What Do Platforms Do? Understanding the Gig Economy

Steven Vallas[1] and Juliet B. Schor[2]

[1]Department of Sociology and Anthropology, Northeastern University, Boston, Massachusetts 02115, USA; email: s.vallas@northeastern.edu

[2]Department of Sociology, Boston College, Chestnut Hill, Massachusetts 02467, USA

Keywords

platform economy, gig work, precarious work, digital revolution, sharing economy

Abstract

The rapid growth of the platform economy has provoked scholarly discussion of its consequences for the nature of work and employment. We identify four major themes in the literature on platform work and the underlying metaphors associated with each. Platforms are seen as entrepreneurial incubators, digital cages, accelerants of precarity, and chameleons adapting to their environments. Each of these devices has limitations, which leads us to introduce an alternative image of platforms: as permissive potentates that externalize responsibility and control over economic transactions while still exercising concentrated power. As a consequence, platforms represent a distinct type of governance mechanism, different from markets, hierarchies, or networks, and therefore pose a unique set of problems for regulators, workers, and their competitors in the conventional economy. Reflecting the instability of the platform structure, struggles over regulatory regimes are dynamic and difficult to predict, but they are sure to gain in prominence as the platform economy grows.

INTRODUCTION

Although it is only a decade old, platform-mediated gig work has insinuated itself into many sectors of economic life, provoking debate about how this form of work organization can be understood. The early literature tended toward sweeping claims such as predictions of an end to employment (Sundararajan 2016) or a shift to a regime of predatory platform capitalism (Lobo 2014, Srnicek 2016). However, a growing literature now provides a more empirically grounded and complex account of platform labor. Key questions have come into view. Does it represent a continuation or acceleration of ongoing trends, such as precarization and outsourcing? Are platforms organizing a new type of algorithmically controlled labor process? Precisely how is the platform distinct from the conventional firm in its labor management? We are now in a position to answer these and related questions. That is the task we set ourselves in this review.

We begin by providing a brief overview and taxonomy of labor platforms and the kinds of work statuses they enable. We then turn to the four major metaphors that underlie scholars' conceptualizations of this new phenomenon: the entrepreneurial incubator, the digital cage, an accelerant of precarity, and the firm as chameleon. Subjecting these images to critique, we find that while each contains a partial truth, each also exhibits elements of distortion concerning the affordances that platforms actually exhibit. We argue that platforms represent a distinctive form of economic activity, influenced by but different from markets, hierarchies, and networks. We identify their unique characteristics, which reside in the selection, control, and evaluation of the labor that service providers perform. In particular, we focus on the shift from closed to open employment and the consequent retreat (Schor 2020) from direct control that platforms represent. We then provide an overview of the legal and regulatory struggles currently unfolding over the platform economy and end by identifying themes that have yet to receive sufficient attention in the literature. These include systemic relations between traditional firms and platforms, the role of platform designers and managers, possibilities of collective action by platform workers, and the struggle over the regulatory regime that will govern platforms.

ADVENT OF THE PLATFORM REVOLUTION

Major platform-based companies such as Airbnb and Uber are now a decade old. Their emergence coincided with the Great Recession, which facilitated the companies' expansion by creating a ready pool of workers, especially among recent graduates, who could be matched with value-seeking consumers. The platform economy has experienced rapid growth since then and now encompasses a wide array of digitally mediated economic transactions involving the exchange of goods and services. It has grown in two ways (Davis 2016a,b; Kenney & Zysman 2016; Srnicek 2016). The first has unfolded within the traditional economy, as established corporations organically digitalize their internal operations and transactions with other businesses. The origins of this trend lie in the advent of the minicomputer in the 1970s, the popularity of the personal computer in the 1980s, and the spread of the internet in the 1990s and thereafter. Corporations must now have public-facing websites in parallel with internally oriented information systems through which functions are conducted. In the wake of lean management, internal divisions of leading corporations increasingly view one another as customers with whom economic transactions are carried out. This has begun to foster platform-like work situations within conventional firms as applications and mobile devices become widespread.

The second and potentially more consequential path of growth began outside the traditional economy, as companies that have been born digital use the internet to usurp existing markets or create entirely new ones. Examples here involve e-commerce platforms, which have captured a

growing share of the revenues once controlled by brick-and-mortar retail outlets; capital platforms for lodging, goods, and even machinery; service labor platforms for rides, household help, and caring labor; and video streaming and content platforms, which compete with broadcast, cable, and other media companies. The platform economy also encompasses social media firms such as Facebook and Instagram, which subsist on revenue from advertising and the sale of data, and internet service platforms such as Amazon Web Services, which provide the infrastructure on which other companies and platforms depend. As such, the platform economy represents an important and strategically consequential branch of global capitalism, not least because of the Schumpeterian creative destruction—or disruption, in the contemporary parlance—it has imposed across much of the economic landscape.

To understand how labor platforms—our chief focus here—are reconfiguring the nature of work, we begin by identifying the types of employment and labor market situations they support. Scholars have begun to construct typologies of platform workers based on skill levels; the nature of the work being done, whether it is performed on- or off-line, rooted in a given locality or globally dispersed, and the kind of product being produced (Frenken & Schor 2017, Irani 2015, Kenney & Zysman 2019, Kuhn & Maleki 2017, Vallas 2019). Building on these taxonomies, we identify five types of work, recognizing overlap and varying boundaries among them.

The first category includes the architects and technologists of the platforms, who are founders, highly skilled employees, and independent contractors. To date, there are few studies of these contributors (however, see Cockayne 2016, Irani 2015, Kelkar 2018). These workers design and maintain platforms' digital infrastructures. As such, the products of their labor have implications for the occupational conditions other types of platform workers are likely to confront (Irani 2015). Neff's (2012) study of early-stage workers in creative industries finds they are performing venture labor, on account of their willingness to work long hours in hopes of generating substantial future wealth through initial public offerings or acquisitions. Kelkar (2018) shows how platform designers at edX reconfigured the relationship between users and the software as the company moved to a conventional business model.

A second type of platform work is performed by cloud-based consultants or freelancers who offer professional services via platforms such as UpWork or Freelancer. Like architects and technologists, these workers provide professional services, but they are users rather than creators of platforms. Their work is often untethered to an individual workplace or geographic locale, although some authors (Ettlinger 2017) find geographic clustering even on global platforms specializing in digital labor. This category is defined by a high level of technical skill in such fields as graphic design, computer programming, and journalism, with workers typically engaged on a project-specific basis (Christin 2018, Osnowitz 2011). Cloud-based consultants can often secure a stable source of income only if they succeed in maintaining a sufficient roster of clients. A key issue is whether platforms that support this type of labor encourage the outsourcing of work by firms operating in the traditional economy (Drahokoupil & Piasna 2019) or provide a digital infrastructure that is replacing temporary employment agencies (Corporaal & Lehdonvirta 2017).

A third category is gig workers whose services are engaged via platforms and generally performed offline, as in ride-hail, food delivery, home repair, and care work. There is a robust market for this type of business, which includes delivery, day-labor, and odd-job tasks. This arrangement affords the provider with flexibility in terms of work schedules and autonomy, a benefit that is regularly advertised by the firms. However, gig workers must not only assume responsibility for operating costs and risks and forego protections enjoyed by employees but also conform to the temporal rhythms of customer demand, which can reduce their autonomy substantially (Ravenelle 2019, Rosenblat 2018, Schor 2020).

A fourth type of platform work is performed entirely online, involving what is termed micro-tasking, as represented by workers engaged on Amazon Mechanical Turk (AMT) or Figure Eight (formerly CrowdFlower). These workers undertake human intelligence tasks that computers cannot perform and that are part of the process of machine learning. These jobs generally require less training and experience than the work of cloud-based consultants and freelancers. Examples include describing or classifying the content of images, editing computer-generated text, validating user accounts on social media, or transcribing brief audio clips (Wood et al. 2018). Payment is on a piece-rate basis. Partly because microtasking encompasses a large, highly varied group of workers living in both the Global North and South, tasks are priced under extremely competitive conditions, and the ability to earn a living wage in wealthy countries through microtasking is limited (Berg 2016, Berg & de Stefano 2018, Gray & Suri 2019). Crowdworking sites have great potential to disperse work that was once performed in-house; indeed, Berg (2016, p. 546) cites instances in which microtasking "has become the organizational model" for firms that previously relied on in-house employment, citing as an example a publishing company that is one of the largest users of AMT and whose entire labor force is sourced via that platform.

A final type of platform worker exists in the penumbra of social media and includes the content producers and influencers who perform what Duffy (2017) calls aspirational labor. This type of platform work is often provided on an unpaid basis, in the hope of gaining a sufficient level of prominence in the attention economy (Marwick 2013) to establish a regular source of revenue. This work resembles Neff's venture labor in that workers' vision of a desirable future leads them to embrace highly insecure positions in the labor market.

Figure 1 presents a typology of the foregoing categories based on skill level and location, with representative platforms. Atop the figure are the platform architects, who are typically not users but instead builders of labor platforms. The categories of platform workers beneath them prompt several important points about platform work. First, workers are exposed to diverse conditions of employment. Labor market dynamics and demand conditions vary across the
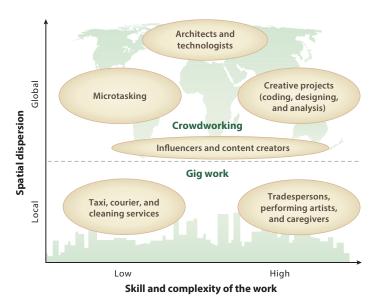

Figure 1

Types of work in the platform economy. Figure adapted from Forde et al. (2017).

groups, with architects and technologists being in chronically short supply and gig, microtasker, and unpaid content producers suffering from chronic excess supply, conditions that platforms often exacerbate with ongoing recruitment. Furthermore, workers stand in different relations to the platform architecture, with architects serving as active designers (digital orthopedists), while others (microtaskers and many gig workers) are mainly passive recipients or users of the platform's affordances. Moreover, although the conditions of existence each type supports are likely to vary, they may develop certain similarities. Workers engaged as architects and technologists, cloud-based consultants, and even content producers and influencers vary in terms of their earnings levels—the latter are frequently unpaid—yet they often exhibit an entrepreneurial orientation toward work and identity (Neff et al. 2005, Pugh 2015, Vallas & Christin 2018). Platform work also varies over time, owing to frequent changes in algorithmic designs, market conditions, and regulatory policy. These and other considerations provide abundant reasons for caution when generalizing about the nature and organization of platform work.

Theorists have responded to the advent of platform work by developing several different approaches toward the phenomenon. In the next section, we identify four of the most prevalent approaches in the literature, briefly discussing the shortcomings of each and comparing their key features and assumptions.

IMAGES OF PLATFORM WORK

Incubators of Entrepreneurialism

While some of the types of work situations identified above have existed for decades, the debate about labor platforms intensified with the emergence of the sharing economy in 2008–2009. In their original incarnation, sharing platforms referred to peer-to-peer structures that mobilize idle resources, such as renting spare rooms or offering rides in cars (Frenken & Schor 2017). Economists emphasized the ability of algorithms and crowd-sourced ratings and reputational information to reduce transaction costs and foster trust, enabling peers to compete in these new markets (Einav et al. 2016, Horton & Zeckhauser 2016, Sundararajan 2016). Although the sweeping claims identified with the early platform economy lost plausibility as for-profit platforms scaled, some theorists continue to emphasize the transformative power of the platform revolution (Brynjolffson & McAfee 2014, Parker et al. 2016, Sundararajan 2016) and the ability of peer-to-peer connections to erode the dominance of the conventional corporate model. The argument is that platforms offer an array of advantages over the traditional corporate form. By reducing the need for bureaucratic intermediaries, platforms reduce transaction costs and eliminate barriers that have constrained labor force participation by rural residents, people with disabilities, or those with care-giving obligations. Moreover, owners of cars, homes, tools, and other goods can monetize these assets, unlocking their latent value in ways that reduce their dependence on labor income. Some argue these opportunities will be especially advantageous to low-income households (Sundararajan 2016). And because platforms can crowdsource reputational scores for participants, they foster trust among potential transactors without the need for costly advertising. In this view, many of the rigidities of the corporate economy are destined to recede in favor of a more egalitarian form of crowd-based capitalism in which corporate hierarchies no longer represent the dominant structure of economic activity. Crucially, the employment relation itself loses its predominance in the wake of "an emerging networked society of microentrepreneurs" (Sundararajan 2016, p. 176). One indication of this shift is that many platform workers are afforded flexibility and choice that are not common among nonprofessionals in conventional jobs, as we discuss in the section titled Permissive Potentates (Schor et al. 2019).

While there is little doubt that platform technology has reduced transaction costs and made stranger sharing (Schor 2014) more viable, it is unlikely that platforms will foster crowd-based capitalism or lead power and control to assume horizontal, peer-based configurations. Nor have they to date. In the presence of network effects, platforms can scale, dominate markets, and gain enough monopoly power that they can dictate conditions of exchange or develop monopsonistic positions in their labor markets (Dube et al. 2018, Khan 2017). In this case, the crowd may not resemble an assemblage of freely acting entrepreneurs but rather a herd that, like livestock, can be milked or sheared to extract revenue. Political factors are also relevant, as powerful platforms have exercised influence over state legislatures, passing preemption laws that forbid cities from regulating app-based services (Borkholder et al. 2018, Collier et al. 2018). Political power has been especially prevalent in ride-hail and delivery, which are local services that lack network effects. The growing literature on deteriorating conditions for workers in ride-hail and delivery (Attwood-Charles 2019, Mishel 2018, Parrott & Reich 2018, Robinson 2017, Rosenblat 2018, Shapiro 2018, UCLA Institute for Research on Labor and Employment 2018, Wells et al. 2019) suggests the exercise of power, rather than a shift to a new kind of peer-based capitalism.

The Digital Cage

If the first, entrepreneurial view exhibits elements of utopian thinking, the opposite charge can be leveled at the second approach to platform work. Scholars adopting this view also see platforms as exhibiting distinctive effects but perceive these in more starkly dystopian terms. Max Weber's fears regarding bureaucratic subordination (the iron cage, however translated) pale in comparison with the prodigious powers over human labor that digital technologies are thought to enjoy. This camp ominously questions what happens when the boss is an algorithm. Indeed, this literature on workplace control is only a subgenre of a larger critique of algorithms that has identified their role in surveillance (Zuboff 2015, 2019); in people analytics in corporate human resource management (Ajunwa & Greene 2019, Bodie et al. 2016); in racist outcomes in evaluation or ranking systems (Eubanks 2018, Noble 2018); in a private-sector version of the Chinese social credit system (Chen & Cheung 2017); and, more generally, as a development that undermines transparency (Pasquale 2015). In the case of labor platforms, the argument is that algorithms are now fully managing workers, thus empowering firms to an ever greater extent.

Early studies of the assembly line made similar claims regarding the capacity of machines to control the rhythms and methods of human labor (Chinoy 1992, Edwards 1980, Walker & Guest 1956). Yet as industrial sociology eventually revealed, workers often devise tactics that enable them to evade, defy, or subvert the dictates of the assembly line (Hamper 1991). This capability is now being attacked by digital technology, which can encode workplace rules into the digital tools that workers must use to complete their tasks. Although the precise contours of algorithmic regimes or algocracy (Ajunwa & Greene 2019, Aneesh 2009) vary according to the type of platform, the general theme is that platforms reduce the worker's capacity to resist, elude, or challenge the rules and expectations that firms establish as conditions of participation. Platforms are said to do this in several ways. First, by generating a wealth of data about their internal operations but sharing this information unevenly, they foster information asymmetries within the firm (Calo & Rosenblat 2017). For example, in ride-hail and delivery, platforms blind providers by withholding information about incoming jobs, which reduces worker autonomy and income (Rosenblat & Stark 2016, Shapiro 2018). Data capture by platforms also enables employers to specify work rules in greater detail—for example, by stipulating the proportion of jobs workers must accept, how much of their time they must make available, and the rating levels they are expected to achieve (Rahman 2018). The effect is to render the labor process more legible to employers than employees (Calo

& Rosenblat 2017, Fourcade & Healy 2017, Rosenblat & Stark 2016). Second, as ethnographic research has shown, platforms rely not only on the calculative mechanisms of control that metrics afford but also on normative mechanisms in the form of games, symbolic rewards, and other inducements that strengthen user attachment to the site (Cameron 2018, Gerber & Krzywdzinkski 2019, Rosenblat 2018, Scheiber 2017), using carefully engineered tactics that one scholar has called soft biopolitics (Cheney-Lippold 2011). Third, platforms individualize their labor forces, depriving workers of the relational spaces (Kellogg 2011) that have traditionally made it possible for workers to challenge managerial authority. Finally, by encompassing a wider array of workers, they heighten competitive relations among labor force participants, not only on crowdworking sites such as AMT but also on bidding sites such as freelancer platforms and early TaskRabbit.

Although this view contains important elements of truth, the inadequacy of the cage metaphor is evident in research showing the limits of algorithmic labor control. Empirical studies have begun to find that workers can indeed develop forms of resistance, acting back on the technologies they confront. For example, Rahman (2018) finds that freelancers on UpWork have found ways of defeating the platform's reputational metrics, essentially forming online alliances with clients to game the performance evaluation system. Jarrahi & Sutherland (2019) also found that freelancers on UpWork have figured out how to manipulate the algorithm by feeding it data, going off-platform, and evading surveillance.

In her study of Uber in Boston, Robinson (2017) found that ride-hail drivers were able to build solidary ties among their own ranks, engaging in efforts to control the supply (and thereby the price) of their own labor power. Such tactics have recently gained wider use (Sweeney 2019). Cameron's (2019) multicity study of Uber drivers showed that workers deploy an array of tactics to evade the platform's rules. Chen's (2018) study of Didi drivers in China found that 40% were using digital strategies such as bots or owning multiple phones to subvert the algorithm. Allen-Robertson (2017) analyzed online postings of drivers and found that they share information about what the algorithm is doing to respond optimally from their own point of view. There are similar findings among delivery couriers, who also develop ways to resist algorithmic control (Attwood-Charles 2019, Schor et al. 2019, Shapiro 2018). Even crowdworkers on AMT have found it possible to engage in what Irani & Silberman (2015) have called tactical quantification, using a browser extension (Turkopticon) that assembles a rich store of information about the trustworthiness of individual requesters (clients), thus limiting the abuses to which Turkers are vulnerable. The effect in this case is to at least partially turn the tables on AMT's algorithm.

Broader forms of resistance have also emerged, as ride-hailing drivers and food couriers engage in job actions such as multicity flash strikes and demonstrations and form associations to mount legal challenges to the regulatory arrangements under which platform companies routinely operate. The role of online forums and social media in organizing these activities suggests that they can provide surrogate sources of solidarity (Gray et al. 2016, Miller & Bernstein 2017, Rosenblat 2018). It remains unclear, however, whether social media–enabled protest will suffice to engage large numbers of workers. There is little question that algorithmic controls can and do inscribe managerial interests. Yet to go further and argue that algorithmic management of platform work expands company control over the work process or forestalls workers' capacity to contest their subordinate position is to overestimate or reify the power of digital technology.

Accelerants of Precarity

However different they are from one another, the first two images share the premise that labor platforms represent novel entities that signal a dramatic break, or rupture, with prior forms of work organization and economic activity. By contrast, the third image of platform work is more

cautious about the transformative nature of institutional shifts. It conceptualizes the digital revolution as a continuation of structural trends that have long been underway, pointing in particular to the decline of the standard work arrangement, the normative ideal that promised secure, full-time work with benefits at a living wage (Hacker 2008; Kalleberg 2013, 2018; Kalleberg & Vallas 2018; Lane 2011; Pugh 2015; Smith 2001; Vallas & Prener 2012). The notion here is that Fordist organizations have been flexibilizing employment relations for decades—for example, by outsourcing and subcontracting work or using contingent forms of employment with increasing regularity (Beck 2000, Smith 2010). Thus, platforms represent a manifestation of a much broader trend that has enabled firms to externalize risks they had previously been compelled to shoulder. The effect, initially evident in temporary work and subcontracting, is to commodify labor time and disembed the worker from prior systems of social protection (Polanyi 1944, Wood et al. 2019). What platforms provide, then, is a convenient, readily available infrastructure with which to limit the firm's obligation to the workforce on which it relies. From this point of view, platforms provide business organizations with yet another way of achieving what Harvey (2005) has called accumulation through dispossession—that is, the use of legal and financial mechanisms with which to uproot the economic rights that workers had previously enjoyed. The issue, in this view, is not so much technology but a broad socioeconomic shift that dismantles many of the labor market shelters workers had previously enjoyed (Kalleberg & Vallas 2018, Vallas 2019).

This third image emphasizes the increasingly vulnerable position of the worker (van Doorn 2017). Bereft of long-standing protections such as a minimum wage, safety and health regulation, retirement income, health insurance, and worker compensation, platform workers are forced to assume forms and levels of risk that were previously shouldered by employers and the state. There is surely truth in such claims. Platforms have thus far been able to avoid bearing the full costs and risks of employment, which they have devolved onto workers. These include responsibility for bodily injury, damage to tools and assets, coverage between paid gigs, financial malfeasance by customers, and harassment (Ladegaard et al. 2018, Ravenelle 2019, Rosenblat 2018). Platform workers bear all the costs of inadequate demand and lost earnings. And they are subject to deactivation, with its attendant consequences, when customers rate them poorly (Ravenelle 2019, Rosenblat 2018). Therefore, precarity is often an apt descriptor of the conditions that platform workers confront as they struggle to keep their balance under conditions of rising uncertainty.

However, this image indulges an overly simplified conception of the platform workforce, which is more heterogeneous than the precarization view allows and more likely to be earning for supplemental income. An accumulation of survey and qualitative evidence on the diversity of platform workers typically finds that the trope of the precarious, dependent, full-time worker is not easily squared with the situations of most workers performing gig and crowdwork (Forde et al. 2017, Gray & Suri 2019, Huws et al. 2017, Manriquez 2019, Pesole et al. 2018, Rosenblat 2018, Schor et al. 2019). With some exceptions (Berg 2016, Berg & Rani 2018), most of the literature finds that a majority of platform workers use their earnings to supplement other sources, including full-time jobs. In such cases, platform earnings may actually decrease precarity and compensate for poor benefits or low wages in primary jobs or help reduce debt or build savings (Schor et al. 2019).

Schor et al. (2019) have argued that dependency status (i.e., how reliant platform workers are on their earnings to pay their basic living expenses) is a key determinant of outcomes (see also Forde et al. 2017, Kuhn & Maleki 2017, Lehdonvirta 2018, Manriquez 2019, Pesole et al. 2018, and Rosenblat 2018 for discussions of dependency). Because supplemental earners enjoy a measure of distance from necessity, they can refuse low-paying tasks, positioning themselves more advantageously in the labor market. Thus, they earn higher wages, exercise more autonomy over their conditions of work, and are more satisfied than those who are dependent (Schor et al. 2019). While most of the theorization in the literature treats platform workers as a homogeneous group,

workforce heterogeneity may be one of the most distinctive structural attributes of platform labor. To neglect this feature of platforms is to misspecify their effects on work and employment.

Institutional Chameleons

A fourth image of platform work is the least empirically developed and the least deterministic in its outlook. In this view, platforms represent a form of work organization whose meaning, nature, and impact are not a function of platforms as such but instead reflect the institutional landscape that surrounds them. Platforms are conceptualized as chameleons or as entities whose effects are contingent on the institutional environments within which they operate. For example, Thelen (2018) found that the disruptive effects of Uber varied markedly across Germany, Sweden, and the United States, with different interests and concerns arising in each society. While platforms almost always classify workers as independent contractors, this feature was most problematic in the United States, where social insurance is directly tied to employment status. Elsewhere, Uber posed a threat not to employment status but to the long-established systems for urban transportation (as in Germany) or to the flow of tax revenues needed to support the welfare state (Sweden) (Thelen 2018, Zanoni 2019). The point, made forcefully in arguments advocating a Nordic approach toward platform operations (Söderqvist 2017, 2018), is that the effects of platforms are a function of the regulatory institutions in which they develop. Berg & De Stefano (2018, p. 181) go further, arguing that the same technology "that has allowed parceling and distributing work to 'the crowd' can also be used to regulate the work and provide protection to workers"—for example, by helping ensure minimum wage levels, frequent breaks, or tax collections from the platform itself. Platforms might even facilitate more democratic participation in the governance of the firm, adopting digital affordances that build membership and participation within collective bargaining organizations into the platform's code (Benkler 2016, Schneider 2018, Scholz 2016a, Scholz & Schneider 2016, Schor 2020). This view holds that there is nothing inherent in platform work that generates fixed or determined hazards; given adequate institutional guidance, platforms could provide mechanisms for worker voice and social inclusion. This perspective finds its clearest expression in arguments advocating for platform cooperativism (Scholz 2016b, chapter 7), discussed in the section titled Platforms and the Sharing Economy: An Agenda for Research.

The virtue of this fourth image is that it sensitizes us to the embeddedness of economic forms. Viewing platforms as largely shaped by their institutional contexts guards against the essentializing of digital technologies, highlighting that technical designs acquire distinct meanings and effects across varied social and political conditions. By emphasizing the institutional contingencies that shape platform technology, however, this view runs the risk of neglecting the common features that platforms do exhibit, especially in a globalizing world. For example, in their study of crowdworking in Southeast Asia and sub-Saharan Africa, Wood et al. (2018) found few significant differences in working conditions across the regions they explored. Moreover, one finds intriguing similarities between studies of Uber drivers in Boston, Massachusetts, and Monterrey, Mexico (Manriquez 2019, Robinson 2017). Although regulatory apparatuses may be able to shape the operations that platform firms adopt, this is not an entirely plastic medium. The business models and digital structures on which platforms rely have certain obdurate qualities that regulators and theorists cannot wish away. Indeed, platform firms can exert powerful influences over their institutional environment—a capacity we discuss in the next section, and a characteristic that few chameleons enjoy.

Permissive Potentates

While each of the four paradigms discussed above contains crucial insights, each is also limited in important respects. In suggesting an alternative conceptualization, we contend that platforms

represent a distinctively new form of economic activity. In advancing this argument, we caution that platforms represent a nascent and highly dynamic economic form characterized by high levels of instability whose future is difficult to foresee.

While platforms incorporate many of the features of prior economic structures—markets, hierarchies, and networks (Powell 1990)—they do so selectively, generating a type of governance mechanism that is qualitatively distinct from its precursors (Aneesh 2009, Kornberger et al. 2017). Just as Powell (1990) stressed the emergence of networks as providing a novel basis for the coordination of economic activity, we argue that platforms constitute a new type of governance mechanism with which employers can conduct economic transactions. In contrast to hierarchies (which centralize power), markets (which disperse it), or networks (which parcel it out to trusted collaborators), platforms exercise power over economic transactions by delegating control among the participants. They do so by establishing a digital infrastructure with which to govern the service triangle that links employers, workers, and customers (Leidner 1993). The effect allows the platform to play the role of *tertius gaudens*—"the third who rejoices"—as in Simmel's classic theory of the triad (in Wolff 1950).

We argue that platforms govern economic transactions not by expanding their control over participants but by relinquishing important dimensions of control and delegating them to the other two parties to the exchange—hence the term permissive. The platform firm retains authority over important functions—the allocation of tasks, collection of data, pricing of services, and of course collection of revenues—but it cedes control over others, such as the specification of work methods, control over work schedules, and the labor of performance evaluation. This is why few platform earners are required to enact workplace scripts, a common feature of interactive service work (Leidner 1993). In effect, the labor process acquires a new geometry, in which "*control* is radically distributed, while *power* remains centralized" (Kornberger et al. 2017, p. 79, emphasis added). The extraction of value rests on a new structural form in which platforms remain powerful even as they cede control over aspects of the labor process. Furthermore, they can also take the form of permissive predators when they use their power to exploit their labor forces, as has grown especially apparent in ride-hail and delivery.

We are not the first to argue along these lines. In addition to Kornberger et al. (2017), Davis (2016a,b), using the term Uberization, has argued that platforms are the next stage in an evolution away from the modern corporation, although his account is more teleological than ours. Kirchner & Schüßler (2020) use a similar formulation, although they place more emphasis on efficient market dynamics. Watkins & Stark (2018) develop a kindred notion of the platform as a novel Möbius basis of economic activity that valorizes aspects of its environment that it does not itself own. Our formulation uses a mixed term—permissive potentates—to capture the complex and contradictory nature of the new economic architecture that platforms represent. Furthermore, our focus is on labor control, which is less prominent in the foregoing accounts. We should also note that by identifying what platforms permit, or have ceded control over, we are not making a normative statement about their beneficence or treatment of workers. We are drawing an analytic distinction between platforms and other economic forms.

In our view, platforms manifest at least four distinct features in this regime of permissive power. The first is the adoption of a business model in which firms capture profits through digital intermediation, thus avoiding the encumbrances that ownership of fixed capital or the direct employment of labor usually entails. Although platforms do create value—for example, by enabling more efficient operations and exchanges—their profits often depend on the ability to externalize the costs that conventional firms must pay (a form of free riding; see Schor et al. 2019). Some platforms also benefit from network effects, producing the concentrated markets and user lock-in that

investors find so attractive, or from the harvesting of user data as a collateral source of value (see Rosenblat 2018; Srnicek 2016; Zuboff 2015, 2019). Relying on digital intermediation as a business model, platforms can grow at astonishing speed, since they are not limited by the need to construct new infrastructure (Srnicek 2016, pp. 45–46). Yet by their very nature, platforms exhibit unstable features, rooted in their effort to govern the labor process from a distance. Indeed, some commentators doubt the economic viability of the digital intermediation model, which has often required generous valuations from venture capital and company-friendly forms of employment law to keep platforms afloat as they seek to establish market domination (Srnicek 2016, Horan 2019).

A second novel feature of platforms lies in their transformation of the employment relationship. The closed employment relationship on which hierarchies have historically relied involves the selection of employees, detailed control over work methods and schedules, and management's own evaluation of worker performance. By contrast, platforms typically relinquish control over these processes, offering an open employment relation that greatly relaxes personnel selection criteria and affords workers considerable autonomy over when and how often to work (Schor et al. 2019). The relation is also open in the sense that earners are free to work for competitor platforms. These forms of autonomy are widely advertised by the platforms, and surveys show that workers place high value on them and on the ability to be their own boss (Chen et al. 2017, Forde et al. 2017, Hall & Krueger 2018, Manyika et al. 2016, Pew Research Center 2016, Schor 2020). In contrast, critics view these freedoms as largely illusory (Ravenelle 2019, Rosenblat 2018). This discussion has neglected a key consequence of adopting an open employment structure, however, which is high heterogeneity among platform workers (Schor et al. 2019). By reducing the barriers to entry for employment, platforms foster greater variation in the work orientations, labor market positions, and sociodemographic composition of their workers. To be sure, workforce divisions were a common feature of Fordist firms, largely along the lines of skill. Yet such divisions involved workers whose schedules were largely controlled by management and who typically shared full-time status. Platforms multiply the differences among their participants, particularly with respect to workers' level of dependence on platform earnings. This introduces sharp disparities in workers' motivations for platform participation (Schor et al. 2019) and potentially in their willingness to demand improved conditions of employment and support for regulatory interventions. Indeed, Rosenblat (2018, pp. 52–55) goes so far as to liken casual Uber drivers to scabs, whose cooperative work orientations undercut the position of Uber's full-time drivers.

The third unique feature of platforms involves their supervisory affordances. Under hierarchies, management must establish authority systems that directly ensure worker compliance (Edwards 1980, Powell 1990). Platforms have relinquished these hierarchical controls, substituting new and more distributed mechanisms to govern the performance of tasks. In ride-hail and delivery, for example, there is some supervision through geolocation monitoring and suggested work practices (e.g., that drivers offer water, snacks, or phone chargers to riders). However, there is a marked absence of routinization, scripting, or the direct imposition of formal rules. This means that workers must informally negotiate their performances with customers, often developing relational strategies toward this end (Manriquez 2019). This is why workers on errands platforms typically carry out highly individualized tasks with virtually no direction from the company (Schor et al. 2019) and why some couriers can sidestep company rules with few adverse consequences (Attwood-Charles 2019, Schor et al. 2019). This is not to say that firms have no mechanisms of control. Handy, a labor services platform, uses fees to control workers (van Doorn 2018). In addition, some crowdworkers and highly skilled freelancers are exposed to surveillance technology (the app conducts periodic screen shots to monitor keystrokes). However,

the efficacy of such monitoring tactics varies widely. Studying crowdworkers in sub-Saharan Africa and Southeast Asia, Wood et al. (2018, p. 64) found that "monitoring mechanisms were easily circumvented," especially as workers grew more experienced. To be sure, workers are subjected to mechanisms that establish limits on their autonomy, but these mechanisms rely much more heavily on the external environment than is the case in hierarchical regimes, especially since ratings systems have redistributed much of the labor of surveillance to customers. Even here, firms vary in the extent to which they use poor ratings to penalize or deactivate earners, and the general inflation of ratings raises questions about the efficacy of such reputational controls (see Cansoy 2018, Zervas et al. 2015). And because platforms allow workers to choose when and for how long they work, they often rely on the disciplinary power of the labor market rather than hierarchical authority as such. We therefore view permissiveness as Janus-faced, offering limited forms of autonomy but exposing workers to an evaluative infrastructure (Kornberger et al. 2017) and the disciplining effect of the market rather than to high levels of centralized managerial control.

The fourth unique feature of platforms concerns the spatial organization of work. With the advent of the industrial era in the West, capitalists found it necessary to concentrate labor at the point of production, for reasons of control (Marglin 1974) and technology (Landes 1986). With the rise of cloud-based digital intermediaries, this trend has reversed; deploying labor effectively requires that workers be spatially dispersed (Kirchner & Schüßler 2020). Ride-hailing drivers must be positioned in close proximity to potential customers if they are to provide a just-in-time service. Crowdworkers must be sourced globally if clients are to have access to the largest potential pool of labor. This spatial dispersion creates two effects. First, workers stand in an increasingly unequal or competitive relation to one another.[1] And second, dispersion generates individualization that can undermine workers' capacity for collective action. It also leads to high levels of social isolation (Wood et al. 2018, although for a contrasting perspective, see Gray & Suri 2019). Ironically, the sharing economy leaves workers with reduced opportunities for a shared experience at work.

We cannot predict whether the platform as we have described it will prove to be a stable governance mechanism that will be institutionalized over time. The history of capitalism suggests that extracting profit from workers requires potent mechanisms of control. Some trends in ride-hail and delivery suggest that platforms are attempting to exert more direct control, especially over hours of work (Rosenblat 2018). A relatively hands-off posture toward supply may not be compatible with ensuring sufficient demand in markets where low prices are attracting large numbers of customers. However, taking more control over the labor process, working hours, and effort levels tends to reduce platforms' ability to attract labor and increases the risk of legal challenges to the independent contractor designation. Furthermore, the prevalence of supplementary earners on most platforms suggests there will be ongoing issues with controlling workers. This also exposes platforms to labor shortages when labor markets are tight. As platforms try to counter judicial and public relations threats, they may discover that they cannot be sufficiently profitable, or indeed, profitable at all (Schor 2020, Srnicek 2016). Perhaps the various features of platform firms cannot easily be combined, and they are best viewed as a chimerical form of economic governance (Sewell 1998). Here we refer to the classical idea of the chimera, the mythical beast that combined the head of a lion, the neck of a goat, and the tail of a serpent, forming a monstrous creature bequeathed by competing gods—but one whose very physiology rendered it inherently unstable.

---

[1]Wood et al. (2019) report that crowdworkers with strong reputational scores often subcontract parts of their tasks to other workers with weaker reputations, generating layers of inequality among crowdworkers themselves. This phenomenon has also been found on errands platforms (Schor 2020) and delivery apps, where documented workers subcontract to vulnerable undocumented workers for lower pay (Alderman 2019).

REGULATORY AND LEGISLATIVE STRUGGLES

The emergence of the platform as a novel governance mechanism has led to considerable sociopolitical conflict as actors have sought to define the playing field on which platforms operate. Key stakeholders include platform firms and their investors, workers, customers, cities, and the wider public, represented by advocacy groups, regulators, legislators, and the courts. A growing body of literature has analyzed the arguments for regulation and the conditions under which this conflict is playing out. Here we provide a brief discussion of these issues.

A key point of contention is the classification of gig workers as independent contractors (Cherry 2016, Dubal 2017a, Rogers 2016). Until recently, misclassification lawsuits against platforms failed to make headway (Collier et al. 2017, Dubal 2017b), but the California high court's *Dynamex Operations West, Inc. v Superior Court of Los Angeles County* (2018) ruling narrowed the scope of the independent contractor status. In 2019, the California legislature enshrined the logic of *Dynamex* into state law with Assembly Bill 5. Ride-hail and delivery companies have failed to comply and have responded with a ballot initiative to overturn the law. How that conflict will resolve is currently unknown. However, if platforms are forced to convert workers to employees, it will result in major changes and may be a threat to profitability (Securities and Exchange Commission 2019).

There is a small literature on the political power of platforms and efforts by other stakeholders to counter their influence (van Doorn 2017). The large platforms have mobilized significant lobbying efforts (Borkholder et al. 2018, Collier et al. 2018). They have framed their critics as opponents of innovation and as enemies of consumer choice (Thelen 2018), which has been effective in many US cities. Another strategy is preemptive legislation at the state level, which denies municipalities the right to enact worker-friendly labor standards and provisions. The companies have also enlisted customers to oppose regulation (Culpepper & Thelen 2019). Uber installed a de Blasio tab to mobilize resistance to regulations. Walker (2016) calls this the Uberization of politics, in which platforms use their technology to create a groundswell of support. Uber has partnered with minority communities, stressing the poor service that traditional taxi companies have provided for people of color (Mays 2018).

Yet workers, trade unions, and community activists are proving to be worthy adversaries (Collier et al. 2017). Beginning in 2018, San Francisco, New York City, and Los Angeles passed stricter regulations on lodging, ride-hailing, or both, including a minimum wage for drivers in New York City (Schor 2020). In early 2019, a media campaign against tip stealing by Instacart was successful, and a few months later, ride-hail drivers launched a one-day global strike to coincide with Uber's initial public offering (Dubal 2019). However, this upsurge of worker mobilization should not blind us to the difficulties of organizing such a diverse and spatially dispersed labor force or to the power of the companies to resist collective action. The events of the past few years raise multiple questions about collective voice for workers on platforms.

PLATFORMS AND THE SHARING ECONOMY: AN AGENDA FOR RESEARCH

Although research on platform work has grown rapidly, much remains unknown. To some extent, such uncertainty reflects the inchoate nature of the phenomenon itself. Judicial rulings and legislation are still being fought out, with municipalities, states, and national governments taking divergent regulatory paths. To make sense of this rapidly changing terrain, sociological research will need to address four issues that warrant particular attention: the systemic relation between the conventional and platform economies, the process of algorithmic design, the prospects for collective action, and alternative approaches to improving labor conditions.

With notable exceptions (Farrell & Greig 2016, Kenney & Zysman 2016, Schor et al. 2019, van Doorn 2017), analysts of the new platform economy have tended to treat it as an island—an entity that operates according to its own rules in isolation from the larger economy. But this is a misleading characterization and highlights the need for a more robust analysis of the macrosocial relation between the conventional and platform economies. A small body of research has revealed that cyclical variations in the conventional economy have strong effects on the supply of platform labor (Farrell & Greig 2016, Farrell et al. 2018, Huang et al. 2018). What is not known is whether there are structural or systemic effects between the platform and conventional economies. If conventional firms continue to abandon the standard employment relation, as the precarity view suggests, this may furnish platforms with growing supplies of labor even during periods of low unemployment. The platform economy, drawing on such labor supplies, may further weaken standard employment, fostering a vicious circle that erodes the overall quality of employment. It remains to be seen whether the platform model will gain sufficient legitimacy to become a leading industry (Silver 2003), providing a template for the organization of work beyond the boundaries of the platform economy itself.

A second area is algorithmic design and its impact on social inequalities. Scholars are already studying the use of algorithms outside the workplace and how they are engineered in ways that favor some groups, races, and classes over others (Benjamin 2019, Eubanks 2018, Noble 2018, Pasquale 2015). Research on the digitization of labor market institutions has found similar imbalances. LinkedIn's design rules governing user profiles limit the autonomy of job seekers (who are prevented from adopting multiple profiles) while maximizing the discretion of employers—a pattern that very likely reflects the concentrated power of employers, who provide the major source of LinkedIn's revenue (Sharone 2017). Does exposure to such platform affordances and the performance pressures they impose have effects on workers' identities, encouraging them to assume employer-friendly—and customer-friendly—traits? Van Dijck (2013) has found this effect on social media platforms. Will labor platforms do the same?

Research shows that algorithms are reproducing racial, class, and other biases outside the workplace (Benjamin 2019, Eubanks 2018, Noble 2018, Pasquale 2015), and there is growing evidence of related effects within firms and platforms. Ajunwa & Greene (2019) found that the automated hiring platforms used for personnel selection give the highest consideration to job applicants who fit preexisting profiles of successful past hires, thus providing an algorithmic basis for homophily but with an aura of digital objectivity and predictive rationality. Customer-sourced reputational metrics expose platform workers to algorithmic discrimination by gender, ethnicity and race (Cansoy 2018). A study of TaskRabbit and Fiverr (Hannák et al. 2017) found that women and, particularly, workers of color receive fewer reviews and lower ratings. On TaskRabbit, workers of color also got lower algorithmic priority, reducing their earnings and employability. Experimental evidence suggests that reputational metrics reduce discrimination (Cui et al. 2016), but using actual listings, Cansoy (2018) found that in neighborhoods with high fractions of nonwhite residents, Airbnb hosts received fewer and lower ratings. This is an area that needs more study, as reputational data become increasingly important in labor market, consumer, and (potentially) judicial decisions.

There is a dearth of research on the programmers who create algorithmic and platform design, including on the cultural inputs that shape design. Irani (2015, p. 231) found that programmers employ macrotaskers on AMT in ways that "hide their labor force," enabling them to frame their startups as creative technology companies even as they rely on an army of crowdworkers performing mundane tasks (see also Shestakofsky 2017). But we know very little about the process by which algorithms and platforms are designed. What and who drive the design and operation of platforms? How do economic, technical, and social factors combine? What are the normative

frames through which programmers understand their work? Studies of platform work have been lopsided: There is an abundance of research on the service providers, yet much less on architects and technologists. How do programmers relate to the manipulative, invasive, and harsh aspects of algorithmic design? Do they view the algorithms they help create as occasions for social choice or as ethically neutral vehicles of economic efficiency? Kelkar's (2018) study of the transformation of edX from a collaborative educational project into a platform company shows how a new organizational discourse shifted educators from a position of pedagogical authority to the routinized and formulaic role of user. Are there analogous changes for gig workers who join platforms?

A third understudied area is the prospects for collective action for platform workers. Is unionization possible, or is a strategy of legal enactment of workers' rights more likely to succeed (Joyce et al. 2019)? Can workers gain support from the consumers and customers they serve, altering the power in this triadic relationship? What forms of governance will be needed to protect workers' voice in lieu of the labor relations systems first enacted in the 1930s? Believing that robust collective organizations are not likely to form soon, some researchers are exploring other avenues. One strategy is a fairness score, which measures platforms' treatment of workers in order to compete for labor (Graham et al. 2019, Gray & Suri 2019). Another approach, taken by Coworker.org, is the use of digital organizing and media exposure to force platforms to improve policies. Some labor groups have constructed apps for day laborers, to report untrustworthy employers and guard against wage theft (one example is Jornaler@, an app available on Google Play and the App Store). In contrast, as this article was being written, a small union of rideshare drivers in California emerged as a powerful actor in the successful fight for Assembly Bill 5, raising the possibility that early views about the potential for collective action have been too negative.

A more ambitious strategy is to create worker-owned and worker-governed platforms (Benkler 2016, Schneider 2018, Scholz 2016a). Sulakshana et al. (2018) found that Stocksy United, a platform cooperative, resulted in better economic conditions and more satisfaction for its photographers. In Europe, SMart, a successful freelancers' cooperative with 35,000 members, has been functioning since 1998. SMart and Stocksy engage high-skilled earners. The hope is that coops can also improve conditions for lower-wage workers in occupations such as carework, where agencies capture rents for reputational assurance, and housecleaning, where informality reigns. In ride-hail and delivery, local provisioning means the absence of network effects and should make small cooperative entities viable.

CONCLUSION

Originally considered a curious novelty, labor platforms have now established themselves as important players in domestic and, increasingly, global labor markets. Scholars have produced several insightful theorizations of them. We identified four controlling images in the literature; however, each has weaknesses. We have added a fifth, which contends that from the point of view of labor and the future of work, platforms should be thought of as a new economic form, distinct from markets, firms, and networks. However, as we noted, the stability of the current configuration remains in doubt, and numerous analysts have attempted to predict the future of platforms (Frenken 2017; Kenney & Zysman 2015, 2016; Pasquale 2016; Scholz 2016b; Schor 2020; Srnicek 2016). They tend to share a common narrative. One path forward will bring platform capitalism with superplatforms (Frenken 2017)—consolidated, dominant entities with formidable data-gathering capability and global reach. Most of these accounts feature this future as one of superexploitation, surveillance, and even more powerful corporate rule (Frenken 2017; Kenney & Zysman 2016, 2019; Pasquale 2016; Srnicek 2016). In a second pathway, states will be successful in establishing meaningful regulation of platforms, and worker, citizen, and platform interests are balanced

(Rahman 2016, Rahman & Thelen 2019). This vision is more like the current situation in some European countries, where platforms have been forced to conform to existing laws. A third possibility is that labor and social media platforms will grow more intertwined, fostering contention that heightens platform instability, perhaps generating pressures for the empowerment of users more generally. A fourth, more visionary possibility, is that platforms come to be governed and even owned by their users, as cooperatives and commons expand to compete with capitalist firms (Benkler 2017, Schneider 2018, Scholz 2016a, Schor 2020). We will not speculate on the likelihood of these four options. Whatever path unfolds will provoke far-reaching change, raising a broad array of questions that will engage social scientists for years to come.

DISCLOSURE STATEMENT

ACKNOWLEDGMENTS

LITERATURE CITED

Ajunwa I, Greene D. 2019. Platforms at work: automated hiring platforms and other new intermediaries in the organization of work. In *Research in the Sociology of Work*, Vol. 33: *Work and Labor in the Digital Age*, ed. SP Vallas, A Kovalainen, pp. 61–91. Bingley, UK: Emerald

Alderman L. 2019. Food-delivery couriers exploit desperate migrants in France. *New York Times*, June 16. **https://www.nytimes.com/2019/06/16/business/uber-eats-deliveroo-glovo-migrants.html**

Allen-Robertson J. 2017. *The Uber game: exploring algorithmic management and resistance*. Paper presented at the 18th Annual Conference of the Association of Internet Researchers, Tartu, Estonia. **http://repository.essex.ac.uk/20603/**

Aneesh A. 2009. Global labor: algocratic modes of organization. *Sociol. Theory* 27(4):347–70

Attwood-Charles W. 2019. *Dimensions of platform labor control and the experience of gig couriers*. Paper presented at Fathomless Futures: Algorithmic and Imagined, New York, June 27

Beck U. 2000. *The Brave New World of Work*. Cambridge, UK: Polity

Benjamin R. 2019. *Race After Technology: Abolitionist Tools for the New Jim Code*. Cambridge, UK: Polity

Benkler Y. 2016. The realism of cooperativism. In *Ours to Hack and to Own: The Rise of Platform Cooperativism, a New Vision for the Future of Work and a Fairer Internet*, ed. T Scholz, N Schneider, pp. 91–95. New York: OR Books

Benkler Y. 2017. Peer production, the commons, and the future of the firm. *Strateg. Organ.* 15(2):264–74

Berg J. 2016. Income security in the on-demand economy: policy lessons from a survey of crowdworkers. *Comp. Labor Law Policy J.* 37:543–76

Berg J, de Stefano V. 2018. Employment and regulation for clickworkers. In *Work in the Digital Age: Challenges of the Fourth Industrial Revolution*, ed. M Neufeind, J O'Reilly, F Ranft, pp. 175–84. London: Rowman Littlefield

Berg J, Rani U. 2018. *Digital labour platforms and the future of work: towards decent work in the online world*. Rep., Int. Labour Organ., Geneva. **https://www.ilo.org/global/publications/books/WCMS_645337/lang--en/index.htm**

Bodie MT, Cherry MA, McCormick ML, Tang J. 2016. The law and policy of people analytics. *Univ. Colo. Law Rev.* 88(4):961–1042

Borkholder J, Montgomery M, Chen MS, Smith R. 2018. *Uber state interference: how transportation network companies buy, bully, and bamboozle their way to deregulation*. Rep., Nat. Employ. Law Proj., New York. **https://www.nelp.org/publication/uber-state-interference/**

Brynjolffson E, McAfee A. 2014. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton

Calo R, Rosenblat A. 2017. The taking economy: Uber, information, and power. *Columbia Law Rev.* 117(6):1623–90

Cameron LD. 2018. *Making out while driving: control, coordination, and its consequences in algorithmic work*. Work. Pap., Univ. Mich., Ann Arbor, MI

Cameron LD. 2019. *The rise of algorithmic work: implications for managerial control and career pathways*. PhD Diss., Univ. Mich., Ann Arbor, MI

Cansoy M. 2018. *"Sharing" in unequal spaces: short-term rentals and the reproduction of urban inequalities*. PhD Diss., Boston Coll., Boston

Chen JY. 2018. Thrown under the bus and outrunning it! The logic of Didi and taxi drivers' labour and activism in the on-demand economy. *New Media Soc.* 20(8):2691–711

Chen MK, Chevalier JA, Rossi PE, Oehlsen E. 2017. *The value of flexible work: evidence from Uber drivers*. NBER Work. Pap. 23296

Chen Y, Cheung ASY. 2017. The transparent self under big data profiling: privacy and Chinese legislation on the social credit system. *J. Comp. Law* 12(2):356–78

Cheney-Lippold J. 2011. A new algorithmic identity: soft biopolitics and the modulation of control. *Theory Cult. Soc.* 28(6):164–81

Cherry MA. 2016. Beyond misclassification: the digital transformation of work. *Comp. Labor Law Policy J.* 37(3):577–602

Chinoy E. 1992. *Automobile Workers and the American Dream*. Champaign-Urbana, IL: Univ. Ill. Press. 2nd ed.

Christin A. 2018. Counting clicks: quantification and variation in web journalism in the United States and France. *Am. J. Sociol.* 123(5):1382–415

Cockayne DG. 2016. Sharing and neoliberal discourse: the economic function of sharing in the digital on-demand economy. *Geoforum* 77:73–82

Collier RB, Dubal VB, Carter CL. 2017. *Labor platforms and gig work: the failure to regulate*. Work. Pap. 106-17, Inst. Res. Labor Employ., Univ. Calif., Berkeley. **http://www.irle.berkeley.edu/files/2017/Labor-Platforms-and-Gig-Work.pdf**

Collier RB, Dubal VB, Carter CL. 2018. Disrupting regulation, regulating disruption: the politics of Uber in the United States. *Perspect. Politics* 16(4):919–37

Corporaal GF, Lehdonvirta V. 2017. *Platform sourcing: how Fortune 500 firms are adopting online freelancing platforms*. Rep., Oxf. Internet Inst., Oxford, UK. **https://www.oii.ox.ac.uk/publications/platform-sourcing.pdf**

Cui R, Li J, Zhang D. 2016. Reducing discrimination with reviews in the sharing economy: evidence from field experiments on Airbnb. *Manag. Sci.* 66:1005–507

Culpepper PD, Thelen K. 2019. Are we all Amazon Primed? Consumers and the politics of platform power. *Comp. Political Stud.* 53:288–318

Davis GF. 2016a. *The Vanishing American Corporation: Navigating the Hazards of a New Economy*. San Francisco: Berrett-Kohler

Davis GF. 2016b. What might replace the modern corporation? Uberization and the web page enterprise. *Seattle Univ. Law Rev.* 39:501–15

Drahokoupil J, Piasna A. 2019. *Work in the platform economy: Deliveroo riders in Belgium and the SMart arrangement*. Work. Pap. 2019.01, Eur. Trade Union Inst., Brussels

Dubal V. 2019. Why the Uber strike was a triumph. *Slate*, May 10. **https://slate.com/technology/2019/05/uber-strike-victory-drivers-network.html**

Dubal VB. 2017a. Wage-slave or entrepreneur? Contesting the dualism of legal worker categories. *Calif. Law Rev.* 105:65–126

Dubal VB. 2017b. Winning the battle, losing the war: assessing the impact of misclassification litigation on workers in the gig economy. *Wis. Law Rev.* 239:739–802

Dube A, Jacobs J, Naidu S, Suri S. 2018. *Monopsony in online labor markets*. NBER Work. Pap. 24416

Duffy BE. 2017. *(Not) Getting Paid to Do What You Love*. New Haven, CT: Yale University Press

Dynamex Operations West, Inc. v Superior Court of Los Angeles County, 4 Cal. 5th 903 (2018). **https://law.justia.com/cases/california/supreme-court/2018/s222732.html**

Edwards R. 1980. *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*. New York: Basic Books

Einav L, Farronato C, Levin J. 2016. Peer-to-peer markets. *Annu. Rev. Econ.* 8:615–35

Ettlinger N. 2017. Paradoxes, problems and potentialities of online work platforms. *Work Organ. Labour Glob.* 11(2):21–34

Eubanks V. 2018. *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. New York: St. Martin's

Farrell D, Greig F, Hamoudi A. 2018. *The online platform economy in 2018: drivers, workers, sellers, and lessors*. Work. Pap., JPMorgan Chase Inst.

Farrell D, Greig FE. 2016. *The online platform economy: Has growth peaked?* Work. Pap., JPMorgan Chase Inst.

Forde C, Stuart M, Joyce S. 2017. *The social protection of workers in the platform economy*. Rep. PE 614.184. Euro. Parliam., Brussels. **http://www.europarl.europa.eu/RegData/etudes/STUD/2017/614184/IPOL_STU(2017)614184_EN.pdf**

Fourcade M, Healy K. 2017. Seeing like a market. *Socio-Econ. Rev.* 15(1):9–29

Frenken K. 2017. Political economies and environmental futures for the sharing economy. *Philos. Trans. R. Soc. A* 375(2095):20160367

Frenken K, Schor JB. 2017. Putting the sharing economy into perspective. *Environ. Innov. Soc. Transit.* 23:3–10

Gerber C, Krzywdzinski M. 2019. Brave new digital work? New forms of performance control in crowdwork. In *Research in the Sociology of Work*, Vol. 33: *Work and Labor in the Digital Age*, ed. SP Vallas, A Kovalainen, pp. 121–45. Binkley, UK: Emerald

Graham M, Woodcock J, Heeks R, Fredman S, du Toit D, et al. 2019. The Fairwork Foundation: strategies for improving platform work. In *Proceedings of the Weizenbaum Conference 2019: Challenges of Digital Inequality: Digital Education, Digital Work, Digital Life*, pp. 89–96. Berlin: Weizenbaum Inst. Netw. Soc.

Gray ML, Suri S. 2019. *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Boston: Houghton Mifflin

Gray ML, Suri S, Ali SS, Kulkarni D. 2016. The crowd is a collaborative network. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing*, pp. 134–47. New York: Assoc. Comput. Mach.

Hacker JS. 2008. *The Great Risk Shift: The New Economic Insecurity and the Decline of the American Dream*. New Haven, CT: Yale Univ. Press. 2nd ed.

Hall JV, Krueger AB. 2018. An analysis of the labor market for Uber's driver-partners in the United States. *ILR Rev.* 71(3):705–32

Hamper B. 1991. *Rivethead: Tales from the Assembly Line*. New York: Warner Books

Hannák A, Wagner C, Garcia D, Mislove AE, Strohmaier M, Wilson C. 2017. Bias in online freelance marketplaces: evidence from TaskRabbit and Fiverr. In *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*, pp. 1914–33. Portland, OR: Assoc. Comput. Mach.

Harvey D. 2005. *A Brief History of Neoliberalism*. Oxford, UK: Oxford Univ. Press

Horan H. 2019. Can Uber ever deliver? *Naked Capitalism*, Apr. 15. **https://www.nakedcapitalism.com/2019/04/hubert-horan-can-uber-ever-deliver-part-nineteen-ubers-ipo-prospectus-overstates-its-2018-profit-imp**

Horton JJ, Zeckhauser RJ. 2016. *Owning, using and renting: some simple economics of the "sharing economy."* NBER Work. Pap. 22029

Huang N, Burtch G, Hong Y, Pavlou PA. 2018. *Unemployment and worker participation in the gig economy: evidence from an online labor platform*. SSRN Work. Pap. **https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3105090**

Huws U, Spencer NH, Syrdal DS, Holts K. 2017. *Work in the European gig economy*. Rep., Found. Eur. Progress. Stud., Brussels. **https://www.feps-europe.eu/Assets/Publications/PostFiles/579_1.pdf**

Irani LC. 2015. Difference and dependence among digital workers: the case of Amazon Mechanical Turk. *South Atl. Q.* 114(1):225–34

Irani LC, Silberman MS. 2015. Turkopticon: interrupting worker invisibility in Amazon Mechanical Turk. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 611–20. Paris: Assoc. Comput. Mach.

Jarrahi MH, Sutherland W. 2019. Algorithmic management and algorithmic competencies: understanding and appropriating algorithms in gig work. In *Information in Contemporary Society*, ed. N Taylor, C Christian-Lamb, M Martin, B Nardi, pp. 578–89. Cham, Switz.: Springer Int.

Joyce S, Stuart M, Forde C. 2019. *Theorising platform worker resistance*. Paper presented at Fathomless Futures: Algorithmic and Imagined, New York, June 28

Kalleberg AL. 2013. *Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s to 2000s*. New York: Russell Sage Found.

Kalleberg AL. 2018. *Precarious Lives: Job Insecurity and Well-Being in Rich Democracies*. Cambridge, UK: Polity

Kalleberg AL, Vallas SP. 2018. Introduction. In *Probing Precarious Work: Theory, Research, and Politics*, ed. AL Kalleberg, SP Vallas, pp. 1–30. Binkley, UK: Emerald

Kelkar S. 2018. Engineering a platform: the construction of interfaces, users, organizational roles, and the division of labor. *New Media Soc.* 20(7):2629–46

Kellogg K. 2011. *Challenging Operations: Medical Reform and Resistance in Surgery*. Chicago: Univ. Chicago Press

Kenney M, Zysman J. 2015. *Choosing a future in the platform economy: the implications and consequences of digital platforms*. Paper presented at the Kauffman Foundation New Entrepreneurial Growth Conference, Amelia Isl., Fla., June 18–19. **https://brie.berkeley.edu/sites/default/files/platformeconomy2distributejune21.pdf**

Kenney M, Zysman J. 2016. The rise of the platform economy. *Issues Sci. Technol.* 32(3):61–69

Kenney M, Zysman J. 2019. Work and value creation in the platform economy. In *Research in the Sociology of Work*, Vol. 33: *Work and Labor in the Digital Age*, ed. SP Vallas, A Kovalainen, pp. 13–41. Binkley, UK: Emerald

Khan LM. 2017. Amazon's antitrust paradox. *Yale Law J.* 126:710–805

Kirchner S, Schüßler E. 2020. Regulating the sharing economy: a field perspective. In *Theorizing the Sharing Economy: Variety and Trajectories of New Forms of Organizing*, ed. I Maurer, J Mair, A Oberg, pp. 215–36. Res. Sociol. Organ. 66. Melbourne, Aust.: Emerald

Kornberger M, Pflueger D, Mouritsen J. 2017. Evaluative infrastructures: accounting for platform organization. *Account. Organ. Soc.* 60:79–95

Kuhn KM, Maleki A. 2017. Micro-entrepreneurs, dependent contractors, and instaserfs: understanding online labor platform workforces. *Acad. Manag. Perspect.* 31(3):183–200

Ladegaard I, Ravenelle A, Schor JB. 2018. *Provider vulnerability in the sharing economy*. Work. Pap., Boston Coll., Boston

Landes DS. 1986. What do bosses really do? *J. Econ. Hist.* 46(3):585–623

Lane CA. 2011. *A Company of One: Insecurity, Independence, and the New World of White-Collar Unemployment*. Cornell, NY: ILR

Lehdonvirta V. 2018. Flexibility in the gig economy: managing time on three online piecework platforms. *New Technol. Work Employ.* 33(1):13–29

Leidner R. 1993. *Fast Food, Fast Talk*. Berkeley: Univ. Calif. Press

Lobo S. 2014. S.P.O.N.—Die Mensch-Maschine: Auf dem Weg in die Dumpinghölle. In *Spiegel Netzwelt*, March 9. **http://www.spiegel.de/netzwelt/netzpolitik/sascha-lobo-sharing-economy-wie-bei-uber-ist-plattform-kapitalismus-a-989584.html**

Manriquez M. 2019. Work-games in the gig-economy: a case study of Uber drivers in the city of Monterrey, Mexico. In *Research in the Sociology of Work*, Vol. 33: *Work and Labor in the Digital Age*, ed. SP Vallas, A Kovalainen. Bingley, UK: Emerald

Manyika J, Lund S, Bughin J, Robinson K, Mischke J, Mahajan D. 2016. *Independent work: choice, necessity and the gig economy*. Rep., McKinsey Glob. Inst., New York. **https://www.mckinsey.com/featured-insights/employment-and-growth/independent-work-choice-necessity-and-the-gig-economy**

Marglin SA. 1974. What do bosses do? The origins and functions of hierarchy in capitalist production. *Rev. Radic. Political Econ.* 6(2):60–112

Marwick AE. 2013. *Status Update: Celebrity, Publicity and Branding in the Social Media Age*. New Haven, CT: Yale Univ. Press

Mays JC. 2018. Uber gains civil rights allies against New York's proposed freeze: "It's a racial issue." *New York Times*, July 29. **https://www.nytimes.com/2018/07/29/nyregion/uber-cap-civil-rights.html**

Miller M, Bernstein EH. 2017. *New frontiers of worker power: challenges and opportunities in the modern economy*. Rep., Roosevelt Inst., New York. **https://rooseveltinstitute.org/new-frontiers-worker-power/**

Mishel L. 2018. *Uber and the labor market*. Rep. 145552, Econ. Policy Inst., Washington, DC. **https://www.epi.org/publication/uber-and-the-labor-market-uber-drivers-compensation-wages-and-the-scale-of-uber-and-the-gig-economy/**

Neff G. 2012. *Venture Labor: Work and the Burden of Risk in Innovative Industries*. Cambridge, MA: MIT Press

Neff G, Wissinger E, Zukin S. 2005. Entrepreneurial labor among cultural producers: "cool" jobs in "hot" industries. *Soc. Semiotics* 15(3):307–34

Noble SU. 2018. *Algorithms of Oppression: How Search Engines Reinforce Racism*. New York: New York Univ. Press

Osnowitz D. 2011. *Freelancing Expertise: Contract Professionals in the New Economy*. Ithaca, NY: Cornell/ILR

Parker G, Van Alstyne M, Choudary SP. 2016. *Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You*. New York: W. W. Norton

Parrott JA, Reich M. 2018. *An earnings standard for New York City's app-based drivers*. Rep., Cent. New York City Aff., New York

Pasquale F. 2015. *The Black Box Society: The Secret Algorithms That Control Money and Information*. Cambridge, MA: Harvard Univ. Press

Pasquale F. 2016. Two narratives of platform capitalism. *Yale Law Policy Rev*. 35(1):309–19

Pesole A, Urzí Brancati MC, Fernández-Macías E, Biagi F, González Vázquez I. 2018. *Platform workers in Europe*. Tech. Rep., EUR 29275 EN. Luxembourg, Luxembg.: Publ. Off. Eur. Union

Pew Res. Cent. 2016. *Gig work, online selling and home sharing*. Rep., Pew Res. Cent., Washington, DC. **http://www.pewinternet.org/2016/11/17/gig-work-online-selling-and-home-sharing/**

Polanyi K. 1944. *The Great Transformation: The Political and Economic Origins of Our Time*. New York: Farrar Rinehart

Powell WW. 1990. Neither market nor hierarchy: network forms of organization. *Res. Organ. Behav*. 12:295–336

Pugh A. 2015. *Tumbleweed Society: Working and Caring in an Age of Insecurity*. Oxford, UK: Oxford Univ. Press

Rahman H. 2018. *Invisible cages: algorithmic evaluations in online labor markets*. PhD Diss., Stanford Univ., Stanford, CA

Rahman KS. 2016. The shape of things to come: the on-demand economy and the normative stakes of regulating 21st-century capitalism. *Eur. J. Risk Regul*. 7(4):652–63

Rahman KS, Thelen K. 2019. The rise of the platform business model and the transformation of twenty-first-century capitalism. *Politics Soc*. 47(2):177–204

Ravenelle AJ. 2019. *Hustle and Gig: Struggling and Surviving in the Sharing Economy*. Berkeley: Univ. Calif. Press

Robinson HC. 2017. *Making a digital working class: Uber drivers in Boston, 2016–2017*. PhD Thesis, Mass. Inst. Tech., Cambridge, MA

Rogers B. 2016. Employment rights in the platform economy: getting back to basics. *Harv. Law Policy Rev*. 10:479–520

Rosenblat A. 2018. *Uberland: How Algorithms Are Re-Writing the Rules of Work*. Berkeley: Univ. Calif. Press

Rosenblat A, Stark L. 2016. Algorithmic labor and information asymmetries: a case study of Uber's drivers. *Int. J. Commun*. 10:3758–84

Scheiber N. 2017. How Uber uses psychological tricks to push its drivers' buttons. *New York Times*, April 2. **https://www.nytimes.com/interactive/2017/04/02/technology/uber-drivers-psychological-tricks.html**

Schneider N. 2018. An Internet of ownership: democratic design for the online economy. *Sociol. Rev. Monogr*. 66(2):320–40

Scholz T. 2016a. *Platform cooperativism: challenging the corporate sharing economy*. Rep., Rosa Luxembg. Stift., New York. **http://www.rosalux-nyc.org/wp-content/files_mf/scholz_platformcoop_5.9.2016.pdf**

Scholz T. 2016b. *Uberworked and Underpaid: How Workers are Disrupting the Digital Economy*. Cambridge, UK: Polity

Scholz T, Schneider N, eds. 2016. *Ours to Hack and to Own: The Rise of Platform Cooperativism, a New Vision for the Future of Work and a Fairer Internet*. New York: OR Books

Schor JB. 2014. Debating the sharing economy. *Great Transition Initiative*, Oct. **https://greattransition.org/publication/debating-the-sharing-economy**

Schor JB. 2020. *After the Gig: How the Sharing Economy Got Hijacked and How to Win It Back*. Berkeley: Univ. Calif. Press

Schor JB, Cansoy M, Charles W, Ladegaard I, Wengronowitz R. 2019. *Dependence and precarity in the platform economy*. Work. Pap., Boston Coll., Boston

Secur. Exch. Comm. 2019. *Form S-1 registration document under the Securities Act of 1933: Uber Technologies, Inc*. Regist. No. 333. **https://www.sec.gov/Archives/edgar/data/1543151/000119312519103850/d647752ds1.htm**

Sewell G. 1998. The discipline of teams: the control of team-based industrial work through electronic and peer surveillance. *Adm. Sci. Q.* 43(2):397–428

Shapiro A. 2018. Between autonomy and control: strategies of arbitrage in the "on-demand" economy. *New Media Soc*. 20(8):2954–71

Sharone O. 2017. LinkedIn or LinkedOut? How social networking sites are reshaping the labor market. In *Research in the Sociology of Work*, Vol. 30: *Emerging Conceptions of Work, Firms and the Labor Market*, ed. SP Vallas, A Kovalainen, pp. 1–33. Binkley, UK: Emerald

Shestakofsky B. 2017. Working algorithms: software automation and the future of work. *Work Occup*. 44(4):376–423

Silver BJ. 2003. *Forces of Labor: Workers' Movements and Globalization Since 1870*. Cambridge, UK: Cambridge Univ. Press

Smith V. 2001. *Crossing the Great Divide: Worker Risk and Opportunity in the New Economy*. Ithaca, NY: Cornell Univ. Press

Smith V. 2010. Enhancing employability: human, cultural, and social capital in an era of turbulent unpredictability. *Hum. Relat*. 63(2):279–300

Söderqvist F. 2017. A Nordic approach to regulating intermediary online labour platforms. *Transfer: Eur. Rev. Labour Res*. 23(3):349–52

Söderqvist F. 2018. Sweden: Will history lead the way in the age of robots and platforms? In *Work in the Digital Age: Challenges of the Fourth Industrial Revolution*, ed. M Neufeind, J O'Reilly, F Ranft, pp. 295–304. London: Rowman Littlefield

Srnicek N. 2016. *Platform Capitalism*. Cambridge, UK/Malden, MA: Polity

Sulakshana E, Eddy S, Schor JB. 2018. *Democratic governance in the sharing economy: a case study of a platform cooperative, Stocksy United*. Work. Pap., Boston Coll., Boston

Sundararajan A. 2016. *The Sharing Economy: The End of Employment and the Rise of Crowd-Based Capitalism*. Cambridge, MA: MIT Press

Sweeney S. 2019. Uber drivers across the U.S. are manipulating fares to create artificial price surges. *WJLA/ABC*7, June 13. **https://wjla.com/features/7-on-your-side/uber-drivers-nationwide-manipulating-fares-artificial-surges**

Thelen K. 2018. Regulating Uber: the politics of the platform economy in Europe and the United States. *Perspect. Politics* 16(4):938–53

UCLA Inst. Res. Labor Employ. 2018. *More than a gig: a survey of ride-hailing drivers in Los Angeles*. Rep., UCLA Inst. Res. Labor Employ., Los Angeles

Vallas SP. 2019. Platform capitalism: What's at stake for workers? *New Labor Forum* 28(1):48–59

Vallas SP, Christin A. 2018. Work and identity in an era of precarious employment: how workers respond to "personal branding" discourse. *Work Occup*. 45(1):3–37

Vallas S, Prener C. 2012. Dualism, job polarization, and the social construction of precarious work. *Work Occup*. 39(4):331–53

van Dijck J. 2013. 'You have one identity': performing the self on Facebook and LinkedIn. *Media Cult. Soc*. 35(2):199–215

van Doorn N. 2017. Platform labor: on the gendered and racialized exploitation of low-income service work in the "on-demand" economy. *Inf. Commun. Soc*. 20(6):898–914

van Doorn N. 2018. Late for a job in the gig economy? Handy will dock your pay. *Quartz at Work*, October 3. **https://qz.com/work/1411833/handy-charges-fees-to-its-workers-for-being-late-or-canceling-jobs/**

Walker CR, Guest RH. 1956. *The Man on the Assembly Line*. Cambridge, MA: Harvard Univ. Press

Walker ET. 2016. Between grassroots and "astroturf": understanding mobilization from the top-down. In *The SAGE Handbook of Resistance*, ed. D Courpasson, S Vallas, pp. 269–79. Los Angeles: SAGE

Watkins EA, Stark D. 2018. The Möbius organizational form: make, buy, cooperate or co-opt? *Sociologica* 12(1):65–80

Wells K, Attoh K, Cullen D. 2019. *The Uber workplace in D.C.* Rep., Kalmanowitz Initiat. Labor Work. Poor, Georgetown Univ., Washington, DC. **https://lwp.georgetown.edu/wp-content/uploads/Uber-Workplace.pdf**

Wolff KH, ed. 1950. *The Sociology of Georg Simmel*. New York: Free Press

Wood AJ, Graham M, Lehdonvirta V, Hjorth I. 2018. Good gig, bad gig: autonomy and algorithmic control in the global gig economy. *Work Employ. Soc.* 33(1):56–75

Wood AJ, Graham M, Lehdonvirta V, Hjorth I. 2019. Networked but commodified: the (dis)embeddedness of digital labour in the gig economy. *Sociology* 53(5):931–50

Zanoni P. 2019. Labor market inclusion through predatory capitalism? The "sharing economy", diversity, and the crisis of social reproduction in the Belgian coordinated market economy. In *Research in the Sociology of Work*, Vol. 33: *Work and Labor in the Digital Age*, ed. SP Vallas, A Kovalainen. Binkley, UK: Emerald

Zervas G, Proserpio D, Byers J. 2015. *A first look at online reputation on Airbnb, where every stay is above average*. SSRN Work. Pap. **http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2554500**

Zuboff S. 2015. Big other: surveillance capitalism and the prospects of an information civilization. *J. Inf. Technol.* 30(1):75–89

Zuboff S. 2019. *The Age of Surveillance Capitalism*. New York: PublicAffairs