

# Algorithmic Management in the Platform Economy

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## Abstract

The platform model is the distinguishing organizational form of the early decades of the twenty-first century. Whereas actors in markets *contract*, hierarchies *command*, and networks *collaborate*, platforms *co-opt* assets, resources, and activities that are not part of the firm. As a distinctive organizational form, the platform model confronts a distinctive managerial challenge: how to manage value-creating activities that are undertaken on the platform but not in the firm? In a triangular geometry, platform owners co-opt the behavior of providers and users, enrolling them in the practices of algorithmic management without managerial authority having been delegated to them. Acting on their own behalf, the ratings and other activities of providers and consumers are algorithmically translated into rankings and other calculating devices that circulate through feedback loops that are twisted rather than circular. Algorithmic management involves a peculiar kind of cybernetic control because at each fold of the feedback loop accountability can be deflected and denied. Whereas Scientific Management in the early twentieth century offered a legitimating principle for the growth of a new managerial class, algorithmic management in the early twenty-first century is reshaping the managerial class. Its power asymmetries at the organizational level are related to coalitions at the regulatory level in which platform owner and investors are in alliance with platform consumers.

**Keywords:** Algorithmic management; platforms; Taylorism; rankings; organizational forms.

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## Introduction

As of September 30, 2020, the world's most valuable public companies were Apple, Microsoft, Amazon, Alphabet, Alibaba Group, Facebook, and Tencent.<sup>1</sup> Together, these seven companies represented more than \$8.3 trillion in market value. All of them are platform businesses.

The rise to prominence of the platform business model has been rapid. Ten years ago, in the third quarter of 2010, in the top positions were two oil companies (Exxon Mobil and PetroChina). Among the GAFAM (Google, Apple, Facebook, Amazon, Microsoft) there was only Apple in third position and Microsoft in the sixth. Apple took the top spot for the first time in the third quarter of 2011, while Google entered the top 10 in 2013 and Amazon and Facebook in 2016. In those ten years, in addition to digital native firms, a significant number of traditional industry leaders were initiating platform projects, and goods and services of a wide range are now carried out by platforms.

Today, much of our daily life is conducted on or with platforms. It is on platforms that we can access information, watch movies, listen to music, read books, shop for all kinds of products, archive documents, and find partners. We go to platforms to get a ride, book travel, support a cause, order food, or finance a project. Do you want to know what the people you care about are doing and thinking? Are you looking for someone for housekeeping, home repairs, medical advice, legal or accounting services, or lectures on any kind of topic? Or perhaps someone to organize your closets or coach you in organizing your life? There are platforms for all of these and more.

Software for your company is provided on platforms; crowdsourcing platforms make it possible to collect ideas, information, or opinions from a large group of people outside the firm; and if you need cybercurrencies, these are also available on a number of platforms (Caliskan, 2020). Traditionally, John Deere manufactures agricultural equipment; but now, equipped with GPS and other software linked to its MyJohnDeer cyber-agricultural platform, its tractors harvest data alongside corn and wheat.<sup>2</sup> And it is on an online platform where researchers share and document BioBricks — DNA sequences encoding specific information and biological functions by the BioBrick™ standard — that members of the synthetic biology community can “mix and match” to build biological devices and systems (Weissenbach, 2020).

In this article we address three fundamental questions about the platform economy that researchers are debating and will continue to debate: i) What are platforms as a social organizational form? ii) What are the distinguishing characteristics of the mode of management on these platforms? iii) How are these features at the organizational level reshaping class relations and coalitions at the broader societal and political levels?

Anticipating our argument: In the following section we ask whether platforms should be conceptualized as markets, hierarchies, or networks. We conclude that the platform model is none of these. Moreover, rather than combining aspects of that triplicate, it is better to understand the platform model as turning them inside out. In elaborating this argument, we make a case that the platform model is a distinctive organizational form. Expressing (indeed, compressing) each of the forms as a verb: whereas for markets the verb is *contract*, the verb for hierarchy is *command*, and for networks it is *collaborate*. By contrast, platforms *co-opt*. With reference to the Möbius topology, platforms co-opt assets that are not part of the firm and create value in a social and economic space that is neither inside nor outside of the platform.

1. Based on the *Financial Times* Global 500 list.

2. See Grabher (2020); and, for an account and photographs literally taken from the field, see Stark and Warner (2013, pp. 90, 94–95, and 108).

In the subsequent section, we examine the distinctive managerial challenge arising from the platform model's distinctive organizational form: how does one manage value-creating activities that are undertaken on the platform but not in the firm? We argue that a distinguishing feature of platform algorithmic management involves its triangular geometry in which platform owners co-opt the behavior of providers and users, enrolling them in the practices of algorithmic management without managerial authority having been delegated to them. Acting on their own behalf, their ratings and other activities are algorithmically translated into rankings and other calculating devices that circulate through feedback loops that are twisted rather than circular. In the peculiar kind of cybernetic control that is algorithmic management, accountability and control can be deflected and denied at each step in the feedback.

In contrast to Scientific Management at the turn of the twentieth century, in the algorithmic management of the twenty-first century there are rules but these are not bureaucratic, there are rankings but not ranks, and there is monitoring but it is not disciplinary. Algorithmic management does not automate bureaucratic structures and practices to create some new form of algorithmic bureaucracy. Whereas the devices and practices of Taylorism were part of a system of hierarchical supervision, the devices and practices of algorithmic management take place within a different economy of attention and a new regime of visibility. Triangular rather than vertical, and not as a panopticon, the lines of vision in algorithmic management are not lines of supervision.

In a third, concluding section, we address the implications of our analysis for class relations and political coalitions. Whereas Scientific Management offered a legitimating principle for the growth of a new managerial class, algorithmic management in platform monopoly capitalism is reshaping the managerial class. Its power asymmetries at the organizational level are related to coalitions at the regulatory level in which platform owner and investors are in alliance with platform consumers.

## Markets, Hierarchies, Networks, Platforms

Of what social form is the platform model, and what governs its coordination? For alternatives to choose among, Oliver Williamson (1996) restricts us to two: markets and hierarchies.<sup>3</sup> Max Weber writes of three forms of authority: traditional, rational legal, and charismatic; and Karl Polanyi (1957) identifies three forms of economic coordination: markets, redistribution, and reciprocity. Directly related to Polanyi's trio, but not completely isomorphically, Walter Powell (1990) gives us markets, hierarchies, and networks. Let's begin there.

### Platforms as Markets?

Much of the economic literature defines platforms as bi-lateral or multi-sided markets. While not themselves generally buyers and sellers, platform operators produce networked marketplaces for at least two different types of users (e.g., buyers and sellers) skimming off a percentage of each transaction as an intermediary (Castelle, 2016). Often treating one side as a profit center and the other as a loss leader (OECD 2009), platforms "effectively cross-subsidize be-

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3. Luc Boltanski and Laurent Thévenot (1991) triple this number, offering six "orders of worth" which can serve as principles for coordination: market, industrial, civic, loyalty, inspiration, and renown. Boltanski and Chiapello (1999) raise the number to seven by adding the network form; Thévenot (2006) adds an eighth, a green or ecological principle.

tween different categories of end users that are parties to a transaction” (Rochet & Tirole, 2003, pp. 1017–1018).

Some platforms are *more than markets* (however multi-sided). At data money exchange platforms (arguably among the platforms most like marketplaces) non-trading activities are core functions. As Koray Caliskan (2020) demonstrates, these exchanges operate as *markets* but also simultaneously as *mints* that make data monies, *vaults* that store money, and *banks* that lend money, as well as operating as *insurance agents*, *data centers*, *clearing houses*, *accounting agencies*, and even as *courthouses* arbitrating cases.

More importantly, platforms do not simply intermediate transactions and extract rents for this intermediation. Instead, with “the capability to systematically track the location, behavior, production, choices, transactions and reviews of millions of people,” platforms *extract data* which they algorithmically process and monetize.<sup>4</sup> It is this ownership of data generated by the actions of participants (who do not get a share of the surplus generated by those activities) that distinguishes platforms from traditional market intermediaries.

But there is an even stronger argument that can be made: platforms are not markets, they are monopolies. Jamie Peck and Rachel Phillips go a step further. Drawing on the Braudellian concept, they argue that the “*anti-market* is the true home of platform capitalism.” Monopoly capitalism is understood as a “predatory” system, living off of the layers of economic life below, where it operates as a machine for concentrating political-economic power. They identify the monopoly practices of platform corporations as the defining feature of the system (Peck & Phillips, 2020).

If the monopoly power of platform capitalism invites comparison to the classic monopolies of the nineteenth and twentieth centuries, the task of such a comparison is to analyze the distinctive way in which market dominance is achieved and exercised (Rahman & Thelen, 2019, p. 179). The first contrast is that “monopoly power is neither acquired nor maintained through direct ownership — as in the monopolies of the Gilded Age — but has instead accrued through the capacity to control and manipulate markets, both established and new” (Peck & Phillips, 2020). Although some platform monopolies grow by aggressive acquisition of potential competitors, the classic patterns of vertical and/or horizontal integration are less important than *network dominance* — a rapid capturing of network externalities by which a platform becomes more valuable to each user as more people use them. In these winner-take-all (and winner-take-most [Cutolo & Kenney, 2020]) markets, what the winner aims to take is not only the end users but also the enormous number of external stakeholders, typically smaller firms, among them independent developers whose activities are vital for various aspects of the platform but are not part of its corporate structure.

### Platforms as Hierarchies?

If platforms are not markets, neither are they hierarchies. Granted, the core administrative component of the platform enterprise is likely governed by bureaucratic methods with (relatively flat) supervisory hierarchies. But as an organizational form, the platform should not be reduced to its corporate core. In our view, platforms are examples of what Watkins and Stark (2018) label the “Möbius organizational form,” referring to a topological form with neither

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4. See Frenken & Fuenfschilling (2020). Van Dijck and Poell (2013) refer to three processes: datafication, commodification, and selection. That is, platforms store personal data, translate them into economic value, and use them for filtering and customizing the information destined to users.

an outside or an inside. Legally, of course, the platform corporate core has boundaries. But organizationally, platform boundaries are far from clear cut.<sup>5</sup>

Expressed in terms of the triplicate — make (hierarchy), buy (market), or cooperate (network) — the Möbius form adds a fourth: co-opt (Watkins & Stark, 2018). The defining Möbius organizing principle can be stated most simply: as a form, co-opt assets and activities that are not part of the firm. Platforms adopt this principle in many aspects of their operations.

In the first place, platforms are asset-light, leveraging physical assets over which they do not exercise ownership as seen in this often-quoted passage:

The world's largest taxi firm, Uber, owns no cars. The world's most popular media company, Facebook, creates no content. The world's most valuable retailer, Alibaba, carries no stock. And the world's largest accommodation provider, Airbnb, owns no property.<sup>6</sup>

Second, platforms are not hierarchical in the organization of labor. Platforms are famously notorious for using nominally independent contractors instead of employing workers. For example, drivers for Uber, micro-workers at Mechanical Turk, and home repair workers at TaskRabbit are not employed by the platforms that, nonetheless, manage their activity (Cansoy et al., 2020; Griesbach et al., 2019; Schor, 2020; Watkins, 2020). The same is true for sellers and other providers (for example, on eBay, Amazon, or Etsy). Just as the “independent” sub-contractors, such as Uber drivers, are not employees but are the platform's *workforce*, affiliated sellers, such as those on eBay, are the platforms' non-employed *salesforce*. Moreover, some platforms monitor the accounts of their sellers, effectively using them as scouts to identify highly profitable niche markets into which the platform (such as Amazon) will enter as direct competitor.<sup>7</sup> Thus, whether workforce, salesforce, or market research, platforms are co-opting the energy and creativity of actors who are on the platform but not as employees at the platform's core.

Third, and finally, platforms exhibit Möbius-like characteristics not only with regard to labor but also in relation to their users. Platform users, like customers more generally, are obviously not organized as part of a corporate hierarchy. But are users part of a platform? Are they inside or outside? The semantics of platform discourse already points to its Möbius qualities. Where are users? Like the subcontracted workforce/salesforce, they are neither in nor out. Everything takes place *on the platform*. Yes, users are part of the platform; frequently they participate in building it. Of course you are not an employee of Amazon or part of its managerial ranks. But it's not unlikely that you are an Amazon Prime *member*, and a member as well on Airbnb, on Facebook, and Etsy. Perhaps you recently changed your “member status” at Uber.

5. In arguing that the topology of platforms is Möbius-like, we are not the first to question the metaphors of inside/outside or internalization/externalization when studying platforms. Kornberger et al. (2017, p. 7), for example, argue that notions of territorialization — disciplinary power as enclosure — are of limited utility in studying relations of platform power and control. Somewhat similarly, Plantin et al. (2018) observe that “(...) unlike system builders, platform builders do *not* seek to internalize their environments through vertical integration. Instead, their platforms are *designed* to be extended and elaborated from outside, by other actors, provided that those actors follow certain rules” (Plantin et al., 2018, p. 298).
6. Tom Goodwin, senior vice president of strategy and innovation at Havas Media, quoted in Hamish McRae, *The Independent*, May 5, 2015.
7. “PDEs [Platform Dependent Entrepreneurs] innovated new businesses that the platform could then enter and capture, by using its better information and ability to manipulate the platform itself, there by appropriating the innovator's rents” (Cutolo & Kenney, 2020, p. 19). See, for example, the case of Google's entry into the Android market for photography apps in 2015 analyzed by Foerderer et. al. (2018).

And the more you think about it, the more you recognize just how often you are asked if you “would like to become a member” of one or another platform.<sup>8</sup>

In the past (one of us is old enough to remember), membership was something one did as a member of a community, for example in joining a religious congregation, for example, the PTA, or a club. Airlines and grocery store chains extended the idea of membership to frequent flyer/buyer programs. These were typically loyalty programs. Other brands exploited desires not simply to have belongings but to have a sense of *belonging*. Möbius-strip platforms do something different. My “participation” in the Delta Sky-miles program does not affect the product that Delta offers to its other customers. But, as is well-known, my posts on Facebook, Twitter, Instagram and others are part of platform user-generated content. Moreover, my “likes” go into creating playlists at Spotify; my stars, thumbs up and thumbs down are a factor shaping the course of the narratives of Netflix original TV series; and my clicks, key strokes, and verbal queries help train pattern recognition algorithms for Google.

### Platforms as Networks?

In addition to Williamson’s dichotomy of markets and hierarchies, organizational researchers writing at the turn of the century emphasized that there was a third mode of coordination — the network.<sup>9</sup> This mode can take many forms: “sub-contracting relationships, research consortia, strategic alliances, joint ventures, and a wide array of activities that fall under the rubric of relational contracts” (Smith-Doerr & Powell, 2005, p. 385), but common to them is that they are “cooperative interfirm relationships” (Kogut et al., 1992, p. 348). With cooperation as the keyword, research indicated, even better that the distinctive character of the network forms is “a *cumulative pattern* of cooperation” (Kogut et al., 1992, p. 349, our emphasis). In this mode, the process of mutual search between buyers and sellers is historical in nature, because it is influenced by their relationship with other firms and by the relationship of these other firms to one another.

At the level of inter-organizational relations, as Grabher and van Tuijl (2020) show, the platform model does evidence some similarities to the network mode, as they leverage networks of firms outside of their corporate boundaries. But their comparison of platforms to Global Production Networks (GPNs sometimes known as Global Supply Chains) reveals more about their differences. Whereas GPNs, for example, typically connect “asset heavy” firms where the problem is “making things,” the managerial challenge for platforms is “making matches” (Grabher & Tuijl, 2020, p. 1009).<sup>10</sup>

Among other critical differences are those of temporality, those of trust, those of power, and how these intersect. Time does count in the platform mode — not as long-lasting processes but in choosing the right “moment” to enter and operate. Reputation is scored rather than built through repeated interactions that shape a trusting relationship. Position in the rankings is privileged over loyalty gained by knowing the practical requirements of fewer relational partners (Gandini et al., 2016). Quantity matters more than quality; instant reputation matters more than trust.

8. Sometimes the user is given no choice. Want to hear a track on Spotify? You *must* become a member.

9. See Powell (1990), Podolny & Page (1998), DiMaggio (2001), Stark (2001).

10. “By its very nature, in contrast to supplier relationships, the transactions over the platform are not transactions with the platform” (Cutolo & Kenney, 2020, p. 15).

Platform owners are interested in long-term relationships — so long as the long term is on their terms.<sup>11</sup> Instead of the logic of loyalty, they prefer that of lock-in. Missing from much of the work that sees platforms as ecosystems (Kretschmer et al., 2020) is their monopoly character and the transition from collaborative to dependent relationships. The goal of winner-take-most strategies for the platforms is to prevent exit strategies by counter-parties (sellers and buyers, providers and users) whether that be by making it impossible to export one's reputation profile to another platform or by using monopoly power to ensure that so-called "complementors" are locked in to the platform. Among such complementors are the independent developers who create the apps that, in many cases, enable key functionalities for the platform. It is through Application Programming Interfaces (APIs) that platforms like Facebook interact with other systems in a seamlessly interactive network. But as Langlois and Elmer (2013) show for a Facebook API, "rather than connecting them to the Open Web, the API locks both groups [app developers and users] into a landscape defined and controlled by Facebook" (Plantin et al., 2018, p. 30).

### Platforms as Platforms

In our view, the platform model is a new form of social organization. *Sui generis*, platforms do not combine Powell's triplicate so much as turn it inside out. As we have argued: i) platforms are of the market but not reducible to it, indeed they may be its anti-market; ii) like hierarchies, they produce power asymmetries, but these are new and outside bureaucratic supervision; and iii) they make property out of network properties, but they substitute timing for trust. Whereas the mode for the market form is *contract*, for hierarchy *command*, and for networks *collaborate*, platforms *co-opt*.

If platforms leverage physical assets, R&D, workforce, salesforce, market research, and the creative energies of customers not by making or buying but by the Möbius strategy of co-opting, are these valuable activities inside or outside of managerial control? What is the management mode of the platform Möbius form? It is to this problem that we turn.

### Platform Algorithmic Management

As the closing gestures of the previous section indicated, the Möbius topology of the platform model poses challenges for the management of these activities. If much of the value that the platform captures is created "on the platform" but outside of the corporate core, how can platform operators control the mission critical activities that occur there? An important part of the answer, we think, goes back to a fundamental aspect of platforms with which we opened the previous section: While questioning the idea that it is the market character of platforms that best describes their dominant logic of coordination, we emphatically agree that platforms involve relations that are *multi-sided*. In the platform economy, management and control are manifested in and through a multi-sided relationship.

This relationship is typically three-sided: on one side, the platform *owner*; on the second side, the *provider* (be it workforce, salesforce, musicians, artisans, etc.); and on the third side, the *user-customer* (the buyer, the rider, the listener/viewer, etc.).<sup>12</sup> These roles are obvious to

11. "Whereas a traditional supplier usually signs a long-term agreement that normally includes protections for both sides, the contracts signed with platforms invariably permit unilateral changes and with little or no notice" (Cutolo & Kenney, 2020).

12. In some platforms (social network sites, some music platforms, etc.), advertisers are also added to these actors.

even the most casual observer. We re-state them here because what is not obvious (in much of the research on algorithmic management) is that this triangular geometry (Vallas & Schor, 2020, p. 282) and the power asymmetries along its various axes are key to understanding algorithmic management in the platform economy.

Concisely stated, the managerial challenge produced by the Möbius character of the platform model is addressed by a Möbius answer: In the triangular relationship, *platform owners co-opt the behavior of providers and users* to address the new management challenges. As elaborated in more detail below, the behavior of providers and customers, acting on their own behalf, is enrolled in practices of algorithmic management without managerial authority having been delegated to them. They are not managers, but alongside the algorithms that organize them, their behavior is co-opted for the purposes of algorithmic management.

Yet neither is it the case that providers and users are controlling each other. As we shall see, the ratings of counter-parties are algorithmically translated into calculating devices that circulate through feedback loops also involving the platform operator. These feedback loops are not circular. Instead, they are twisted by the triadic relations of owner-provider-user. Algorithmic management involves a peculiar kind of cybernetic control because at each fold of the feedback loop, accountability can be deflected and denied. Algorithmic management gives a Möbius twist to the cybernetic loop.

Our argument takes its point of departure by comparing/contrasting Taylor's Scientific Management and algorithmic management, presented in three parts — summarized here in catchword formulae: First, on platforms you will find plenty of rules but these are not bureaucratic. Second, (and this more elaborated) you will also find lots of rankings but there are hardly any ranks. Third, there is monitoring aplenty, but often it is not disciplinary.<sup>13</sup>

## Rules

One aspect of algorithmic management on today's platforms finds platform operators performing as private regulators,<sup>14</sup> proliferating rules of distinctive character (Frenken & Fuenfschilling, 2020). Although it has been suggested that platforms operate in a "legal void" (Elert & Henrekson, 2016), in fact, the legal framework for activity on platforms is elaborately specified — in the "terms and conditions" to which the member (whether the customer, but even more importantly, the provider/seller) must subscribe (Frenken & Fuenfschilling, 2020).<sup>15</sup> On the supply side, such terms and conditions can run for pages of fine print. But despite their volume and their specificity, these rules are questionably bureaucratic, primarily because such

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13. Scientific management is taking place in some parts of the platform's operations, especially where there is no triangular relationship. For example, Amazon's enormous warehouses are extreme examples of algorithmically guided, direct disciplinary control (Delfanti, 2019). That is, algorithmic management can take a different form in the firm than on the platform.

14. See Grabher & König (2020). As Zysman and Kenney (2016) point out, platforms constitute "regulatory structures" that dictate the terms of interaction. Similarly, according to Grabher and van Tuijl (2020, p. 1012), platform operators act as "private regulators" and "co-produce their own institutional and societal embeddedness."

15. One would be mistaken to think about these conditions as "terms of a contract." On quasi-monopolistic platforms, terms and conditions are not conventionally contractual: "This extreme concentration results in the contractual obligations regulating the platform-PDE relationship differing markedly from the traditional supplier-buyer relationship. For nearly all platform users, the terms and conditions of participation are non-negotiable" (Cutolo & Kenny, 2020, p. 15).



terms and conditions exhibit little stability.<sup>16</sup> The same is true for the matching protocols and algorithms for evaluating the salesforce (Curchod et al., 2020) and the workforce:

Workers also experience arbitrary authority when platform companies unilaterally “pivot” (Ravenelle, 2019), changing the structure of the work or the system for compensating and evaluating workers, often without advance notice or justification (Griesbach et al., 2019).

Far from being a source of certainty<sup>17</sup> around which the dependent entrepreneurial developer, the seller or provider can orient, frequent changes in terms, conditions, and protocols are a major *source of uncertainty*.

By this account, platform algorithmic management operates very differently from the scientific management of a century earlier. Although piece rates could change capriciously in a Taylorist factory, the actual introduction of Taylorism on a large scale involved relatively stable rules in the form of productivity bargaining mandated and overseen by the Wartime Production Boards in the First World War (Stark, 1980). Moreover, the maturation of Taylorism in the Fordist and other models of monopoly capitalism by the mid-twentieth century was organized around standardized wage scales and other bureaucratic rules whose goal was predictability. What became known as “internal labor markets” were actually internal bureaucratic rules to reduce market uncertainty (Stark, 1986). On the basis of these rules, workers could use protocols involving measures of skill and seniority (algorithms if you like) to anticipate promotions in pay scales and job ranks.

By contrast, the technical capabilities of algorithmic systems facilitate a form of rational control that is distinct from the technical and bureaucratic (Kellogg et al., 2020, p. 366) or normative (Rahman, 2020) control used by employers in the past. In platform monopoly capitalism (Vertesi et al., 2020), the goal of the perpetual recoding of the institutional fabric, the shifting evaluation criteria, and the unpredictable “updates” of terms and conditions is the production of uncertainty. The ongoing generation of such uncertainty — whether by instability (Frenken & Fünfschilling, 2020) or opacity (Curchod et al., 2020; Rahman, 2020) — is a source of non-bureaucratic control.<sup>18</sup>

Non-bureaucratic means of control are important because, as Hatim Rahman emphasizes, “platforms theoretically (and legally) cannot subject workers to control measures of the past” (Rahman, 2020). To do so, would damage the platform owners’ claim that the drivers and other agents who provide their workforce, the musicians and artists who provide their creative teams, the dependent entrepreneurial developers who provide their R&D arm, and the sellers who, in effect, provide their salesforce, and so on, are independent contractors.

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16. Frenken and Fünfschilling (2020) argue that the specificity of platforms rests on their “re-coding capacity,” i.e., it is not just that they create their own rules but that they are capable of adapting them quickly to the changing context. “Just as their technological capacities evolve through changes in the software codes, so do platforms evolve — or better ‘recode’ — their formal institutional embedding through ongoing adjustments in their terms and conditions (...) The re-coding capacity provides platforms the ability to continuously adapt the course of institutionalization in a largely autonomous manner” (Frenken & Fünfschilling, 2020).

17. Kreiss, Finn and Turner (2011) point out that, in the urge to get rid of the iron cage, we also risk losing the valuable elements of bureaucracy, forgetting that stable rule systems replaced the irrationality of traditional forms of domination such as monarchies.

18. In Rahman’s (2020) terms, “from the iron cage to the invisible cage.”

## Ratings and Rankings

Taylorism involved an ecology of devices. In fact, much of the materiality of Taylorism — its stop watches, time sheets, and stroboscopic cameras, as well as its calculating protocols — showed algorithmic aspects.<sup>19</sup> The algorithmic management of platform capitalism also consists “of an ecology of accounting devices in the form of rankings, lists, classifications, stars and other symbols (‘likes’, ‘links’, ‘tags’, and other traces left through clicks)” (Kornberger et al., 2017, p. 3).

But whereas the assemblage of people, devices, and procedures that was Taylorism took place as part of the creation and maintenance of a system of hierarchical supervision, the assemblage of people, devices, and protocols that is algorithmic management takes place in a system where feedback loops are twisted rather than circular. Triangular rather than vertical, the lines of vision in algorithmic management are not those of a panopticon — and, strictly speaking, are not supervisory.

**Ratings.** One of the most important devices in the “evaluative infrastructure” (Kornberger et al., 2017) of algorithmic management, ratings offer feedback about performance. Unlike employee evaluations by line managers (in a conventional corporate setting) or 360° evaluations by co-workers (in a post-bureaucratic setting), these ratings are by the counter-parties to the transaction. Familiar to all of us from daily life, ratings can involve written comments but are frequently simple numerical scores (or graphic representations of such) or, when binary, indicators (thumbs ups/down, “likes,” reposts, retweets, and the like) that can be added up to yield a score.<sup>20</sup> These ratings can serve as feedback to inform providers about their own performance of various forms; and, importantly, these performance metrics are frequently available to other users.

Of course, such performance metrics are always available to the platform operator; in fact, some platforms will exclude or punish provider/users based on their ratings by others.<sup>21</sup> Even without being examined by (or aggregated into rankings by) the platform operator, user ratings can influence the *provider’s behavior* because users’ accessibility to ratings can influence *customers’ choices*. As Orlikowski and Scott (2012; 2014) demonstrated in an early and important study of TripAdvisor and as Curchod et al. (2020) show in their study of eBay, online evaluations generate a sense of anxiety and vulnerability.<sup>22</sup>

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19. One of the interesting consequences of comparing Taylorism and algorithmic management is that the comparison reveals aspects of the former. It’s often stated that many procedures involve algorithmic features (a cooking recipe, for example). But there is a non-trivial sense in which Taylorism had algorithmic characteristics. This was certainly so for the system of “Motion Studies” by Frank and Lillian Gilbreth. Created as an alternative to the “Time Studies” of classical Taylorism, the Gilbrethian system replaced Taylor’s stopwatch that depended on the cooperation of the workman with the movie camera in a kind of laboratory setting. Micromotion study involved filming human activities, analyzing these by breaking movements down to isolate the times of specific micromotions, and cataloging these elementary motions — the times of which could be added up to derive the standardized time to carry out a particular activity. Through such microanalysis the Gilbreths thereby created an algorithmic system, what we might now call a database of elementary motions.

20. For a pathbreaking analysis of “the like economy,” see Gerlitz and Helmond (2013).

21. For an analysis of deactivations at Uber, see Rosenblat (2018).

22. On hostile practices by the customers including forms of black-mail, see Curchod et al. (2020), who write, for example, about eBay: “Sellers are anxious that one evaluation too many might automatically trigger a status downgrade. The frustration and anxiety sellers experience are partly due to a feeling of being surrounded by things rather than people and hence being unable to communicate and justify their actions” (Curchod et al., 2020, p. 667).

**Rankings.** As mentioned, ratings are typically scores. Of great importance for algorithmic management is that a rating (or set of ratings along different dimensions) can be readily aggregated and translated into a ranking (Stark, 2011). Whereas a rating is understood as judging something as better or worse than a standard, a ranking is immediately grasped as assessing something as better or worse than some other — even when the ranking was produced neither with reference to any standard nor with any head to head comparison between the actors/objects ever having been made.<sup>23</sup>

Rankings matter because much of the platform economy is an *economy of attention*. Not just sellers but nearly all types of users are competing for attention. Whether to be chosen for purchase or to be available for “a match” one must be seen. On many platforms visibility is a direct function of where the offering, provider, or the user sits in the ranking. The visibility produced by rankings is especially important because the numbers of offerings or potential matches on platforms is truly staggering. Even when the offerings presented in the ranking are restricted by genre or some type of categorization, the numbers are often likely to be vast.<sup>24</sup> The specific number can vary by platform. But whether it be 10, 110, or 1,010, below a certain position in the ranking you might just as well be invisible.<sup>25</sup>

In the competition for attention, platform players compete for position in the algorithmic rankings. This position is determined by the aggregated ratings of other users — sometimes ratings by direct counterparties, sometimes even by other providers (think, for example, of likes and reposts on cultural platforms).<sup>26</sup> Such competition is less like market competition than it is like organized *competitions*. But the competitions on platforms are not like athletic competitions, music competitions, or architectural competitions occurring within a discrete time and specific place, with competitors registered at the beginning and winners announced at the end. Taking place almost anywhere, nearly anytime, perhaps even all the time, rankings are ongoing, endlessly updated.<sup>27</sup>

The rankings of online platforms are not like the awards and prizes of conventional competitions (Espeland, 2020). The winner of an Olympic event is, for all times, an “Olympic gold medalist.” But a provider ranked Number 8 on some list might fall out the Top Ten in the next ranking, whether that be in the next year, the next month, or the next day. And the

23. See Esposito & Stark (2020) and Stark (2020). On the relational, as opposed to referential, character of algorithmic evaluative infrastructures, see Kornberger et al. (2017, pp. 11–13).

24. To give some examples: if you are looking for accommodation in a large city, Airbnb might communicate that “there are more than 300 accommodations for the requested dates” (a standard formula) and then propose them in the order of priority established by the algorithm. If you are looking for a glass or a fork on Amazon, it offers you the first 48 results “over 70,000” (a standard formula, again).

25. See Bucher (2012). Ranking is also important for the visibility of scholarly output. Of course, you would never buy a book based on its overall sales ranking on Amazon. Nonetheless, you might unconsciously rely on rankings to guide your reading. If you use Google or Google Scholar to search for a paper on a given topic, especially in a field in which you are not expertly familiar (say, “network centrality measures” or “performance studies”), your attention will be directed to a ranking organized algorithmically based in large part on citation counts. Evans (2008) shows how the resulting pattern of attention speeds up search but narrows the diversity of exposure.

26. For the most part, what platform operators do is to organize competition. But sometimes they deliberately manipulate the rankings. The consultation that led to “Ranking transparency guidelines in the framework of the EU regulation on platform-to-business relations” (Regulation EU 2019/1150) showed that one of the major difficulties businesses have in their relationship with online platforms is arbitrary and discriminatory changes to search algorithms made by online platforms with little or no warning or explanation.

27. For more on competition and competitions (as well as on the differences between discrete liberal competitions and the continuous “Illiberal” competitions of online platforms, see the essays in Stark (ed., 2020).

difference between being in or just out of the Top Ten can be consequential even if the ordinal move is very small (Stark, 2020). On many platforms, rankings are not episodic (yearly, for example) but are being algorithmically updated almost continuously. Algorithmic control, in these cases, does not mean that the user/provider is under 24/7 direct surveillance monitoring but that their behavior, the evaluation of this behavior by others, and the translation of these third-party evaluations into a ranking that can be fed back to affect their behavior is happening all the time.<sup>28</sup>

Rank orderings can be explicit; but oftentimes the ranked list is not explicitly presented as such. This is frequently the case on cultural platforms, where Bonini and Gandini (2019) speak of a “new regime of visibility.” Of particular interest is the changing role of rankings in the field of music consumption where algorithmic rankings (and the control that accompanies them) take new forms responding to new products and services.

Practices of curation figure prominently in music, as in other cultural fields; and lists figure prominently in curation. Whether on the radio or now on music streaming platforms, curation is the distinctive service provided to the listener<sup>29</sup> — and the ranked list was and remains the basic, curated format. Of course, that format has evolved considerably.

Top 40 lists set the agenda for AM radio and hence the consumption habits of pop music listeners. And, if the character Rob Fleming, the indie record store owner in Nick Hornby’s (1995) novel *High Fidelity* was true to life, then Top 10 lists of albums were no strangers to FM listeners as well.<sup>30</sup> Where the record single release was the basic sales unit of AM radio, and the album the basic unit for the FM field, today’s online streaming platforms have unbundled the album and rebundled releases to *create a new product*: the playlist (Bonini & Gandini, 2019, p. 2; Prey, 2020a, p. 3). Thus, whereas Top 40s or Top 10s were ranked lists of products (releases/albums), *today the product (the playlist) is itself a ranked list*.

Users of Spotify or other music streaming platforms, doubtless familiar with playlists, might be perplexed that we refer to playlists as ranked. Platform operators, labels, distributors, and musicians would not be surprised at all. We are not referring to the playlist you or your friends make (at Spotify, for example, numbering in the billions) but to the playlists generated by the platform operators. Although the major labels do have their own playlists on Spotify to promote their artists, it is the Spotify-generated playlists that overwhelmingly dominate playlists on the platform.<sup>31</sup> Each platform has its own proprietary software for data analytics. The PUMA (Playlist Usage Monitoring and Analysis) program, for example,

breaks down each song on a playlist by things like number of plays, number of skips, and number of saves. PUMA also tracks the overall performance of the

28. On the non-disciplinary character of illiberal competitions see especially Davies (2020). In a thoughtful study of performance metrics and algorithmic management emphasizing the role of rankings, sociologists Olav Velthuis and Niels van Doorn (2020) document the daily, even hourly, updating of rankings of the (literal) performances of sex workers in an online platform.

29. See Prey, 2020a. Bonini and Gandini (2019, p. 3) date late 2014 as the “*curatorial turn*” — not because this is the first curatorial moment in the presentation of music but because it was the moment when Spotify adopted the role of curator by moving from simply streaming music to generating playlists.

30. Rob Fleming (the character played by John Cusack in the movie with the same title) used the format of Top 5 lists as a way to organize the elements of his private life and his self-image.

31. “The top Spotify-curated playlist — the algorithmically generated ‘Today’s Top Hits’ — counts over 22 million followers. The 35 most followed playlists on Spotify (as of January 2019) were all Spotify-curated playlists; as are 99 of the top 100 playlists” (Prey, 2020a, p. 3). “Spotify’s curated lists have over three quarters of the followers of the top 1,000 playlists” (Aguar & Waldfogel, 2018, p. 8).

playlist as a whole, with colorful charts and graphs illustrating listeners' age range, gender, geographical region, time of day, subscription tier, and more (Pelly, 2017, quoted in Bonini & Gandini, 2019, p. 6).

The genre or mood-specific playlists (“RapCaviar,” “Soul Coffee”), playlists for individual artists (“This is Lang Lang”), and the personalized playlists algorithmically created<sup>32</sup> for individual users (such as “Discover Weekly,” “Your Daily Drive,” and “Release Radar”) do not appear as numbered lists. But the order of the tracks in a ranking is known to the platform operator (since placement in a ranking is a major factor determining whether the release is on a playlist at all). Most importantly for artists and labels, location on the discretely ranked playlist directly shapes listening and revenues — with positioning near the top of the playlist having the greatest impact:<sup>33</sup>

Music artists and record labels are growing increasingly dependent on plum playlist positions — playlists controlled by Spotify. For platforms such as Spotify or YouTube who do not own the rights to their own content, playlists are a key mechanism through which to exert what we can call “curatorial power” (Prey, 2020a, p. 3).

By dominating the playlist game, platform operators are now attempting to use artists' dependence on inclusion and ranked location in playlists to improve platform profit margins, limited to date, by the major recording labels to which the platform must pay streaming fees. Spotify, for example, is offering significant advances to independent artists to license their music directly to the platform. According to *Billboard* “[s]ome acts say they are tempted to sign direct deals with Spotify not just for the advance fee and the higher potential payouts per stream, but for the prospect of better placement on top playlists” (Karp, 2018a, cited in Prey, 2020a, p. 7).<sup>34</sup>

### From Disciplinary Supervision to Non-supervisory Visibility

When referring to the explicit rankings (or the disguised rankings such as playlists) of algorithmic management as a “new regime of visibility,” we were speaking to the ways in which ordered

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32. Playlist creation often involves algorithms and humans: “Instead of contrasting editorial and algorithmic logics, we should thus frame these logics as stacked and entangled, both shaping the outputs of platforms. These are always present together, but with different weights. Each platform articulates these logics by giving them a different relevance. In some Spotify playlists, the algorithmic logic weighs more, while in other playlists, editorial logics are more relevant.” (Bonini & Gandini, 2019, p. 6).

33. “The European Commission study determined that a track placement on Spotify’s “Today’s Top Hits” playlist resulted in up to US\$ 163,000 in additional revenue. Other popular Spotify-curated playlists resulted in an even higher payout: “Viva Latino!” was found to generate between US\$ 303,047 and US\$ 424,265 in added revenue per track (Aguilar & Waldfogel, 2018).” (Prey, 2020a, p. 3).

34. Noting that Netflix is often cited as a model of a platform moving from distributing cultural content to producing it, Prey (2020a) points out that the recorded music industry is considerably more concentrated than the television and film industries with the three major music companies controlling an overwhelming proportion of Spotify’s streamed content. Pushing too fast and hard to sign artists’ directly could risk retaliation by one of the major labels; yet profit margins are so thin, and investors are eager that the platform incrementally position itself as a content producer. Spotify’s stock price is likely to move together with victories/failures in the playlist battles.

lists brought actors to the attention of others in the platform economy. But some might consider that the tools of algorithmic management point to a different kind of visibility: subordinates in a visible cage subject to a new and even more ubiquitous managerial gaze. This perspective sees algorithmic management as the new disciplinary panopticon. Such a view is adopted, for example, in the study of eBay by Curchod et al. (2020, especially pp. 665–667). But, from their insightful observations about asymmetries of power between evaluators and the evaluated at the interactional level and between sellers and platform owners at the structural level, we do not draw the conclusion that these “power asymmetries stemmed from eBay’s capacity to impose sanctions and rewards through *highly bureaucratic*, automated practices” (p. 656, our emphasis), or that eBay “relied on evaluations as a bureaucratic mechanism for the exercise of power” (p. 660), or that its “sellers are situated in a formal, hierarchical power structure” (p. 666).

Platform organizations are, indeed, powerful, as we argued emphatically in the previous section. Moreover, the scopic properties of algorithmic management — simultaneously registering in a very large scope while also making intimate details visible — are indeed extraordinary. In contrast to Curchod et al. (2020), however, platforms demonstrate that centralized power can be decoupled from direct disciplinary control.<sup>35</sup> In platform algorithmic management, control is decentralized and distributed (Kornberger et al., 2017; Vallas & Schor, 2020).<sup>36</sup>

Of course, bureaucracies also distribute control: bureaucratic supervision is distributed hierarchically (an actor in a bureaucratic hierarchy can supervise other actors below and be supervised by others placed higher in the hierarchy of authority). When we say that control in algorithmic management is decentralized and distributed, we do not mean to suggest that *bureaucratic authority* has been distributed in a more decentralized way. Algorithmic management is not organized around bureaucratic authority, neither conventionally nor algorithmically.

In the triangular algorithmic model, platform owners relinquish supervisory control (Kornberger et al., 2017, p. 3; Vallas & Schor, 2020, p. 282) in favor of enrolling the behavior of the other two parties to the exchange. It is this behavior that functions as inputs for algorithmic management.<sup>37</sup> Though not part of the management team, buyers and sellers are, nonetheless, a critical part of algorithmic management.

It follows that algorithmic management *does not automate bureaucratic structures and practices*. The problems it deals with are not bureaucratic problems to start with and the answers are not some new form of algorithmic bureaucracy. The inputs for the ratings and rankings and numerous other non-bureaucratic accounting devices of algorithmic management are produced by interactions in the triangular relationship, and the outputs — performance metrics — are accessible to the second and third parties themselves (at least partly and often with considerable opacity).

When speaking of the behavior of these second and third parties as being involved in the

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35. Power “lies in the number of users and big data, rather than in the ability to discipline and control individuals directly” (Kornberger et al., p. 12).

36. In Amazon warehouses (Delfanti, 2019) and at the delivery platforms Instacart and Deliveroo centralized power can be coupled with “algorithmic despotism” (Griesbach et al., 2019; Woodcock, 2020).

37. In their study of eBay, Kornberger et al. (2017) provide an excellent example of relinquishing control. As they demonstrate, the problem of reputation was among the most (perhaps the single most) critical issues for the online marketplace platform. eBay refused to adjudicate reputation. “The evaluative infrastructures created to solve this problem provided a means of distributing the task of management that had originally and painstakingly been undertaken in-house” (Kornberger et al., 2017, p. 8).

practices of algorithmic management, we deliberately use the language of *enrollment* (Latour, 1987; Callon, 1999). Workforce and users, salesforce and customers, are acting on their own behalf, not as the agents or the delegates of platform management. We prefer enrollment because “delegating”<sup>38</sup> could suggest that the same supervisory activity has now been assigned to other actors. Similarly, it might suggest that, because authority has been delegated to them, they are now accountable to platform management.

Broad changes in patterns of accountability can be seen in three historical configurations since the mid-twentieth century, corresponding to mass production, collaborative production, and platformization.

Table 1: Historical Patterns of Management, Visibility, and Accountability

	<b>Mid 20<sup>th</sup> Century Mass Production</b>	<b>Late 20<sup>th</sup> Century Collaborative Production</b>	<b>Early 21<sup>st</sup> Century Platformization</b>
<b>Management</b>	Scientific	Project-Based	Algorithmic
<b>Visibility</b>	Vertical	Lateral	Triangular
<b>Accountability</b>	Hierarchical	Heterarchical	Deflected

Taylorism was robustly hierarchical — not only in its location within a hierarchy of managerial promotion and accountability, but also in its sequential engineering and in its embedding in a *conceptual hierarchy* in which exhaustive and exclusive categories are organized from the particular to the general (Stark, 2009). Algorithmic management operates according to a different logic. Without the verticality and the sequential engineering of the mid-Twentieth century corporation, its databases are not categorical but relational. Algorithmic management differs as well from the project management of high-tech startups in which cognitively distant team members look to each other for lateral coordination rather than compartmentalization (de Vaan et al., 2015). Without the horizontality and the simultaneous engineering of project management in the late-twentieth century startup,<sup>39</sup> in the platform economy some are algorithmically surveilled while others compete in the rankings for algorithmic attention.

In the corporate world of mid-twentieth century capitalism, as in other hierarchical settings, accountability was vertical. In the post-bureaucratic firms of the end of the century, in high-tech startups and inside projects in otherwise corporate firms, multiple evaluative principles co-existed. In this heterarchical form, accountability was lateral, eloquently expressed by a young interactive designer in Manhattan’s Silicon Alley when asked to whom he was accountable in the new media startup: “I’m accountable to everybody who counts on me” (Stark, 2009, p. 23). In the algorithmic management of the platform economy, accountability (like the lines of visibility) is neither vertical nor lateral. The counter-parties are not accountable to project operators; although they evaluate each other through all kinds of devices and must take these accounts into account, they are not accountable to each other; and project operators are certainly not accountable to their workforce/salesforce or users. Evaluations and ratings abound, accountings are plentiful, but no one is accountable because there is no accountability in algorithmic accounting.

38. The term “delegating” is from Vallas and Schor (2020, p. 282) with whom we are otherwise in quite strong agreement about the platform governance mechanism.

39. On sequential versus simultaneous engineering, see Sabel and Dorf (1998) and Stark (2009, esp. pp. 21–23, 99–101).

## Class Structure and the Political Models of Platform Monopoly Capitalism

### Class Structure, Class Composition

In this final section, we briefly gesture to the implications that our analysis has for class and politics in platform monopoly capitalism. In terms of class structure, the algorithmic management of our century can be instructively compared to the Scientific Management movement of a century ago. Although Taylorism is typically understood as an instrument of capital in its dominance over labor (Braverman, 1974), this two-class model fails to explain the introduction and spread of Scientific Management because it ignores how Taylorism was a new class project. Led by Frederick Winslow Taylor, Scientific Management laid out the founding principles for the practices and the ideology of a *new knowledge class*. The transformation of the labor process was a multi-sided class struggle among labor, capital, and this emerging new class (Stark, 1980).

At the forefront of the movement were industrial and mechanical engineers who adopted and modified the practices of scientific management to advance their class interests as a leading part of the rapidly expanding ranks of managers. Their legitimating claims were neither ownership of capital nor the labor theory of value. Instead, Scientific Management based its legitimacy on knowledge claims. On that basis it was the ideological spearhead of the new class of managers and professionals. One does not need to accept its claims of objectivity and scientificity to recognize that this was a powerful ideology for a class that swelled throughout the twentieth century.

If Scientific Management contributed to (or, at the very least, corresponded to) the rise and growth of managers, what are the likely effects of algorithmic management on class structure/class composition? What are the class interests of the new social engineers? How do they differ from those of the new knowledge class of a century ago? And how are they congruent or in conflict with those of the platform owners? These are questions deserving of comprehensive treatment. We gesture here to some lines of investigation for further research.

Whereas industrial and mechanical engineers figured prominently in Scientific Management, the engineering base of algorithmic management is among software engineers and data scientists. More computational than the Taylorists and their followers, the tests conducted by these engineers are more likely to be testing fundamental questions about sociality (what are the network properties of trust? for example, or what is the meaning of a social tie?) than of ergonomics (Marres & Stark, 2020). The data scientists and software engineers are, indeed, engaged in a new project of social engineering.

Claims to objectivity and scientificity mark a strong line of continuity linking scientific and algorithmic management across the centuries. Our analysis has emphasized the differences. Whereas Scientific Management was bound up with a project of bureaucratic supervision and the growth of a managerial class, algorithmic management is not bureaucratic, and its ascendance is reshaping the composition of the knowledge class. That is, based on our analysis, there are reasons to think that the growth of the platform economy and the spread of algorithmic management will be accompanied by a marked decrease in the ranks of management. Algorithmic management is not automating bureaucracy. It is not doing bureaucracy algorithmically. Nonetheless, the algorithmic triad will be putting managers out of work (Enriquez & Vertesi, 2020). This is an empirical question. A related hypothesis would suggest that algorithmic management accompanies an overall, although slower, decline in management while marking a dramatic change in the proportion of line and staff management, strongly favoring the latter. These are research questions for further investigation.



Completing our comparison, if Scientific Management was a movement led by mechanical engineers, who are the leading spokespersons for algorithmic management? Does it come from data scientists and software engineers? For Scientific Management to become widespread, the Taylorists had to make compromises on both sides of the class divide, accommodating to the owners of industry by curtailing their ambitions and accommodating to labor by productivity bargaining (Stark, 1980). What are the lines of conflict and congruence between the big data scientists and the platform owners? Here, too, are questions for further research.

### Societal Coalitions

In closing, we turn to politics. Any analysis of the political model(s) of platform capitalism, even one as brief as the outline we sketch here, must begin with how the term itself — platform — plays a role in the legitimating ideology<sup>40</sup> of platform dominance and in its political alliances. As Gillespie (2010) so persuasively demonstrates, the term *platform* evokes many connotations — a software operating system, a base to build on, a raised architectural element, a subway platform, a political platform, a place to take a position or express oneself, and more. According to Gillespie, the notion of platform is “specific enough to mean something, and vague enough to work across multiple venues for multiple audiences” (Gillespie, 2010, p. 349).<sup>41</sup> Common to the various connotations, however, platforms are typically flat and open to all: “In any of *platform’s* senses, being raised, level and accessible are ideological features as much as physical ones.” Suggesting “a progressive and egalitarian arrangement, promising to support those who stand upon it,” the term thereby “retains a populist ethos” (Gillespie, 2010, pp. 350–351).<sup>42</sup>

If the platform speaks to disparate audiences with a singular language and is open in terms of accessibility, this metaphorical flatness belies asymmetries of power among the actors. It is a solid and not a plane geometry. In the current conjuncture, how do these asymmetries result in dominated participants, how do they yield coalitions at the platform level, and how do these relate to coalitions at the societal level?

In a reprise on the theme of visibility, we return to the research on eBay by Curchod et al. (2020), focusing as it does on patterns of visibility. Whereas the track records and details

40. A comprehensive analysis of the legitimating discourse of platform capitalism would need to highlight the prominence of what Boltanski and Chiapello (1999) refer to as the “connectionist” order of worth, keying, for example, on the role of “matching” in the platform discourse.

41. Gillespie’s idea of a discursive positioning that makes it possible to be interpreted in multiple, even disparate registers is similar to Padgett and Ansel’s (1993) notion of “robust action.” See also, Star and Griesemer’s (1989) concept of “boundary object.” In Stark’s summary, a boundary object “must be stabilized enough to circulate across sites, yet plastic enough to adapt to the local constraints and needs of the disparate parties deploying them. Robust enough to be recognized in different settings, boundary objects are recognized by the different communities in distinctive ways” (Stark, 2009, p. 194).

42. The self-presentations of platform billionaires are typically either as “geeks” or as “regular guys.” Whether, for example, they dropped out of Harvard (Bill Gates and Marc Zuckerberg), graduated from Princeton and got degrees in electrical engineering and computer science (Jeff Bezos), or were in the computer science PhD program at Stanford (Sergey Brin and Larry Page), some of the founders of early platforms offer (rightfully or wrongly) geek associations tying them to the technical elite. Other, more recent, founders offer themselves in more populist guise. For example, the founding myth of Airbnb goes back to 2007 when the founders were traveling to a conference but lacked funds to pay for lodging. They decided to rent out part of their apartments to cover the cost of the trip. This sparked their idea. The same for BlaBlaCar: Fred Mazzella could not find a seat on the train to reach his hometown for Christmas and realized there were plenty of empty seats on cars going in the same destination, but he could not access them. In these cases, they had encountered (supposedly, “like you and me”), some annoying problem in trying to get things done; they found a solution, and they now share that with us.

of *sellers* were visible to all, “online evaluations enabled *buyers* to keep their track record hidden, their identity private, and their direct e-mail confidential” (p. 656, our emphasis). The anonymity and invisibility of the buyers corresponds to a power asymmetry *favoring buyer over seller at the transactional* level; and the stance of indifference and distance on the part of the platform corresponds to a power asymmetry *favoring platform operator over seller at the governance* level. As outcome, Curchod et al. (2020, p. 665) observe an “isolation of the visibles” (the sellers) and identify a “coalition of the invisibles” (buyers and platform owner). This coalition of platform operator and customer would not be unfamiliar to the participants dominated on other platforms, be they drivers at Uber, musicians on Spotify, artisans on Etsy, or the dependent complementors on many platforms (Huws, 2014; Schor, 2020).

If organizational researchers identify a coalition of interests between platform owners and customers at the platform level, what coalitions do political economists find at the societal level? In an exemplary article, one of political economy at its best, K.S. Rahman and Kathleen Thelen (2019) provide an answer, especially interesting because they make almost no reference to research at the organizational level.

Rahman and Thelen situate their analysis of the rise of the platform model in an historical account, identifying three main phases in the evolution of capitalism over the past one hundred years. The mid-twentieth century model involved a “nexus of reciprocal relationships” between industrial megafirms (such as General Motors and General Dynamics) and their stakeholders, geared towards stable long-term growth, based on large workforces with permanent employment contracts and underwritten by patient capital. This model broke down in the late twentieth century, replaced by a “network of contracts” in which stock price was the core metric of success. For companies such as Nike, the pressure of investors favored aggressive outsourcing and labor-reducing strategies to face price-based competition among producers. The new platform-based firms of the business model in the third period are backed by a different type of investor: “unlike the ‘break it up and sell it off’ mentality of the 1990s, the financial interests behind firms such as Uber and Amazon are in it for the long haul” (Rahman & Thelen, 2019, p. 180).

In each phase the business model rests on a different political-coalitional foundation: whereas the mid-century model was based on a coalition of managers and stakeholders (including labor), the shareholder revolution of the late twentieth century was organized around a coalition of managers and investors; today, the twenty-first century platform model is built on an alliance between firm owners, investors and consumers. “Consumers are enlisted — either explicitly or, more often, implicitly — in the political alliance against labor” (Rahman & Thelen, 2019, p. 181). Moreover, because of their unprecedentedly close relationship to the consumer, platform firms can use the consumer to influence regulatory policy.<sup>43</sup> This very direct, almost unmediated, connection to the user makes possible the “explicit weaponization of the user base in political battles with regulators” (Rahman & Thelen, 2019, p. 185).

Rahman and Thelen’s observations about politics are congruent with our observations at the platform transactional level as well as those about the expected effects of algorithmic management on class structure/composition. Together, these make it clear that the “customer obsession” declared by organizational doctrine on platforms like Amazon is far more than a mere marketing strategy: consumers (unwittingly) produce value through their data, consumers re-

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43. Van Doorn (2020) analyses the ascendancy of “regulatory entrepreneurship” and in particular Airbnb as a urban regulatory entrepreneur, “a company for which changing the law forms a material part of its business plan” and users as both a scalable political workforce and also regulatory entrepreneurs in their own rights.

place (at least partially) management in the evaluation of workforce/salesforce, and consumers act as a political voice in favor of the platforms.<sup>44</sup>

How stable is the political business model of consumers in coalition with platform owners/investors? Is it a temporary conjuncture or is it likely to be sustainable in the long run?

Starting by challenging the idea that there is one platform political model, research to address these questions will examine important differences in the American, European, and Chinese models (Peck & Phillips, 2020). The United States has very particular political and regulatory features, which as Rahmen and Thelen recognize, made it likely to be the hothouse for platform growth. But China also has very distinctive political features — significantly different from the USA — which also have produced an enormous platform sector. In identifying coalitions there, a strong candidate would be a coalition of platform operators and the Chinese Communist Party (and its national and regional governments) (Plantin & De Seta, 2019; Jia & Winseck, 2018; De Kloet et al., 2019). The European regulatory system is entirely different yet again and perhaps a reason why there are relatively few large platforms with European headquarters (Peck & Phillips, 2020).

In the initial years in the United States,<sup>45</sup> patient investors did allow platforms to cross-subsidize providers long enough to create network effects and achieve winner-take-most standing. With such subsidization, platforms could offer incentives to providers, who themselves made investments (for example, drivers who bought cars, or hosts who renovated apartments) to improve their position on the platform. With a solid base of providers, the platforms concentrated their energies on expanding the consumer base. And, once a position of dominance was achieved — as has already happened in “first generation” platforms such as Amazon — platforms move laterally, expanding into new sectors. In this situation, platforms no longer need to subsidize providers<sup>46</sup> — who are now vulnerable to capricious changes in service conditions and whose personal investments are at risk<sup>47</sup> — yet the platforms must keep the customer base large. Hence the alliance with the consumer.

On the regulatory front, platform owners did maneuver around and through regulatory ambiguities (or simply ignored and broke existing regulations) until they could gain loyal consumers who would support them to secure favorable regulation (Thelen, 2018; Culpepper & Thelen, 2020). What could undermine this alliance? In the current situation, moments of overt political conflict between platforms and the citizen/consumer have involved activities where platforms generate negative externalities on a social level. For example, some municipal-

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44. According to Thelen (2018) this coalition between consumers and investors / platforms owners explains the different regulatory response also between countries with the same model of capitalism: “if the “varieties of capitalism” framework fails to explain these outcomes, more purely political arguments — based on an electoral logic — might be brought to bear. The political economy literature tends to emphasize interest group politics, possibly overlooking dynamics that are rooted instead in the incentives that politicians face as they confront citizens as voters and as consumers” (Thelen, 2018). This approach proposes an important reversal of perspective with respect to political economy: it does not look at the voters who consume but at the consumers who vote.

45. Many of the platforms at the core of our analysis were founded in the years following the 2008 crisis. In those years, investors were looking for new opportunities, the workforce and salesforce needed new markets, and consumers had little money but wide aspirations.

46. Rahman and Thelen (2019) might have over-estimated the extent of investor patience. Perhaps pressures by shareholders for cost-cutting measures are among the factors leading to practices that come at the expense of the workforce/salesforce.

47. Moreover, in some sectors, automation strategies make providers less and less relevant. In some cases, providers even involuntarily collaborate in their own replacement (Vertesi et al., 2020).

ities — including cities such as Barcelona — have restrictively regulated Airbnb, responding to citizens who, as long-term renters, were aggrieved by Airbnb’s effects on the housing market. That is, such cases effectively shift regulatory attention from a focus on the interests of the platform customer to larger societal interests, albeit to date at the municipal or regional level.<sup>48</sup>

The antitrust regulations of twentieth-century capitalism were built with a rhetoric of consumer protection. Antitrust regulations in the twenty-first century might yet be built on such a rhetoric, but in the foreseeable future platforms’ expansion into new sectors will require that they continue to mobilize consumer support.<sup>49</sup> An alternative is that antitrust regulations to curb monopoly platforms will be built on different principles — societal rather than consumer protection.

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48. Culpepper and Thelen (2020) argue that the capacity of companies to enlist consumers as allies depends on having sufficient concentrations of them in a relevant voting jurisdiction. Thus it matters whether a platform service is consumed by locals (as in the case of Uber) or instead by visitors (Airbnb) to whom local politicians may not feel particularly beholden. Politicians are more likely to bend to platforms where the platform’s users are their own voters, which helps to explain why mayors across a range of cities in different countries have imposed more regulations on Airbnb than Uber.

49. US-based platforms might also be expected to need consumer/citizen support for policies that minimize the threat of competition by powerful Chinese-based platforms.

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