Abstract

On–demand labor has become a new instantiation of piecework. Without shared factories and water coolers, how do these workers coordinate, build solidarity, and take collective action? We will engage in fieldwork with pieceworkers in data entry, domestic services, and on–demand driving to understand how they counter algorithmic systems and engage in collective action. Our goal is to both understand the factors that drive collective behavior in supposedly distributed labor platforms, and to build infrastructures that enable the growth of worker collective action in digitally mediated on–demand labor. Our results shed light on the potential for digital piecework cooperativism, as well as the policies necessary for it to succeed.

Motivating Work: Historical Analysis of Piecework

Piecework has historically disempowered workers and empowered employers. Subdividing work and paying per task drives employees to work faster and longer, affording them little control over working conditions. For most of its history, piecework offered no benefits, occupational health and safety, or social insurance. When piecework combined with job routinization, workers became interchangeable and deindividuated. This combination of piecework and routinization produced the dominant payment system during the industrial era, starting with agriculture and home production but quickly moving into factories. However, by the turn of the 20th century in the United States, campaigns for workers' rights yielded regulations on conditions, and by the late 20th century, piecework was associated primarily with migrant labor and sweatshops. This contracted piecework economy has remained relatively stable since.

Today, with the growth of on–demand labor, piecework is reemerging in new forms. Networked computational infrastructure is now mediating each unit of work and worker. Uber's taxi drivers are paid per ride and assigned jobs by an algorithm [13, 7]. Information workers, such as those on Amazon Mechanical Turk and Upwork, are paid per task, performing vast quantities of data and administrative work [15]. Increasingly numerous workers make money through one–off tasks like housecleaning and food delivery, all mediated by online platforms. Much of this work has been limited in complexity to easily verifiable work, stymieing gig workers' career opportunities in many of the same ways that historically limited information workers' careers [6].

In our examination of crowd work and gig work as a reinstantiation of piecework [1], we identify a number of parallels that relate to this question. First, that the first "human computers" were geographically distributed and only retained for several years to stifle career development opportunities [6]; second, that effective uses of historical piecework were generally limited to easily measured work due to a general mistrust [11, 16]; third, this mistrust led to such a starkly adversarial relationship between workers and managers that it may have precipitated the wave of labor advocacy which defined the first half of the 20th century [9, 10]. What remains then are serious questions about the future of gig work as informed by piecework's history. We have limited knowledge of how gig workers today are adapting to digitally mediated, constantly changing labor markets. Similarly, we know very little about gig work's potential to support complex work, let alone how to turn that potential into reality.

This work carries policy implications for the emerging, and as yet largely unregulated, gig economy. Will gig work represent empowered, independent professionals who freely control their destinies, or will gig work become a geographically distributed "digital sweatshop" [3]? Whereas researchers had relatively little control over the markets that emerged throughout the 20th century, researchers of digital sites of work have the ability not only to influence, but to architect these settings [14]. It can be argued that with a few lines of code, we can effect outsize change on the future of gig work — a form of work that continues to grow by the year [19, 18].

Research plan

We intend to create a platform that can become a template for online work that better represents workers' needs. However, solutions that exist for traditional, non-gig workers — especially labor unions — face resistance from workers in the gig economy [15, 17]. This distaste may be due to a general decline in public opinion of unions. However, the traditional mechanics of a labor union are also a poor match: challenging issues include managing the benefits and proportional representation of workers whose contracts may last only minutes or hours, enforcing collective decisions on a decentralized network of workers, and establishing trust between workers who may never meet face–to–face. In our early fieldwork, for example, a worker on Amazon Mechanical Turk stated: "If by 'union' you mean a 'labor union', I would not feel comfortable taking part. It runs against my grain because I am an individualist. [. . .] I consider myself self–employed. . . not working for anyone in particular."

Given these constraints, what alternative model would give workers more power in an online gig–economy platform while still enabling a market to emerge and function? To explore one such alternative, we will collaborate with the National Domestic Workers Alliance's innovation arm, the Fair Care Labs, to create tools for online pieceworkers to collectively manage and govern their own labor markets. While the literature in social computing design and crowdsourcing already features many tools for successful decentralized collaborations (e.g., Wikipedia), and collective action movements (e.g., change.org), templates and guidelines for sustained collective action and governance online in high–stakes situations that affect workers' livelihoods are rare. Such efforts tend to swell quickly, but soon find themselves embroiled as they struggle to satisfy myriad stakeholders . Our goal is to introduce design mechanisms to enable collectives of gig workers to form, debate policy, and implement their decisions over a long period of time.

Together with the Fair Care Labs, we are designing and launching a cooperative gig labor market for domestic workers (house cleaners). This cooperative labor market, Alia, is designed for domestic workers in the California Bay Area. However, our interest (and Fair Care Labs') is to generalize its insights to other workers and industries. While the driving domain is already crowded with services such as Lyft and Uber, domestic work is a more ideal area to launch a research prototype. In addition, the NDWA Fair Care Labs' support and network will help us gain rapid traction. The web and mobile application, Alia, enables the basic affordances of "gig" work for domestic work — rapid scheduling of any available worker in the network (Figure 1).

Interdisciplinarity

For this research to succeed, the methodological approaches of Political Science and the engineering skills of Computer Science must not only be in conversation, but in concert. The challenge in designing for collective governance, as Hardin (1982) differentiates it from collective action, is such that collective governance "takes on the character of a nearly anthropological investigation of minute interrelationships" [8]. In order to design a system that empowers workers, a researchers must first attempt to understand a wide range of workers' circumstances: The needs of workers; the contexts in which they work; their relationships with one another, with other groups, & with institutions such as governments; and more generally the paradigmatic views of gig workers. Only then can one reasonably hope to design a system consistent with the views and broader culture of gig work.

Lee et al. and Gray et al. have identified a number of ways that workers subvert and circumvent the intents of system–designers, both in digital workplaces and where work is simply mediated digitally [13, 5]. These patterns of behavior elude algorithmic tracking and measurement because they deliberately avoid the *a priori* assumptions made by the designers of systems, who attempt to structure these sites of work in ways to create incentives for preferred behavior. Identifying and understanding the details of this behavior thus begins with a qualitative, ethnographic endeavor.

Anticipated Contributions & Implications

This research is important given the recent trends toward the discretization of work. With increasing numbers of people joining the gig economy, and lacking sufficient work toward digitally mediated forms of collective action and governance, disenfranchised and marginalized laborers in particular stand to lose significantly. Indeed, advances made by labor advocacy groups in the past century have already eroded due to the classification of many of these workers as "contractors" rather than "employees", signaling the larger trend of the reversal of benefits and protections for which workers have fought.

More broadly, this project's will speak to the critique that the internet, far from the democratizing force that Barlow predicted it would be, has become an infrastructure facilitating the corporate centralization of power [2, 12, 4]. The success of this project will therefore not only bring a more nuanced understanding of the shifting climate and culture of labor, but may — in a small way — deliver on the promise Barlow made that cyberspace and the Internet would be a tool for democratizing access to information, and with that, empowering more than the tech elite who engineered it.

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