subs, more revenue; more revenue, more content,” Ted Sarandos, Netflix’s chief content officer, explains (Adalian, 2018). Such economies of scale are even more pronounced in digital markets, where marginal costs – the costs of adding an additional subscriber – are relatively low.

The positive feedback loop described by Sarandos ultimately leads to market concentration. As explained by business scholar Constantinides and his colleagues: “In markets where network effects are strong, there is simply little competitive space for more than a few players” (2018: 389). To be sure, network effects can also be negative and can, seemingly in an instant, pull the financial rug underneath a company like Netflix. The more subscribers leave, the less Netflix can spend on content, the less appealing the portal becomes. Such a negative spiral would be particularly worrying for a company that is already faced with billions of dollars of debt and has significant operational costs (e.g., labor, server maintenance, marketing, etc.). Likewise, the inability to prompt positive network effects was demonstrated by the SVOD portal Quibi. Launched in April 2020, despite billions of dollars of investments in original content, facing a lack of new subscribers, the portal was shuttered in December of that year.

Crucially, portals are economically and infrastructurally sealed off to individual end-users, and this is one of the key differences between a portal and a platform. The latter – think of YouTube and Twitch – host a mix of user-generated and professional content (Cunningham and Craig, 2019). Conversely, Netflix’s subscribers are unable to contribute or distribute their own content via Netflix, nor are they able to interact directly with Netflix’s suppliers. Unlike Netflix, the primary revenue stream of platform companies, such as Google and Facebook, is not from directly commissioning intellectual property and then selling access to such “premium” content. Platform companies may host unprecedented amounts of cultural content, but most of it is produced by a mix of external companies (big and small) or by individuals. And when platform companies do invest billions in original content, for example, in the case of Apple (Apple TV+) and Amazon (Amazon Video), it is to compete against SVOD portals or to increase the appeal of other business offerings (phones for Apple and e-commerce for Amazon). Corporations tend to benefit from the conceptual fuzziness between conglomerates, portals, and platforms. For legal and other reasons, platforms put great discursive effort into not being seen as media companies but rather as the

more neutral-sounding “technology companies,” or simply platforms (Napoli and Caplan, 2017).

MULTI-SIDED MARKETS AND PLATFORM STRATEGY

What then are platform markets and how are they different from the markets and business models operated by conglomerates and portals? The platform concept, as noted in an early, influential critique, is notoriously slippery (Gillespie, 2010). It is not always clearly defined and for some it has lost much of its meaning. If every business active in the digital economy can be considered a platform, what is the purpose of such specific terminology in the first place? To get out of this murkiness, we want to draw attention to a specific economic understanding of platforms as *multi-sided markets*. This orthodox economic approach includes subfields such as strategic management, information systems, and network economics. Most of those active in these fields are affiliated with economic departments or business schools. Together, they have been quite prolific, as evidenced by a series of popular books on platform economics (Cusumano et al., 2019; McAfee and Brynjolfsson, 2017; Parker et al., 2016), special journal collections (e.g., Constantinides et al., 2018), research agendas (e.g., De Reuver et al., 2018), and review articles that list many dozens of individual papers (McIntyre and Srinivasan, 2017; Rietveld and Schilling, 2021).

Unlike portals such as Netflix that operate a single-sided business, platform companies operate marketplaces that mediate between two or more user groups (Rochet and Tirole, 2003). Whereas Netflix blocks direct interactions between subscribers and content producers, platforms are seen as “matchmakers” that encourage different groups of users to interact with each other (Evans and Schmalensee, 2016). The simplest form of a multi-sided market is a two-sided one. A typical example that predates the digital economy would be a credit card company: Visa and Mastercard facilitate transactions between buyers or “end-users” on the one side versus sellers or “complementors” on the other. In this configuration, end-users populate the demand-side, whereas complementors populate the supply-side. *Complementors* can be seen as institutional actors, think of any kind of organization, government, non-profit, or incorporated entities, which can be large (businesses) or individual freelancers, such as content creators or gig-workers. Following this broader conceptualization of multi-sided markets, a definition of platforms tailored to cultural production understands platform companies as “aggregators of institutional connections, including economic transactions, that mediate between end-users and content and service providers” (Poell et al., 2021: 35). One can imagine that with the advent of digitization, digital platforms have benefitted immensely from economies of scale, as the costs to attract individual users have declined, and from economies of scope, as the costs to attract different user groups have been lowered as well.

One of the key insights among orthodox economists is that platform businesses are not only subject to *direct* network effects, like the ones we discussed for Netflix, but they also give way to *indirect* or *cross-side* network effects. What economists Rochet and Tirole (2003) found was that cross-side effects can be equally as powerful as same-side effects. The more users joining a “platform-mediated network” on one side, the more valuable the network indirectly becomes for users on the other side (McIntyre and Srinivasan, 2017). To return to the two-sided market example of credit card companies: the more consumers (end-users) who have a credit card, the more valuable joining the network becomes for merchants (complementors). Conversely, wider availability of stores accepting a specific credit card provides a better value proposition for consumers when they consider getting a new card.

After economists ascertained the existence of these indirect effects, strategic management scholars became interested in platform competition – the rivalry between competing platform companies – and the subsequent strategic dilemmas faced by managers of platform companies (Rietveld and Schilling, 2021). Because there are at least two sides in a platform market, one managerial challenge facing a platform operator is which side (or user group) to attract first? End-users or complementors? That is, when launching a platform, operators must always address a “chicken-and-egg problem” and be careful to “get both sides on board” (Rochet and Tirole, 2003: 990). A lack of growth on one side of the market will eventually stall growth on the other side, thereby frustrating growth of the entire platform ecosystem.

As the rapid initial growth of digital platforms such as TikTok and Facebook has shown, the launch of a new platform is a key moment for a platform operator. To incentivize users to adopt a new platform, operators may want to reduce any friction or cost that prevents users from joining. The extent of such incentives is closely related to another strategic decision platform operators face, which is deciding upon a revenue model. Platform companies have a variety of options because they can charge one group of users (for access), while deciding to subsidize the other(s). Thus, for platform operators, a key decision becomes which side in the market to subsidize, and if so, when to do so and how much. A platform’s options in designing a revenue model are dependent on a number of economic variables that differ from platform company to company and from market to market. These variables can include a platform company’s sources of revenue and profit, industry norms, and the size and growth of its user groups.

For example, in the case of Facebook, access to the platform is free for end-users (i.e., subsidized), while advertisers are charged to serve targeted advertising to end-users. In Apple’s App Store, users can download a variety of apps for free, but developers are charged a 30 percent fee over any in-app transaction. More recently, this fee structure has been challenged and subsequently changed by Apple; app developers that generate less than \$1 million in annual sales pay

15 percent instead. In the end, the design of a platform's business model greatly shapes the economic environment in which complementors operate. For small and medium-sized enterprises operating in the media industries, having to pay 15 percent instead of 30 percent in platform fees can be the difference between a profit or a loss.

How platform companies effectuate their business models is through their governance frameworks, which are codified via elaborate terms of services, license agreements, and community guidelines, and operationalized via automated enforcement, human moderators, or both (Eaton et al., 2015; Ghazawneh and Henfridsson, 2013). Much of the research on the virtual rules of the digital road (i.e., platform governance) concerns the impact of content moderation and curation on end-users (Gillespie, 2018). Studies by critical media scholars have explored the impact of a platform's "curatorial" (Prey, 2020) or "algorithmic" power (Bucher, 2018), which acknowledges how platforms engage in selective promotion through a mix of human and automated recommender and moderation systems (Bonini and Gandini, 2019). More recently, there has been an increased awareness of how the various instances of platform governance impact the economic outlook of "platform-dependent cultural production" (Poell et al., 2021). In-depth studies by media scholars on YouTube's governance model demonstrate how seemingly small, uneven, or arbitrary interventions can have significant impact on creator communities, particularly members of underrepresented groups (Caplan and Gillespie, 2020; Cunningham and Craig, 2019; Kumar, 2019). Similarly, there is an increased awareness among strategic management scholars that a failure in effective control over a platform ecosystem – an institutional practice referred to as "orchestration" – impacts the overall health of a platform ecosystem. For instance, Rietveld et al. (2020) found that platform governance models are not only constantly evolving, but they also impact certain complementors differently as a platform company becomes more dominant in a market. That is, platform operators initially provide more favorable economic conditions to complementors early in its launch phase but become more selective and geared towards end-users as a platform matures. Despite these recent interventions, there is a lack of insight into the impact of shifting governance strategies on the economic fate of complementors.

THE POLITICAL ECONOMY OF PLATFORMS

Whereas mainstream economists can be credited with advancing our understanding of the fundamentals of platform economics, media industry scholars have largely stayed within the confines of their disciplinary boundaries and have been somewhat reluctant to engage extensively with the aforementioned research on multi-sided markets. That being said, a handful of media and communication scholars raised questions about the political and economic implications of

platform power by asking who the “winners” and “losers” are in the rapidly evolving platform economy. It is undeniable who the winners are. Over the last two decades, a handful of US- and China-based platform companies have seen all their key metrics going up: end-users, revenue, profit, and market valuations. During the first two years of the COVID pandemic (2020–2021), these numbers have only increased, with tech CEOs adding billions to their personal wealth.

Ironically, perhaps, mainstream economists have been among the first to point to the concentrated nature of markets that are subject to strong network effects. Networked products and services – from railroads and credit cards to social networks and e-commerce – become easily entrenched, which is described as a “lock-in effect.” As noted by Rietveld and Schilling: “A technology that got a head start in adoptions due to investment by a sponsor, for example, could rise to dominate the market even if it was considered inferior by technological standards” (2021: 1537). Once a platform company reaches a tipping point, it is able to leverage economies of scale and scope to become a dominant market player. Indirect network effects push multi-sided markets even further towards concentration; “winners” get ahead by their ability to attract both end-users and complementors, which is described by economists as a “winner-take-all” effect (Schilling, 2002).

Like mainstream economists, critical media scholars have come to similar conclusions about the unequal distribution of power and capital in platform markets. Contrary to mainstream economists, however, the latter tend to ground their analysis in the context of media history and broader critiques of capitalism (Mosco, 2009). The rise of the platform economy, it is argued, entails a continuation of *and* a break with long-established economic mechanisms and strategies (Jin, 2015; Winseck, 2020). Starting with the continuities, many legacy institutions, companies, and practices are rivaling, or at times competing head-on, with platform companies. For example, the telecommunications industry may have had to relinquish direct control over mobile hardware and software (Ballon, 2009), but many dominant players in this sector (e.g., Vodafone, AT&T, or China Mobile) are still incredibly profitable and powerful. The same can be said of legacy media conglomerates or consumer electronic companies – the Walt Disney Company is still thriving. Then there is the largely invisible but nevertheless substantial power of finance capital: private equity firms, institutional investors, and hedge funds have become key actors in the broader economy (DeWaard, 2020).

Another continuity would be that most instances of platform-dependent cultural production are shaped by or take place in a market-oriented environment. Critical political economists have argued that “Commercial media institutions are driven by core economic interests to secure future profitability and expand market share” (Hardy, 2014: 53). Despite the early promises of open-source or “non-market peer production” (Benkler, 2006), app and game developers, TikTok and Instagram creators, journalists, and musicians, are predominantly using

proprietary platform tools and are subject to the all-encompassing logic of capital accumulation (Fuchs, 2021). This is one way of saying that “platform capitalism,” like its predecessor “digital capitalism” (Schiller, 1999), is subject to the logic of capital, which tends to accumulate and cluster (Srnicek, 2017).

How such macro-economic shifts manifest themselves in the everyday life-world of media workers is explored extensively in the (sub)fields of media industry and media production studies (Herbert et al., 2020; Mayer et al., 2009). Such scholarship has theorized “media work” (Deuze, 2013) and surveyed the contours of “creative labour” (Hesmondhalgh and Baker, 2013), consistently pointing to the precarious nature of working in the media industries. Permanent contracts are rare, workers face long hours often for low pay, and there is a marked difference between above-the-line (visible, well-paid) and below-the-line (invisible, lower-paid) workers. The subsequent uptake of easily accessible platforms and apps – e.g., TikTok/Douyin, YouTube, and Instagram – coincided with celebratory corporate and press accounts deploying democratic discourses invoking increased labor autonomy and freedom. New entrants into the platform economy, such as individual “creators” and “influencers,” deploy a highly “aspirational” ethos; a new generation of media workers is drawn to platforms by the promise of recognition and monetary rewards, yet, for many, the results of their labor will largely go uncompensated (Duffy, 2017). All this is to say that platform-dependent labor has introduced new challenges and tensions, including those between social and political visibility versus invisibility, collective action versus individual work, job security versus insecurity, and equality versus inequality (Poell et al., 2021: 115). In the end, platform labor is as precarious and insecure as working for legacy conglomerates and portals.

Both mainstream and critical political economists have struggled to put hard numbers on the exact distribution of revenue among actors in the platform economy. As we noted earlier, there is a lack of insight into the economic plight of complementors that engage in platform-dependent cultural production. For example, there is the widespread recognition that streaming platforms, such as Spotify, have deeply impacted the music industry. How much exactly is hard to say. As noted by music industry scholar David Hesmondhalgh: “The recent wave of research on the new musical system has rarely addressed, in any sustained way, the increasingly controversial question of how income is distributed by [music streaming services] to rights holders and then by rights holding companies to musicians” (2021: 3596). He goes on to argue a lack of clear data and evidence has led to “imprecise, inaccurate and under-supported criticisms” about the impact of streaming platforms (2021: 3597). Research on media industry sectors where data is more accessible does paint an unnerving picture for those seeking more sustainable economic futures for media workers. The economics of YouTube, for instance, are incredibly lopsided. In keeping with the winner-take-all logic, a very small number of creators and YouTube channels are said to generate the majority of revenue and views (Bärtl, 2020; Rieder et al., 2020). One

could argue that in absolute numbers there are tens of thousands of new creative workers entering the industry. Then again, in relative terms, the chances of finding an audience are incredibly slim for the average creator. Lastly, the political economy of Apple's App Store is equally fraught (Bresnahan et al., 2015). An empirical investigation into the Canadian instance of the iOS App Store demonstrates that very few Canadian game makers have been able to gain foothold in their domestic market, even though Canada has a relatively large game industry (Nieborg et al., 2020).

Lacking actionable economic insights, politicians and policy makers are struggling to formulate effective strategies to curb the ever more powerful winners such as Apple, Facebook, Amazon, Tencent, and Alibaba. Most attention goes out to anti-trust law and competition law as appropriate frameworks to limit the power of platform companies (Khan, 2017; Khan and Vaheesan, 2017), even if most critical legal scholars complain about the lack of a clear, broadly agreed-upon definition of multi-sided platforms in conventional discourses of the law (Coyle, 2019). Narrow legal frameworks commonly inhibit governments' abilities to protect both the relationships between individual users and the platforms they rely on; they also fail to address the larger societal interests at stake in the relationships between individuals, communities, and societies on the one hand, and large platform conglomerates on the other. Contract law does not properly address these relationships, which leads some legal scholars to call for a governance of platforms in terms of constitutional principles and normative standards (Suzor, 2018). And finally, media and communication law does not entirely capture the expansive power of platforms such as Facebook and YouTube with regards to moderation issues (disinformation and fake news); even though social media companies are global points of control on the internet, each country deals with this problem within different legislative and regulatory frameworks (DeNardis and Hackle, 2015; Napoli, 2019).

Platform companies are difficult to rule not only because they have morphed into multi-sided markets, but also because these markets stretch beyond the known common structures shaped by law: *private sectors*, such as the media industry or advertising markets, and *material infrastructures*, such as telecom providers. In fact, as mentioned earlier, platform conglomerates are doing their very best to evade any proper categorization in order to ward off regulation by states or governments. They “deliberately push their platforms to vacillate between sectors and infrastructures, between private and public interests, between a marketplace for goods and services and a marketplace of ideas, *while adopting features of both*” (Van Dijck, 2021: 2810, emphasis in original). Economic power concentration, hence, is the indirect result of gaps in legal and political governance, allowing for many uncontrolled and uncontrollable dynamics such as a *horizontal integration* of users across sectors and a *vertical integration* (lock-in) of users across sectors and infrastructures – which will be elaborated upon in the next sections.

SECTORS, REGIONALITY, AND PLATFORM EVOLUTION

When investigating the political economy of platform-dependent cultural production, it is becoming apparent that platform companies have a different impact depending on the media industry segment, region, and the stage of a platform's diffusion (i.e., adoption by both end-users and complementors). Let us discuss these three analytical dimensions in turn, as these foci have prompted exciting new insights and research agendas.

First, scholars are moving beyond a singular focus on platform companies to also include complementors in their analysis. The ways in which platform businesses are operated and how they trigger new economic mechanisms and managerial strategies is reasonably well theorized and understood. Conversely, how a platform's business model and economic orientation affect the economic position of the many millions of cultural producers that rely on platforms to reach end-users, is far less clear. While not every company active in the media industries is necessarily fully platform-dependent, increasingly cultural producers, from large publishers to aspirational media workers, are impelled to develop distribution and monetization strategies that are aligned with the business models of platforms. When they do so, we see marked differences among media industry sectors. For example, digital game developers and publishers have a long history of working with and for digital distribution platforms from dedicated consoles to app stores (Nieborg, 2021). Conversely, news organizations, such as newspapers, followed a different historical path by distributing and monetizing their products via a wide range of platform-independent channels and means (Nielsen, 2019). One could make similar observations about every other media industry segment. Each has a different, ever-evolving relationship with platform companies that warrants further scholarly scrutiny.

Second, how platform capitalism has impacted different regions is fertile ground for future work. For example, Steinberg (2019) points to the Japanese roots of the platform concept and problematizes the neat, US- and Euro-centric understanding of platform markets. Another critique of the US centrism of platform power is Jin's (2015) notion of "platform imperialism," which documents how US companies benefit from ready access to finance capital and favorable intellectual property regimes, which allows them to extend control far beyond their domestic borders. That being said, platform capitalism is more global in its scope and scale. "Social media entertainment," an emerging media industry segment populated by creators that are heavily dependent on platforms such as YouTube, Instagram, and TikTok for their earnings, may be dominated by US-based creators, but it is also much more diverse in terms of both its audience and its workers (Cunningham and Craig, 2019). Detailed studies are emerging of how media workers across countries, regions, diasporas, and language-based communities are adopting, resisting, and shaping the platform economy (e.g., Kim and Yu, 2019; Mehta, 2019; Tomasena, 2019).

Third, the institutional relationships between platform companies, media workers, and the companies they represent are inherently “contingent,” open to constant revision and re-negotiation (Nieborg and Poell, 2018). Whereas critical media scholars have drawn on science and technology studies to theorize how different users socially shape platform technology (Van Dijck, 2013), economists have theorized platform evolution by pointing to a platform’s “life cycle” and how end-users and complementors “get on board” with a platform at different moments in time (Rietveld et al., 2020). For instance, when a platform launches and starts its life cycle, there is inherently little competition among complementors. Recall here that economists have noted that a platform needs to put great efforts into solving the “chicken-and-egg” puzzle. Complementors will be reluctant to join a new platform early because there will be so few end-users to serve. Then, when a platform “matures” and network effects kick in, end-users may decide to join in droves, fundamentally altering the competitive outlook for all. Thus, for cultural producers the decision to join a platform presents a recurring trade-off: when to join a platform and when to leave?

In sum, in surveying state-of-the-art economic platform scholarship we have seen that both economic disciplines – business studies and critical political economy – started their investigations into platform economics from diametrically opposed epistemologies. The former centers on a platform company’s ability to gain a “competitive advantage” or to “capture value,” whereas the latter group is much more mindful of media history and monopoly power. That said, both research streams are increasingly converging, both in their conceptual apparatus and their empirical inquiries with increased attention to *which* and *what kinds* of cultural producers are able to wield power or have an advantage in the platform economy, *when*, and *where* they are located. For decades, critical media scholars have argued that the highly concentrated nature of media ownership has frustrated media plurality by silencing “independent and local voices in the media” and damaging “the quality of journalism” (Simmons, 2010: 106). Then again, this form of power is predominantly of a financial and economic nature. Media conglomerates such as Disney may be able to provide popular or ostensibly quality products and services; they only indirectly frustrate the opportunities of other producers. That is, their power is not *infrastructural*: conglomerates have not been able to directly define connectivity standards or deny competitors infrastructural access to the means of production, distribution, marketing, and monetization.

PLATFORMS AS INFRASTRUCTURES

A survey of the roles of platforms in the digital economy would not be complete without acknowledging recent interventions by platform and software studies scholars. Economists have pointed to how platforms aggregate *economic*

transactions and how they mediate between different groups of users or sides in the market. At the same time, this process of matchmaking and mediating relationships has a decidedly material and computational dimension. In practical terms, to access a platform, complementors typically access platform data and end-users via automated means – i.e., application programming interfaces (APIs) or software development kits (SDKs). That is, they are integrated into a platform's economic and computational *infrastructure*. Or, in the words of Jean-Christoph Plantin and his colleagues (2018), platforms have prompted a process of “infrastructuralization.” Facebook, Google, Alibaba, and Tencent are not only able to control access to their platforms, but their commercial success is predicated on the promise that the platforms are better at providing reliable access to end-users at scale (Gillespie, 2018). As argued by Anne Helmond and Fernando van der Vlist: “social media have evolved from social networking services developed ‘on top of’ the open web’s infrastructure to closed platforms for social media” (2019: 7). In other words, rather than being general-purpose technologies, platforms have rapidly trended towards becoming closed-off, privately owned networks.

The fact that platform companies have an inherent market orientation means that products and services that were previously openly accessible are increasingly encapsulated by platform infrastructures. Instead of texting, businesses talk to customers via Facebook’s WhatsApp or Tencent’s WeChat. Instead of hosting data on self-owned and operated servers built out of generic technology (e.g., hard-drives, CPUs, motherboards, etc.), companies use Amazon Web Services or Alibaba Cloud. And instead of using open-source programming and scripting languages, tools, and formats, complementors who align their business models with platforms have to integrate their production pipeline with proprietary, closed-off equivalents. The political economic stakes of this shift are profound. The increased economic and infrastructural dominance of platform companies not only leads to enforced lock-ins of users by allowing platform companies to benefit from combining users’ data flows in the back-end of their platforms, but such walled gardens of connective platforms also tend to crowd out non-profit, open-source, or public alternatives.

Next to calling attention to infrastructural power, platform scholars have called for the more precise conceptualization of key institutional actors in platform ecosystems and their evolving relationships (Helmond et al., 2019). Indirectly, this can be seen as a critique of the economic literatures where platform companies all tend to be treated equally. Uber, AirBnB, and Facebook are typically lumped together and seen as somewhat monolithic corporations operating multi-sided markets. From an economic perspective this is understandable as these companies do operate in a similar fashion. Yet, we also pointed to how platform companies – using the example of Google – tend to operate a wide range of platform subsidiaries that each operate distinct multi-sided markets. In this sense, it would make sense to speak of *platform conglomerates*. The ability to operate multiple

“platform instances” is typical for dominant platform companies that operate complex multi-sided markets (Nieborg and Helmond, 2019). For this reason, Van Dijck et al. label such platform instances as “infrastructural services,” to “identify the integral ecosystem’s ‘nodes’ through which data flows are managed, processed, stored, and channeled, and upon which many other online services, complementors, and users have come to depend” (2019: 9). Amazon operates AWS, but it also operates the Amazon Appstore and its e-commerce platform Amazon Marketplace; each instance functions as an infrastructural service (Van Dijck et al., 2018).

If we want to gauge the impact of platform conglomerates on the digital economy – and not just on individual sectors of transportation, urbanization, or education – we should be more precise which companies to include in our analysis. The literature in media studies is not of much help in this sense; clear-cut typologies of platform companies that are sensitive to cultural production are hard to come by. For example, in his excellent investigation of “platform capitalism,” critical media scholar Nick Srnicek (2017: 47–92) considers five platform types: advertising, cloud, industrial, product, and lean platforms. This typology, however, has its limitations. When considering the media economy, we are already seeing considerable slippage among these five types. For example, Google is so diverse that its products and services fit four, if not all five types. Next to overlapping categories, another reason not to categorize platforms is again because of the aforementioned velocity and volatility of platform evolution. Early 2020, a transportation platform such as Uber may be irrelevant to the media economy, but this may change at any point. Uber may decide to partner with advertisers or media companies, for example to have passengers view clips while waiting or during their rides.

One productive way out of this classification conundrum is to focus on platform boundaries and their dynamics. Rather than seeing platforms as objects or services, they can be conceived as dynamic processes (Poell et al., 2019). Taking an infrastructural perspective, platforms are said to extend beyond their own boundaries, for example via plug-ins and data integration in third-party websites, platforms, and apps. This process, theorized as “platformization” (Helmond, 2015), then sets a platform up to collect external data and send it back to its own databases. As such, the platform has become “the dominant infrastructural and economic model of the social web” (Helmond, 2015: 1). The notion of platform boundaries is further explored by management scholar Annabelle Gawer, who argues that platform companies open their boundaries to either facilitate transactions, innovations, or in the case of “hybrid” platforms, both. Most platform conglomerates active in the media industries qualify as hybrid platforms as they allow for complementors and end-users to engage in (economic) exchanges, but also to have complementors build innovative new cultural products and services. The notion of platform boundaries not only helps us to demarcate the infrastructural and economic boundaries between a platform and a complementor, but also constantly reminds us to ask who a platform is opening its boundaries up to and under what conditions.

In practice, platform boundaries are never fully open, nor fully closed; platform companies face a strategic tension between openness and control. Using app development as their case study, information systems researchers Ahmad Ghazawneh and Ola Henfridsson (2013) coined the notion of “boundary resources,” which allow complementors to access platforms. These include APIs, but also specialized development tools, developer documentation, and a variety of regulatory frameworks and documents. These resources delineate platform boundaries, codify and standardize infrastructural access and integration, and are instruments to govern transactions and interactions (Poell et al., 2021). This entire collection is subsequently designed to support or “resource” complementors, while simultaneously “securing” or controlling them (Ghazawneh and Henfridsson, 2013).

CONCLUSION

In response to the proliferation as well as the slipperiness of notions of platform and platformization, we have tried to provide conceptual clarity by situating these terms in key theoretical traditions. Scholars working in critical political economy, business studies, and software and platform studies have been at the forefront of examining the institutional dimensions of platform power and politics. Combining insights from these traditions allowed us to develop a comprehensive perspective, which highlights how platform markets, infrastructures, and governance frameworks are intricately entangled. Moreover, by comparing platforms with digital media companies – portals and media conglomerates – we have highlighted the distinguishing features of platforms. Crucially, platforms constitute relatively open markets and infrastructures, which enable economic transactions between complementors and end-users. Yet, while platforms facilitate direct interactions between end-users and content and service providers, they also tightly govern these interactions.

Building on these insights, *platforms* can be defined, as we have done elsewhere, as “data infrastructures that facilitate, aggregate, monetize, and govern interactions between end-users and content and service providers” (Poell et al., 2021: 5). The obvious fact that platforms are all businesses matters because there are fundamental differences between the openness, ownership, and market-orientation of platforms versus public or semi-public infrastructures. Platforms not so much complement existing infrastructures, they compete with or even replace them (Plantin et al., 2018: 301). Therefore, we can think about *platformization* as the “penetration of digital platforms’ economic, infrastructural, and governmental extensions in different economic sectors and spheres of life” (Poell et al., 2019: 5–6).

We hope that our conceptual work will contribute to building bridges between theoretical traditions, which are complementary but have not sufficiently been in conversation with each other. This attempt at interdisciplinary collaboration

should help to improve our understanding of how shifts in the organization of markets are entangled with changes in the infrastructures and governance instruments of platforms. So far, these institutional connections are not transparent and therefore not very well understood, even though they provide the key to understanding how platforms evolve and especially what the impact of platform evolution is on different types of media workers, cultural institutions, and media industry sectors.

This brings us to the second objective of this chapter. Over the past years, in the face of growing platform power and the precarization of platform-dependent societal actors, it has become increasingly clear that more stringent public regulation is urgently needed (Nooren et al., 2018). The governance of platforms, though, is inherently dependent on our understanding of governance *by* platforms (Gillespie, 2018). If we do not manage to reach a political consensus, resulting in agreed-on policy statements and reflected in transparent legal definitions and regulatory frameworks, the expansive power of platform conglomerates may become unruly. This will need to be a form of regulation that addresses the complex relations between the rapidly growing platform markets, often obfuscated infrastructures, labyrinthine instruments of governance, and the many different types of complementors, from cultural producers and advertisers to social movements and political parties. Whether transnational frameworks currently under construction, such as the European Digital Markets Act and Digital Services Act (DMA/DSA), will prove sufficient as new legal scaffolds, or whether we need a new form of “constitutionalism” (Suzor, 2018), is a hotly debated topic. What should be clear from our analysis, though, is that addressing only one of many dimensions of platform configurations is not going to adequately reshape the political economy of platforms. We need a comprehensive and truly interdisciplinary approach to platforms and platformization in order to govern the digital society.

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